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U.S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555

Docket No. 50-312
Rancho Seco Nuclear Generating Station
License No. DPR-54
SOIL AND STRUCTURAL SURFACE AREA FACTORS

Attention: John Hickman

Attached is a copy of Decommissioning Technical Basis Document DTBD-05-003 "Soil and Structural Surface Area Factors for use at RSNGS," Revision 0. This Decommissioning Technical Basis Document (DTBD) calculates both surface soil and structural surface area factors to modify derived concentration guideline levels (DCGLs), based on areas of contamination, for use in conducting the final status survey (FSS).

As they become available, we will submit additional DTBDs in anticipation that the review of these documents will facilitate NRC review and approval of the LTP to be submitted later this year. Members of your staff with questions requiring additional information or clarification may contact Bob Jones at (916) 732-4843.

Sincerely,

Michael J Bevan for S.R.
Steve Redeker
Manager, Plant Closure and Decommissioning

Attachment

Cc w/ attachment: B.S. Mallett, NRC, Region IV

NMSS01

Rancho Seco Nuclear Generating Station Decommissioning Technical Basis Document	DTBD–05-003 Revision No. 0 DPT 05-029 RIC 2A.900

Soil and Structural Surface Area Factors for Use at RSNGS

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1.0 PURPOSE

The purpose of this Decommissioning Technical Basis Document (DTBD) is to calculate both surface soil and structural surface area factors to modify derived concentration guideline levels (DCGLs) based on areas of contamination for use in conducting the final status survey (FSS).

2.0 DISCUSSION

As stated in NUREG-1757, Volume 2, Consolidated NMSS Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria, Appendix I, [Reference 7.1] the $DCGL_W$ is the average concentration across an area that is calculated to result in the average member of the critical group receiving a dose at the appropriate dose limit. The general assumption is that the concentration of the radionuclides in the source are fairly homogenous. The degree to which any single localized area can be elevated above the average, assuming the average is at the $DCGL_W$, and not invalidate the homogenous assumption is characterized by the $DCGL_{EMC}$. One method for determining values for the $DCGL_{EMC}$ is to modify the $DCGL_W$ using a correction factor that accounts for the difference in area and the resulting change in dose. The area factor is then the magnitude by which the concentration within the small area of elevated activity can exceed $DCGL_W$ while maintaining compliance with the release criterion.

An area factor for use in elevated measurement comparison during final status surveys is defined by the equation:

$$Area\ Factor = \frac{DCGL_{EMC}}{DCGL_W}$$

Equation 1

where:

$DCGL_W$ = Baseline average DCGL value and
$DCGL_{EMC}$ = Elevated measurement comparison DCGL value

NUREG-1505, A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys, [Reference 7.2] provides the methodology for calculating area factors in Chapter 8. Chapter 8 states that the area factors should be calculated using dose pathway models and assumptions that are consistent with those used to calculate the $DCGL_W$. Area factors are computed by taking the ratio of the dose per unit concentration calculated by RESRAD for the baseline area to that calculated for various smaller areas.

3.0 DEFINITIONS

DCGL: A derived, radionuclide-specific activity concentration within a survey unit corresponding to the release criterion. The DCGL is based on the spatial distribution of the contaminant and hence is derived differently for the nonparametric statistical test ($DCGL_W$) and the Elevated Measurement Comparison ($DCGL_{EMC}$). DCGLs are derived from activity/dose relationships through various exposure pathway scenarios.

Deterministic treatment: While using RESRAD or RESRAD-BUILD in the probabilistic mode, deterministic treatment is the assignment of a single conservative value to a parameter rather than a statistical distribution.

District: Sacramento Municipal Utility District (SMUD)

Industrial Area: An approximately 87-acre fence-enclosed area containing the nuclear facility.

RESRAD: RESRAD is a computer model designed to estimate radiation doses and risks from RESidual RADioactive materials for deriving limits for radionuclides in soil.

RESRAD-BUILD: RESRAD-BUILD is a computer model designed to estimate radiation doses from RESidual RADioactivity in BUILDings.

Stochastic treatment: While using RESRAD or RESRAD-BUILD in the probabilistic mode, stochastic treatment is the assignment of a statistical distribution for the value of a parameter.

Unity rule (mixture rule): A rule applied when more than one radionuclide is present at a concentration that is distinguishable from background and where a single concentration comparison does not apply. In this case, the mixture of radionuclides is compared against default concentrations by applying the unity rule. This is accomplished by determining: 1) the ratio between the concentration of each radionuclide in the mixture, and 2) the concentration for that radionuclide in an appropriate listing of default values. The sum of the ratios for all radionuclides in the mixture should not exceed 1.

4.0 TECHNICAL POSITION

Area factors for radionuclides that have been detected in soils have been calculated using RESRAD and are presented in Table 6-4 and shown graphically in Figures 6-1 and 6-2. Area factors for principal gamma emitting radionuclides detected on structural surfaces have been calculated using RESRAD-BUILD and are presented in Table 6-7 and shown graphically in Figure 6-3. It is acceptable to use the unity rule to combine these area factors when mixtures of radionuclides are present or to select the most restrictive area factors in the mixture and apply them to the entire mixture.

5.0 LIMITATIONS

None

6.0 TECHNICAL BASES

6.1 Area Factors for RSNGS Surface Soils

6.1.1 Radionuclides of Concern for Surface Soils

A site-specific suite of potential radionuclides for use at RSNGS was derived in DTBD-04-001, Radionuclides for Consideration During Rancho Seco Nuclear Generating Station Characterization or Final Status Surveys, [Reference 7.3]. This suite of potential radionuclides contained a total of 26 radionuclides. On May 28, 2004 RSNGS submitted a spent fuel pool cooler pad soil sample collected on March 8, 2004 to General Engineering Laboratories (GEL) for analysis of the entire suite of potentially present 26 radionuclides. This sample was known by onsite gamma spectroscopy to have the highest level of contamination of any soil samples collected during the site characterization process. Of the suite of 26 potential radionuclides, GEL positively identified only six radionuclides. These were C-14, Co-60, Ni-63, Sr-90, Cs-134, and Cs-137. Single nuclide DCGL concentration values (each radionuclide DCGL concentration represents 25 millirem per year) were derived for a baseline default area of 10,000 m^2 in DTBD-04-05, DCGLs for RSNGS Industrial Area Surface Soils [Reference 7.4] for each of the six radionuclides detected by GEL. These single nuclide DCGL concentration values are provided in Table 6-1 below. Area factors are calculated in this DTBD only for the six radionuclides for which DTBD-04-05 derived DCGLs.

Table 6-1

Single Nuclide DCGL Values for Detectable Radionuclides

Radionuclide	Peak of the Mean Dose (mrem/y per pCi/g)	DCGL (pCi/g)
C-14	2.93E-06	8.33E+06
Co-60	1.93E+00	1.26E+01
Ni-63	1.60E-06	1.52E+07
Sr-90	3.76E-03	6.49E+03
Cs-134	1.09E+00	2.24E+01
Cs-137	4.62E-01	5.28E+01

6.1.2 Mathematical Hydrogeological Model

The RSNGS site consists of an approximately 87-acre fence-enclosed Industrial Area containing the nuclear facility surrounded by District-owned

and District-controlled property totaling 2,480 acres. RESRAD v6.22 requires that the hydrogeological conditions of the site be described in a simplified mathematical model from the surface down to the first saturated potable groundwater zone. RESRAD allows for the modeling of an uncontaminated cover, a contaminated soil zone, up to five unsaturated (vadose) zones and a saturated zone. The current RSNGS hydrogeological information used to develop the simplified mathematical model is based on the original siting study performed in 1967 and 1968 and described in the RSNGS Final Safety Analysis Report (FSAR).

The site-specific simplified mathematical model for RSNGS was developed in DTB-04-005 and includes:

- A contaminated silt layer 15 cm thick,
- An unsaturated silt layer 1 foot (0.305 meters) thick,
- An unsaturated fine sand layer 10 feet (3.05 meters) thick,
- An unsaturated siltstone layer 84 feet (25.6 meters) thick,
- An unsaturated sandstone layer 35.5 feet (10.8 meters) thick, and
- An underlying saturated sandstone layer.

Parameters for this simplified mathematical model are provided in Attachment 8.1, RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario.

6.1.3 Calculation of Dose to Source Ratios for Surface Soil Area Factors

Dose to source ratios (DSRs) for the detectable radionuclides of concern were calculated by performing individual RESRAD probabilistic calculations for each of the six detectable radionuclides for each of the nine specified contaminated area sizes. The site-specific RESRAD v6.22 dose model was first configured with the simplified mathematical model parameters contained in Attachment 8.1 then with the statistical parameter distributions provided in Attachment 8.2, Dose Modeling Statistical Distribution Parameters – Industrial Worker Scenario. Sensitive parameters identified in DTBD-04-005 (density of the contaminated zone, contaminated zone K_d value for Cs-137 and external gamma shielding factor) were treated deterministically using the sensitive parameter values listed in Attachment 8.1. Parameters that were not sensitive were treated stociastically using the statistical parameter distributions contained in Attachment 8.2. RESRAD was then run in the probabilistic mode for each

detected radionuclide and for each of the nine specified contaminated area sizes. A new value for the parameter "length of contaminated zone parallel to the aquifer flow" was used each time the contaminated area size was changed. The uncertainty analysis input settings for these calculations were:

- Latin Hypercube sampling
- Random seed – 1000
- Number of observations – 300
- Number of repetitions – 1
- Grouping of observations – correlated or uncorrelated

The electronic file names for each of these calculations are contained in Table 6-2. Representative RESRAD v6.22 input parameters are contained in Attachment 8.3, RESRAD v6.22 Deterministic and Probabilistic 10,000 m^2 Input Parameters for Surface Soil Area Factor Calculations. The probabilistic results summary report peak of the mean result for each calculation is provided in Attachment 8.4, Peak of the Mean DSR Results for Surface Soil Area Factor Calculations.

Table 6-2

Electronic File Names for Surface Soil DSR Calculations

Contaminated Area (m^2)	Radionuclide					
	C-14	Co-60	Ni-63	Sr-90	Cs-134	Cs-137
10,000	CAF1.RAD	CoAF1.RAD	NiAF1.RAD	SrAF1.RAD	Cs4AF1.RAD	Cs7AF1.RAD
3,000	CAF2.RAD	CoAF2.RAD	NiAF2.RAD	SrAF2.RAD	Cs4AF2.RAD	Cs7AF2.RAD
1,000	CAF3.RAD	CoAF3.RAD	NiAF3.RAD	SrAF3.RAD	Cs4AF3.RAD	Cs7AF3.RAD
300	CAF4.RAD	CoAF4.RAD	NiAF4.RAD	SrAF4.RAD	Cs4AF4.RAD	Cs7AF4.RAD
100	CAF5.RAD	CoAF5.RAD	NiAF5.RAD	SrAF5.RAD	Cs4AF5.RAD	Cs7AF5.RAD
30	CAF6.RAD	CoAF6.RAD	NiAF6.RAD	SrAF6.RAD	Cs4AF6.RAD	Cs7AF6.RAD
10	CAF7.RAD	CoAF7.RAD	NiAF7.RAD	SrAF7.RAD	Cs4AF7.RAD	Cs7AF7.RAD
3	CAF8.RAD	CoAF8.RAD	NiAF8.RAD	SrAF8.RAD	Cs4AF8.RAD	Cs7AF8.RAD
1	CAF9.RAD	CoAF9.RAD	NiAF9.RAD	SrAF9.RAD	Cs4AF9.RAD	Cs7AF9.RAD

These calculations provided the peak of the mean DSR in mrem/year per pCi/g for each detected radionuclide. These DSRs are listed in Table 6-3.

Table 6-3

Calculated Peak-of-the-Mean DSR Values

Contaminated Area (m^2)	Radionuclide DSR (millirem/year per pCi/gram)					
	C-14	Co-60	Ni-63	Sr-90	Cs-134	Cs-137
10,000	2.92E-06	1.93E+00	1.60E-06	3.76E-03	1.09E+00	4.62E-01
3,000	1.76E-06	1.89E+00	1.60E-06	3.69E-03	1.07E+00	4.53E-01
1,000	1.16E-06	1.85E+00	1.60E-06	3.62E-03	1.05E+00	4.44E-01
300	6.08E-07	1.72E+00	4.90E-07	3.13E-03	9.77E-01	4.15E-01
100	3.63E-07	1.56E+00	1.72E-07	2.77E-03	8.86E-01	3.76E-01
30	2.15E-07	1.19E+00	5.94E-08	2.12E-03	6.88E-01	2.92E-01
10	1.34E-07	8.09E-01	2.64E-08	1.44E-03	4.71E-01	2.00E-01
3	7.04E-08	3.82E-01	1.40E-08	6.82E-04	2.23E-01	9.48E-02
1	3.84E-08	1.63E-01	9.78E-09	2.94E-04	9.65E-02	4.09E-02

6.1.4 Calculation of Surface Soil Area Factors

The DSRs calculated in Section 6.1.3 were then used to calculate area factors in accordance with the following equation:

$$AF_i = \frac{DSR_{10,000\,m^2}}{DSR_i}$$

Equation 2

where:

AF_i = *Area Factor at EMC area i*

$DSR_{10,000\,m^2}$ = *DSR at the baseline area of 10,000 m^2*

DSR_i = *DSR for EMC area i*

The results of these calculations are listed in Table 6-4, shown graphically in Figure 6-1 for gamma emitters and shown graphically in Figure 6-2 for beta emitters.

Table 6-4

Calculated Surface Soil Area Factors

Contaminated Area (m^2)	Radionuclide Area Factor (unitless)					
	C-14	Co-60	Ni-63	Sr-90	Cs-134	Cs-137
10,000	1.00	1.00	1.00	1.00	1.00	1.00
3,000	1.66	1.02	1.00	1.02	1.02	1.02
1,000	2.52	1.04	1.00	1.04	1.04	1.04
300	4.80	1.12	3.27	1.20	1.12	1.11
100	8.04	1.24	9.30	1.36	1.23	1.23
30	13.6	1.62	26.9	1.77	1.58	1.58
10	21.8	2.39	60.6	2.61	2.31	2.31
3	41.5	5.05	114	5.51	4.89	4.87
1	76.0	11.8	164	12.8	11.3	11.3

6.2 Area Factors for RSNGS Structural Surfaces

6.2.1 Radionuclides of Concern for Structural Surfaces

DTBD-04-001 identified a site-specific suite of 26 radionuclides as potentially present at RSNGS. Offsite laboratory analysis of characterization samples representing structural surfaces taken to date have not identified five of these radionuclides as being present above analytical minimum detectable activity (MDA) levels. In addition, three more radionuclides were identified to have activity levels above MDA in only one characterization sample and with questionable results, indicating that these might be false positive results. Therefore, a total of eight radionuclides were discounted from further area factor evaluation. These eight radionuclides include Na-22, Sb-125, Eu-152, Eu-154, Eu-155, Np-237, Pu-242 and Cm-244. The remaining radionuclides considered for structural surface area factors include:

H-3	C-14	Fe-55	Ni-59
Co-60	Ni-63	Sr-90	Nb-94
Tc-99	Ag-108m	Cs-134	Cs-137
Pm-147	Pu-238	Pu-239	Pu-240
Pu-241	Am-241		

6.2.2 Calculation of Dose to Source Ratios for Structural Surface Area Factors

Single nuclide DCGL values for RSNGS structural surfaces were developed in DTBD-04-004, DCGLs for RSNGS Structural Surfaces, [Reference 7.5] using the probabilistic features of RESRAD-BUILD v3.22. These calculations were based on an industrial worker building occupancy

scenario introduced in NUREG/CR-6755, "Technical Basis for Calculating Radiation Doses for the Building Occupancy Scenario Using the Probabilistic RESRAD-BUILD 3.0 Code" [Reference 7.6].

DTBD-04-004 identified sensitive parameters for RESRAD-BUILD v3.22 and established the dose model for derivation of DCGLs for structural surfaces. The dose model included five contaminated surfaces, four walls and a floor. The room dimensions were determined probabilistically and given conservative deterministic values. Since area factors apply only to one contiguous surface, the floor was selected from which to derive area factors because it was the largest single surface area (137 m^2). The room dimensions and remaining deterministic and stochastic parameters were left as they were derived in DTBD-04-004. The RESRAD-BUILD v3.22 parameters used to develop area factors are provided in Attachment 8.5, RESRAD-BUILD v3.22 Input Parameters for Probabilistic Derivation of Structural Surface Area Factors, and the statistical parameter distributions for the parameters treated stochastically are provided in Attachment 8.6, RESRAD-BUILD v3.22 Statistical Distribution Parameters.

Area factors were calculated in increments ranging from the 137 m^2 floor area down to 0.5 m^2. Complete sets of area factors were calculated only for the principle gamma emitting radionuclides of Co-60, Cs-134 and Cs-137. Area factors for the remaining 15 radionuclides were calculated only for the 0.5 m2 area to demonstrate that their area factors are conservatively bounded by the area factors calculated for the principle gamma emitting radionuclides.

Dose to source ratios in units of millirem/year per dpm/100 cm^2 were calculated first using RESRAD-BUILD v3.22 in the probabilistic mode to identify the "Statistics for Dose" for Time 1 to obtain the calculated DSR. For each calculation, the Latin Hypercube sampling technique was used with a random seed of 1000, 300 observations and one repetition. The file names for each calculation are provided in Table 6-5. Excerpts from the RESRAD-BUILD v3.22 output reports showing the input parameters used in each radionuclide calculation are provided in Attachment 8.7, RESRAD-BUILD v3.22 Output Report Nuclide Specific Information for Deterministic and Stochastic Input Parameters Used In 137 m^2 Area Factor Calculations. Excerpts from the probabilistic output reports from each of these calculations are provided in Attachment 8.8, RESRAD-BUILD v3.22 Probabilistic Output Report Nuclide Specific DSR Results Used for Area Factor Calculations. The DCFs selected (in units of mrem/yr per 100 dpm/100 cm^2) are the average total dose values for the receptor and are provided in Table 6-6.

Table 6-5

Electronic File Names (.bld) for Structural Surface DSR Calculations

Contaminated Area (m^2)	Radionuclide					
	H-3	C-14	Fe-55	Ni-59	Co-60	Ni-63
137	H3AF1	C14AF1	Fe55AF1	Ni59AF1	Co60AF1	Ni63AF1
68	—	—	—	—	Co60AF2	—
36	—	—	—	—	Co60AF3	—
25	—	—	—	—	Co60AF4	—
16	—	—	—	—	Co60AF5	—
9	—	—	—	—	Co60AF6	—
4	—	—	—	—	Co60AF7	—
1	—	—	—	—	Co60AF8	—
0.5	H3AF9	C14AF9	Fe55AF9	Ni59AF9	Co60AF9	Ni63AF9
Contaminated Area (m^2)	Radionuclide					
	Sr-90	Nb-94	Tc-99	Ag-108m	Cs-134	Cs-137
137	Sr90AF1	Nb94AF1	Tc99AF1	Ag108AF1	Cs134AF1	Cs137AF1
68	—	—	—	—	Cs134AF2	Cs137AF2
36	—	—	—	—	Cs134AF3	Cs137AF3
25	—	—	—	—	Cs134AF4	Cs137AF4
16	—	—	—	—	Cs134AF5	Cs137AF5
9	—	—	—	—	Cs134AF6	Cs137AF6
4	—	—	—	—	Cs134AF7	Cs137AF7
1	—	—	—	—	Cs134AF8	Cs137AF8
0.5	Sr90AF9	Nb94AF9	Tc99AF9	Ag108AF9	Cs134AF9	Cs137AF9
Contaminated Area (m^2)	Radionuclide					
	Pm-147	Pu-238	Pu-239	Pu-240	Pu-241	Am-241
137	Pm147AF1	Pu238AF1	Pu239AF1	Pu240AF1	Pu241AF1	Am241AF1
68	—	—	—	—	—	—
36	—	—	—	—	—	—
25	—	—	—	—	—	—
16	—	—	—	—	—	—
9	—	—	—	—	—	—
4	—	—	—	—	—	—
1	—	—	—	—	—	—
0.5	Pm147AF9	Pu238AF9	Pu239AF9	Pu240AF9	Pu241AF9	Am241AF9

Table 6-6

Calculated Mean DSR Values

Contaminated Area (m^2)	Radionuclide DSR (millirem/year per dpm/100 cm^2)					
	H-3	C-14	Fe-55	Ni-59	Co-60	Ni-63
137	3.39E-08	1.24E-06	3.13E-07	1.32E-07	1.19E-03	3.47E-07
68	—	—	—	—	9.75E-04	—
36	—	—	—	—	7.87E-04	—
25	—	—	—	—	6.83E-04	—
16	—	—	—	—	5.63E-04	—
9	—	—	—	—	4.21E-04	—
4	—	—	—	—	2.56E-04	—
1	—	—	—	—	8.60E-05	—
0.5	1:24E-10	4.89E-09	1.14E-09	4.82E-10	4.60E-05	1.27E-09
Contaminated Area (m^2)	Radionuclide					
	Sr-90	Nb-94	Tc-99	Ag-108m	Cs-134	Cs-137
137	8.92E-05	7.86E-04	9.16E-07	8.19E-04	8.07E-04	3.09E-04
68	—	—	—	—	6.51E-04	2.45E-04
36	—	—	—	—	5.21E-04	1.94E-04
25	—	—	—	—	4.52E-04	1.67E-04
16	—	—	—	—	3.71E-04	1.37E-04
9	—	—	—	—	2.77E-04	1.02E-04
4	—	—	—	—	1.68E-04	6.16E-05
1	—	—	—	—	5.64E-05	2.07E-05
0.5	4.26E-07	3.04E-05	4.69E-09	3.17E-05	3.01E-05	1.10E-05
Contaminated Area (m^2)	Radionuclide					
	Pm-147	Pu-238	Pu-239	Pu-240	Pu-241	Am-241
137	6.86E-07	2.50E-03	2.80E-03	2.80E-03	4.87E-05	2.88E-03
68	—	—	—	—	—	—
36	—	—	—	—	—	—
25	—	—	—	—	—	—
16	—	—	—	—	—	—
9	—	—	—	—	—	—
4	—	—	—	—	—	—
1	—	—	—	—	—	—
0.5	3.11E-09	9.17E-06	1.03E-05	1.03E-05	1.78E-07	1.12E-05

6.2.3 Calculation of Structural Surface Area Factors

The DSRs calculated in Section 6.2.2 were then used to calculate structural surface area factors in accordance with the following equation:

$$AF_i = \frac{DSR_{137\,m^2}}{DSR_i}$$

Equation 3

where:

AF_i = *Area Factor at EMC area i*
$DSR_{137\,m^2}$ = *DSR at the floor area of 137 m^2*
DSR_i = *DSR for EMC area i*

The results of these calculations are listed in Table 6-7 and shown graphically in Figure 6-3.

Table 6-7

Calculated Area Factor Values

Contaminated Area (m^2)	Radionuclide Area Factor					
	H-3	C-14	Fe-55	Ni-59	Co-60	Ni-63
137	1	1	1	1	1	1
68	—	—	—	—	1.22	—
36	—	—	—	—	1.51	—
25	—	—	—	—	1.74	—
16	—	—	—	—	2.11	—
9	—	—	—	—	2.83	—
4	—	—	—	—	4.65	—
1	—	—	—	—	13.8	—
0.5	273	254	275	274	25.9	273
Contaminated Area (m^2)	Radionuclide					
	Sr-90	Nb-94	Tc-99	Ag-108m	Cs-134	Cs-137
137	1	1	1	1	1	1
68	—	—	—	—	1.24	1.26
36	—	—	—	—	1.55	1.59
25	—	—	—	—	1.79	1.85
16	—	—	—	—	2.18	2.26
9	—	—	—	—	2.91	3.03
4	—	—	—	—	4.80	5.02
1	—	—	—	—	14.3	14.9
0.5	209	25.9	195	25.8	26.8	28.1
Contaminated Area (m^2)	Radionuclide					
	Pm-147	Pu-238	Pu-239	Pu-240	Pu-241	Am-241
137	1	1	1	1	1	1
68	—	—	—	—	—	—
36	—	—	—	—	—	—
25	—	—	—	—	—	—
16	—	—	—	—	—	—
9	—	—	—	—	—	—
4	—	—	—	—	—	—
1	—	—	—	—	—	—
0.5	221	273	272	272	274	257

Figure 6-1
Surface Soil Area Factors for Gamma Emitters

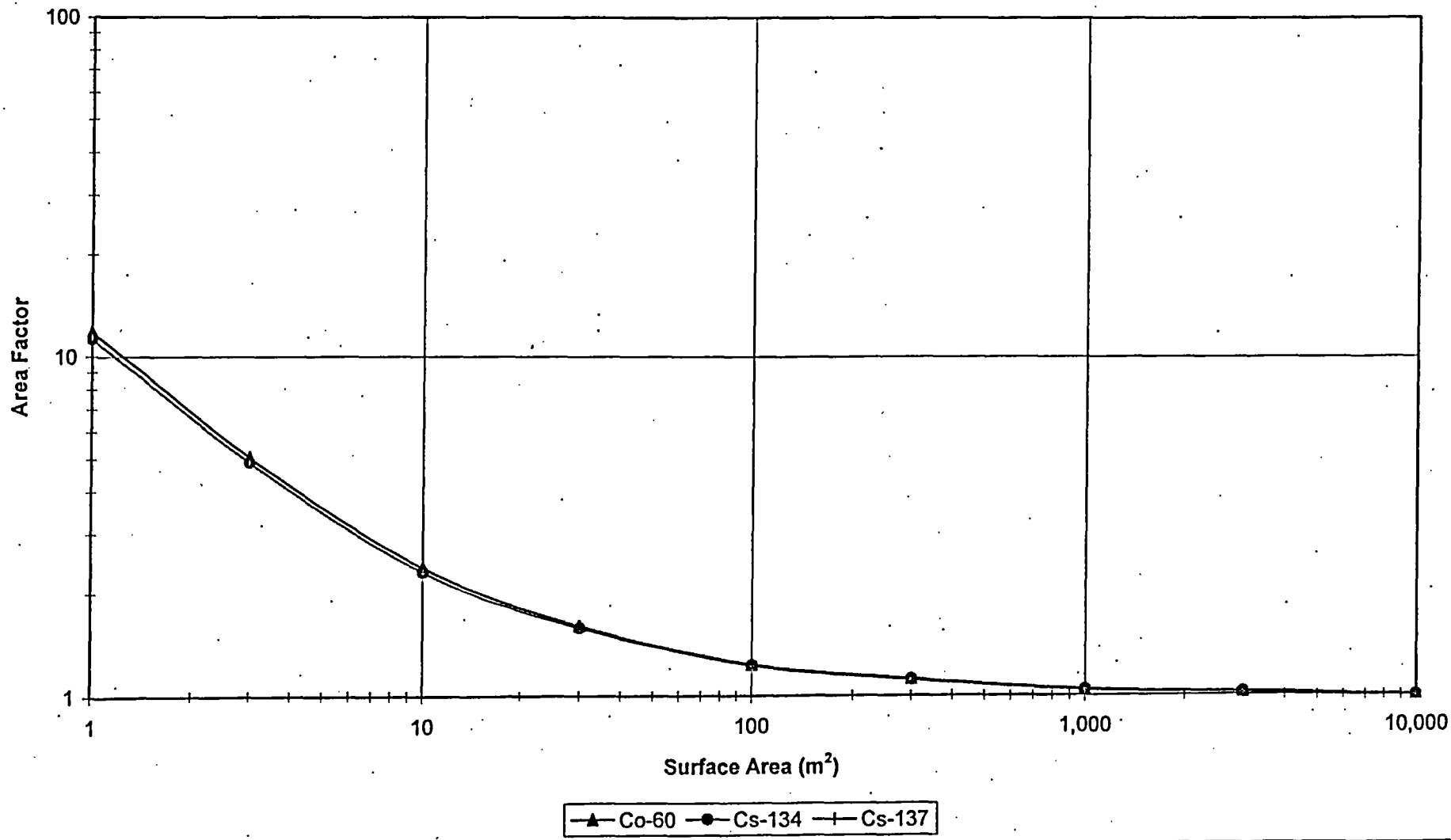


Figure 6-2
Surface Soil Area Factors for Beta Emitters

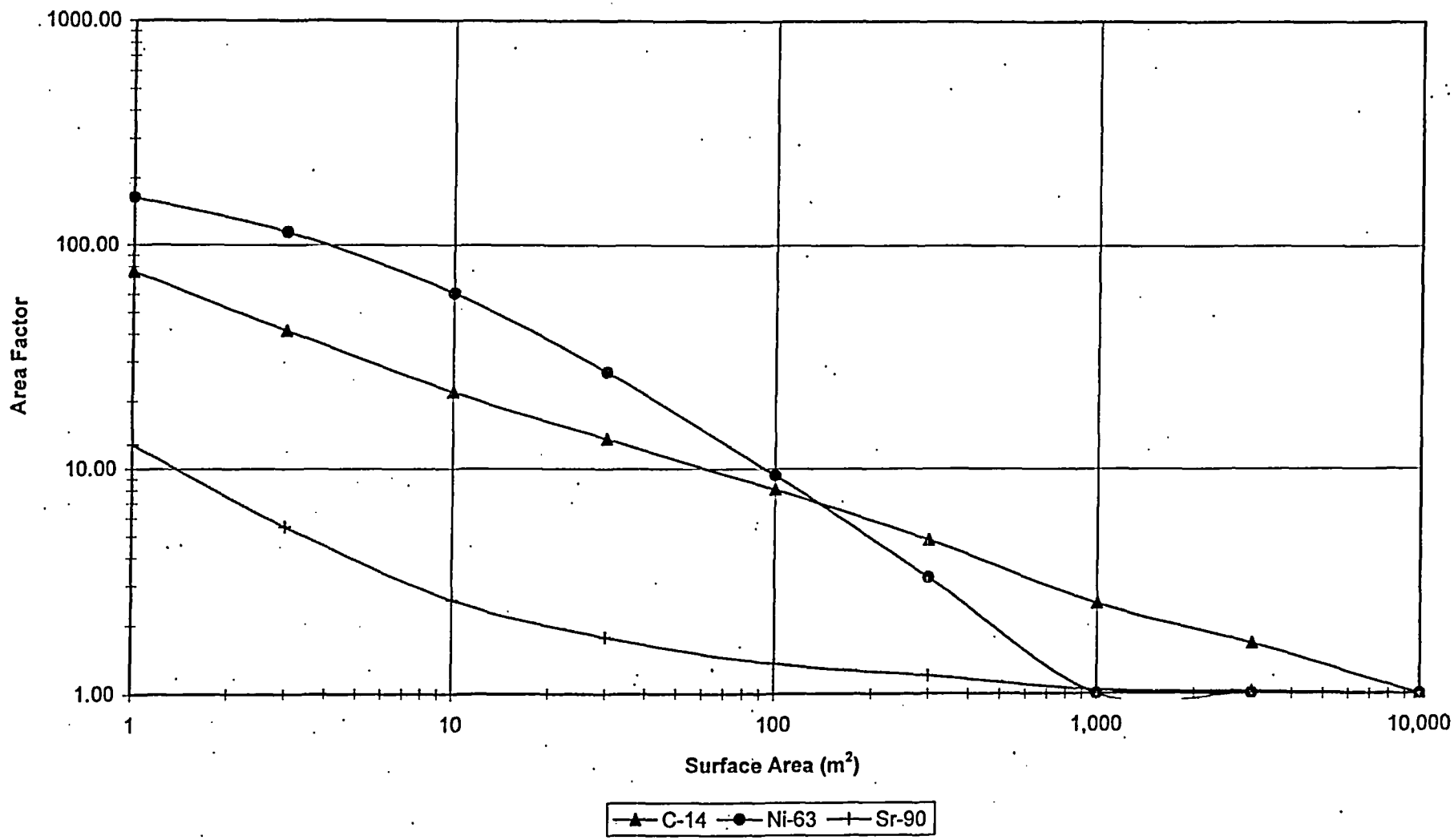
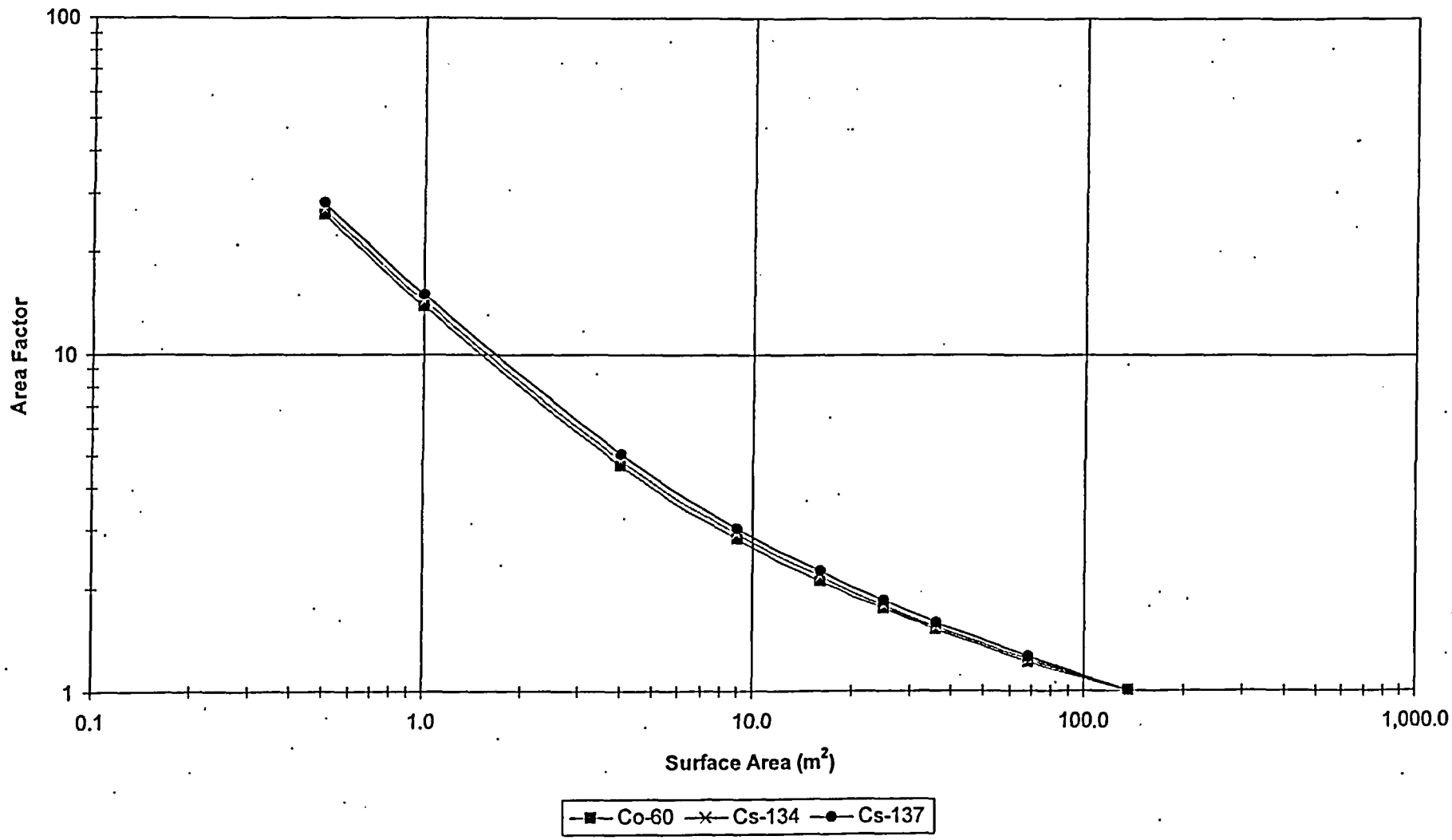


Figure 6-3
Structural Surface Area Factors



7.0 REFERENCES

7.1 U.S. Nuclear Regulatory Commission, NUREG-1757, Volume 2, Consolidated NMSS Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria, Final Report, September 2003

7.2 U.S. Nuclear Regulatory Commission, NUREG-1505, A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys, June 1998

7.3 DTBD-04-001, Revision 2, Radionuclides for Consideration During Rancho Seco Nuclear Generating Station Characterization or Final Status Surveys

7.4 DTBD-04-005, Revision 0, DCGLs for RSNGS Industrial Area Surface Soils

7.5 DTBD-04-004, Revision 0, DCGLs for RSNGS Structural Surfaces

7.6 Argonne National Laboratory / U.S. Nuclear Regulatory Commission, NUREG/CR-6755, Technical Basis for Calculating Radiation Doses for the Building Occupancy Scenario Using the Probabilistic RESRAD-BUILD 3.0 Code, February 2002

7.7 U.S. Nuclear Regulatory Commission, NUREG/CR-5512, Volume 1, Review Of Parameter Data for the NUREG/CR-5512 Building Occupancy Scenario and Probability Distributions for the DandD Parameter Analysis, January 1998

7.8 U.S. Nuclear Regulatory Commission, NUREG/CR-5512, Volume 3, Residual Radioactive Contamination from Decommissioning – Parameter Analysis, October 1999

7.9 U.S. Nuclear Regulatory Commission, NUREG-1720, Draft Report for Comment, Re-evaluation of the Indoor Resuspension Factor for the Screening Analysis of the Building Occupancy Scenario for NRC's License Termination Rule, June 2002

7.10 Argonne National Laboratory / U.S. Nuclear Regulatory Commission, NUREG/CR-6755, Technical Basis for Calculating Radiation Doses for the Building Occupancy Scenario Using the Probabilistic RESRAD-BUILD 3.0 Code, February 2002

7.11 U.S. Nuclear Regulatory Commission, NUREG-1727, NMSS Decommissioning Standard Review Plan, September 2000

8.0 ATTACHMENTS

8.1 RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario

8.2 Dose Modeling Statistical Distribution Parameters – Industrial Worker Scenario

8.3 RESRAD v6.22 Deterministic and Probabilistic 10,000 m^2 Input Parameters for Surface Soil Area Factor Calculations

8.4 Peak of the Mean DSR Results for Surface Soil Area Factor Calculations

8.5 RESRAD-BUILD v3.22 Input Parameters for Probabilistic Derivation of Structural Surface Area Factors

8.6 RESRAD-BUILD v3.22 Statistical Distribution Parameters

8.7 RESRAD-BUILD v3.22 Output Report Nuclide Specific Information for Deterministic and Stochastic Input Parameters Used In 137 m^2 Area Factor Calculations

8.8 RESRAD-BUILD v3.22 Probabilistic Output Report Nuclide Specific DSR Results Used for Area Factor Calculations

9.0 RESPONSIBLE INDIVIDUAL

Leon E. Brown

Attachment 8.1

RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario

RESRAD v6.22 Parameters for Dose Modeling Probabilistic Analysis of Varying Contamination Layer Thickness					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Contamination					
Thickness of contaminated zone	P	2	m	0.15, 0.5, 1, 1.5, 2, 2.5, 3	Assigned value
Area of contaminated zone	P	2	m^2	10,000	Example contaminated zone area used to calculate DCGLs in DTBD-04-005
Shape of the contaminated zone	P	3	-	Circular	Default RESRAD v6.22 Physical value acceptable for this evaluation
Initial concentration of principal radionuclides in soil	P	2	pCi/g	Various	Table 6-1 maximum allowed radionuclide mixture concentrations
Initial concentration of radionuclides present in ground water	P	3	pCi/L	0	Not Used for this evaluation
Leach rate	P	3	1/yr	0	Default Physical value to invoke the calculation of this parameter via a first-order leaching model that uses the value of the soil/water distribution coefficient in the contaminated zone
Solubility limit	P	3	mol/L	0	Default Physical value – not used by RESRAD v6.22 with leach rate flag set to 0
Time since placement of material	P	3	yr	0	Default RESRAD v6.22 Physical value acceptable for this evaluation
Times for calculation	P	3	yr	1, 3, 10, 30, 100, 300, 1000	Default RESRAD v6.22 Physical value acceptable for this evaluation
Contaminated zone density	P	1	g/cm^3	1.47	Deterministic sensitive parameter value determined in DTBD-04-005
Contaminated zone distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Contaminated zone distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Contaminated zone distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Contaminated zone distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Contaminated zone distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Contaminated zone distribution coefficient for Cs-137	P	1	cm^3/g	2130	Deterministic sensitive parameter value determined in DTBD-05-005
Use plant/soil ratio	NA	3	Check box	No	For purposes of this evaluation, the code should not be allowed to calculate the distribution coefficient from the plant root uptake factors
Contaminated zone field capacity	P	3	-	0.2	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
Contaminated zone erosion rate	P,B	2	m/yr	Continuous logarithmic distribution	NUREG/CR-6697, Attachment C
Contaminated zone total porosity	P	2	-	Truncated normal distribution	NUREG/CR-6697, Attachment C
Contaminated zone hydraulic conductivity	P	2	m/yr	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.4-1 for silt
Contaminated zone b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C
Carbon-Model Parameters					
Thickness of evasion layer of C-14 in soil	P	2	m	Triangular distribution	NUREG/CR-6697, Attachment C
C-14 evasion flux rate from soil	P	3	1/s	7E-07	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
C-12 concentration in local water	P	3	g/cm^3	2E-05	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
C-12 concentration in contaminated soil	P	3	g/g	0.03	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
Fraction of vegetation carbon absorbed from soil	P	3	-	0.02	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario

Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Fraction of vegetation carbon absorbed from air	P	3	-	0.98	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
C-12 evasion flux rate from soil	P	3	1/s	1E-10	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
Grain fraction in beef cattle feed	B	3	-	0.8	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
Grain fraction in milk cow feed	B	3	-	0.2	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
DCF correction factor for gaseous forms of C-14	P	3	-	88.94	Default RESRAD v6.22 Priority 3 Physical value acceptable for this evaluation
Soil					
Cover depth	P	2	m	0	The contamination is assumed to be on surface soil
Density of cover material	P	1	g/cm^3	Not Used	A cover is not used in this evaluation
Cover total porosity	P	3	-	Not Used	Radon is not used in this evaluation
Cover volumetric water content	P	3	-	Not Used	Radon is not used in this evaluation
Cover radon diffusion coefficient	P	3	m^2/s	Not Used	Radon is not used in this evaluation
Cover erosion rate	P,B	2	m/yr	Not Used	A cover is not used in this evaluation
Number of unsaturated zones	P	3	-	4	Simplified hydrogeological model assumption
Unsaturated zone 1 thickness	P	1	m	0.305	Thickness of silt layer above the sand layer
Unsaturated zone 1 density	P	2	g/cm^3	Normal distribution	NUREG/CR-6767, Attachment C, Table C-1 distribution for silt
Unsaturated zone 1 distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 1 distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 1 distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Unsaturated zone 1 distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 1 distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 1 distribution coefficient for Cs-137	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 1 total porosity	P	2	-	Truncated normal distribution	NUREG/CR-6697, Attachment C, Table 3.2-1 distribution for silt
Unsaturated zone 1 effective porosity	P	2	-	Truncated normal distribution	NUREG/CR-6767, Attachment A, Table A-7 distribution for silt
Unsaturated zone 1 field capacity	P	3	-	Truncated normal distribution	NUREG/CR-6767, Attachment A, Table A-7 distribution for silt
Unsaturated zone 1 hydraulic conductivity	P	2	m/yr	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.4-1 for silt
Unsaturated zone 1 soil-specific b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.5-1 for silt
Unsaturated zone 2 thickness	P	1	m	3.05	Thickness of fine sand layer above the siltstone layer
Unsaturated zone 2 density	P	2	g/cm^3	Normal distribution	NUREG/CR-6767, Attachment C, Table C-1 distribution for sand
Unsaturated zone 2 distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 2 distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 2 distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Unsaturated zone 2 distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 2 distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 2 distribution coefficient for Cs-137	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 2 total porosity	P	2	-	Truncated normal distribution	NUREG/CR-6697, Attachment C, Table 3.2-1 distribution for sand
Unsaturated zone 2 effective porosity	P	2	-	Truncated normal distribution	NUREG/CR-6767, Attachment A, Table A-1 distribution for sand
Unsaturated zone 2 field capacity	P	3	-	Truncated normal distribution	NUREG/CR-6767, Attachment A, Table A-1 distribution for sand
Unsaturated zone 2 hydraulic conductivity	P	2	m/yr	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.4-1 for sand
Unsaturated zone 2 soil-specific b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.5-1 for sand
Unsaturated zone 3 thickness	P	1	m	25.60	Thickness of siltstone layer
Unsaturated zone 3 density	P	2	g/cm^3	Normal distribution	NUREG/CR-6767, Attachment C, Table C-1 distribution for silt used as a placeholder until development of site-specific zone 3 density data
Unsaturated zone 3 distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 3 distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Unsaturated zone 3 distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 3 distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 3 distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 3 distribution coefficient for Cs-137	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 3 total porosity	P	2	-	0.35	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for medium siltstone used as a placeholder until development of site-specific zone 3 total porosity data
Unsaturated zone 3 effective porosity	P	2	-	0.12	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for medium siltstone used as a placeholder until development of site-specific zone 3 effective porosity data
Unsaturated zone 3 field capacity	P	3	-	0.23	Total porosity minus effective porosity per RESRAD Data Collection Handbook, Section 4.1, used as a placeholder until development of site-specific zone 4 field capacity data
Unsaturated zone 3 hydraulic conductivity	P	2	m/yr	Bounded lognormal-n	NUREG/CR-6697, Attachment C, Table 3.4-1 for silt used as a placeholder until development of site-specific zone 3 hydraulic conductivity data
Unsaturated zone 3 soil-specific b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.5-1 for silt used as a placeholder until development of site-specific zone 3 soil-specific b parameter data
Unsaturated zone 4 thickness	P	1	m	10.82	Thickness of unsaturated sandstone layer
Unsaturated zone 4 density	P	2	g/cm^3	Normal distribution	NUREG/CR-6767, Attachment C, Table C-1 distribution for sand used as a placeholder until development of site-specific zone 4 density data
Unsaturated zone 4 distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Unsaturated zone 4 distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 4 distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 4 distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 4 distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 4 distribution coefficient for Cs-137	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Unsaturated zone 4 total porosity	P	2	-	0.35	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for sandstone used as a placeholder until development of site-specific zone 4 total porosity data
Unsaturated zone 4 effective porosity	P	2	-	0.27	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for sandstone used as a placeholder until development of site-specific zone 4 effective porosity data
Unsaturated zone 4 field capacity	P	3	-	0.07	Total porosity minus effective porosity per RESRAD Data Collection Handbook, Section 4.1, used as a placeholder until development of site-specific zone 4 field capacity data
Unsaturated zone 4 hydraulic conductivity	P	2	m/yr	10	Upper boundary value from RESRAD Data Collection Handbook, Table 5.1 for sandstone used as a placeholder until development of site-specific zone 4 hydraulic conductivity data
Unsaturated zone 4 soil-specific b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C, Table 3.5-1 for sand used as a placeholder until development of site-specific zone 4 soil-specific b parameter data
Water					
Density of saturated zone	P	1	g/cm^3	Normal distribution	NUREG/CR-6767, Attachment C, Table C-1 distribution for sand used as a placeholder until development of site-specific zone 4 density data
Saturated zone distribution coefficient for C-14	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Saturated zone distribution coefficient for Ni-63	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone distribution coefficient for Co-60	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone distribution coefficient for Sr-90	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone distribution coefficient for Cs-134	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone distribution coefficient for Cs-137	P	1	cm^3/g	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone total porosity	P	1	-	0.34	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for sandstone used as a placeholder until development of site-specific zone 4 total porosity data
Saturated zone effective porosity	P	1	-	0.27	RESRAD Data Collection Handbook Table 3.2 arithmetic mean for sandstone used as a placeholder until development of site-specific zone 4 effective porosity data
Saturated zone field capacity	P	3	-	0.07	Total porosity minus effective porosity per RESRAD Data Collection Handbook, Section 4.1, used as a placeholder until development of site-specific zone 4 field capacity data
Saturated zone hydraulic conductivity	P	1	m/yr	10	Upper boundary value from RESRAD Data Collection Handbook, Table 5.1 for sandstone used as a placeholder until development of site-specific zone 4 hydraulic conductivity data
Saturated zone hydraulic gradient	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C
Saturated zone soil-specific b parameter	P	2	-	Bounded lognormal-n distribution	NUREG/CR-6697, Attachment C
Length of contaminated zone parallel to the aquifer flow	P	2	m	113, 61.8, 35.7, 19.5, 11.3, 6.18, 3.57, 1.95, 1.13	Diameter of 10,000, 3,000, 1,000, 300, 100, 30, 10, 3 and 1 m^2 contaminated zones

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Water table drop rate	P	3	m/yr	0.783	Site specific value applicable to the RSNGS site as reported in the FSAR, Appendix 2C
Well-pump intake depth (below water table)	P	2	m	23	Site specific value applicable to the RSNGS site as reported in the FSAR, Appendix 2C
Well pumping rate	B, P	2	m^3/yr	Not Used	Well pumping rate is not used with the Mass-Balance model for water transport selected – well pumping rate is used to calculated a dilution factor when the Nondisposal model is selected.
Model: non-dispersion or mass balance	NA	3	-	MB	The mass-balance model was chosen as the most conservative since it assumes that all of the radionuclides released from the contaminated zone are withdrawn through the well.
Evapotranspiration coefficient	P	2	-	Uniform distribution	NUREG/CR-6697, Attachment C
Humidity in air	P	3	g/m^3	Not Used	Not used when the Radon exposure pathway is suppressed
Average annual wind speed	P	2	m/s	3.13	7 mph average annual wind speed for the years of 1930 – 1996 reported by the National Climatic Data Center for Stockton, CA (http://www.ncdc.noaa.gov/oa/documentlibrary/wind/wind1996.pdf)
Precipitation rate	P	2	m/yr	0.38	Mean annual average rainfall measured at Sacramento and Stockton
Irrigation mode	B	3	-	Overhead	Behavioral value - ditch irrigation is not the principal method of irrigation in the local region
Irrigation rate	B	3	m/yr	0.2	Behavioral RESRAD v6.22 default value acceptable for this evaluation
Runoff coefficient	P	2	-	Uniform distribution	NUREG/CR-6697, Attachment C
Watershed area for nearby stream or pond	P	3	m^2	1.00E+07	The entire RSNGS site drains into Clay Creek
Accuracy for water soil computation	NA	3	-	0.001	Default RESRAD v6.22 value acceptable for this evaluation
Ingestion					
Fruit, vegetable, and grain consumption rate	M, B	2	kg/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Leafy vegetable consumption	M, B	3	kg/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Milk consumption	M, B	2	L/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Meat and poultry consumption	M, B	3	kg/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Fish consumption rate	M, B	3	kg/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Other seafood consumption rate	M, B	3	kg/yr	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Aquatic food contaminated fraction	B, P	2	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Soil ingestion rate	M, B	2	g/yr	Triangular distribution	NUREG/CR-6697, Attachment C
Drinking water intake	M, B	2	L/yr	Truncated lognormal-n distribution	NUREG/CR-6697, Attachment C
Storage time for fruits, non-leafy vegetables, and grain	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for leafy vegetables	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for milk	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for meat	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for fish	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for crustacea and mollusks	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Storage time for well water	B	3	d	1	Behavioral RESRAD v6.22 default value
Storage time for surface water	B	3	d	1	Behavioral RESRAD v6.22 default value
Storage time for livestock fodder	B	3	d	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Drinking water contaminated fraction	B, P	3	-	1	Default RESRAD v6.22 Behavioral/Physical value acceptable for this evaluation

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Household water contaminated fraction	B, P	3	-	Not Used	Not used when the radon exposure pathway is suppressed
Livestock water contaminated fraction	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Irrigation water contaminated fraction	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Plant food contaminated fraction	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Meat contaminated fraction	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Milk contaminated fraction	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Livestock fodder intake rate for meat	M	3	kg/d	Not Used	Not used with meat and milk exposure pathways suppressed in accordance with the Industrial Worker Scenario
Livestock fodder intake rate for milk	M	3	kg/d	Not Used	Not used with meat and milk exposure pathways suppressed in accordance with the Industrial Worker Scenario
Livestock water intake rate for meat	M	3	L/d	Not Used	Not used with meat and milk exposure pathways suppressed in accordance with the Industrial Worker Scenario
Livestock water intake rate for milk	M	3	L/d	Not Used	Not used with meat and milk exposure pathways suppressed in accordance with the Industrial Worker Scenario
Livestock intake of soil	M	3	kg/d	Not Used	Not used with meat and milk exposure pathways suppressed in accordance with the Industrial Worker Scenario
Mass loading for foliar deposition	P	3	g/m^3	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Depth of soil mixing layer	P	2	m	Triangular distribution	NUREG/CR-6697, Attachment C
Depth of roots	P	1	m	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Groundwater fractional usage for drinking water	B, P	3	-	1	Default RESRAD v6.22 Behavioral/Physical value acceptable for this evaluation
Groundwater fractional usage for household water	B, P	3	-	Not Used	Not used when the radon exposure pathway is suppressed
Groundwater fractional usage for livestock water	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Groundwater fractional usage for irrigation water	B, P	3	-	Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Wet weight crop yield for non-leafy plants	P	2	kg/m^2	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Wet weight crop yield for leafy plants	P	3	kg/m^2	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Wet weight crop yield for fodder	P	3	kg/m^2	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Length of growing season for non-leafy vegetables	P	3	yr	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Length of growing season for leafy vegetables	P	3	yr	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Length of growing season for fodder	P	3	yr	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Translocation factor for non-leafy vegetables	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Translocation factor for leafy vegetables	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Translocation factor for fodder	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Weathering removal constant	P	2	1/yr	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Dry foliar interception fraction for non-leafy vegetables	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Dry foliar interception fraction for leafy vegetables	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Dry foliar interception fraction for fodder	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Wet foliar interception fraction for non-leafy vegetables	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	**Class[1]**	**Priority[2]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
Wet foliar interception fraction for leafy vegetables	P	2	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Wet foliar interception fraction for fodder	P	3	-	Not Used	Not used with vegetation exposure pathways suppressed in accordance with the Industrial Worker Scenario
Slope factor – external	M	3	(risk/yr)/ (pCi/g)	Nuclide specific	Metabolic RESRAD v6.22 default value
Slope factor – inhalation	M	3	risk/pCi	Nuclide specific	Metabolic RESRAD v6.22 default value
Slope factor – ingestion	M	3	risk/pCi	Nuclide specific	Metabolic RESRAD v6.22 default value
Plant transfer factor	P	1	-	Nuclide specific - Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Meat transfer factor	P	2	(pCi/kg)/ (pCi/d)	Nuclide specific - Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Milk transfer factor	P	2	(pCi/L)/ (pCi/d)	Nuclide specific - Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Bioaccumulation factor for fish	P	2	(pCi/kg)/ (pCi/L)	Nuclide specific - Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Bioaccumulation factor for crustacea and mollusks	P	3	(pCi/kg)/ (pCi/L)	Nuclide specific - Not Used	Not used with ingestion exposure pathways suppressed in accordance with the Industrial Worker Scenario
Occupancy (Inhalation & External Parameters)					
Inhalation rate	M, B	3	m^3/yr	Triangular distribution	NUREG/CR-6697, Attachment C
Inhalation dose conversion factors	M	3	mrem/pCi	Nuclide Specific	Metabolic RESRAD v6.22 default value
Ingestion dose conversion factors	M	3	mrem/pCi	Nuclide Specific	Metabolic RESRAD v6.22 default value
Mass loading for inhalation	P, B	2	g/m^3	Continuous linear distribution	NUREG/CR-6697, Attachment C
Indoor dust filtration factor	P, B	2	-	Uniform distribution	NUREG/CR-6697, Attachment C
External gamma shielding factor	P	2	-	0.397	Deterministic sensitive parameter value determined in DTBD-05-005
Building foundation thickness	P	3	m	Not Used	The Radon Exposure Pathway is not used

Selected RESRAD v6.22 Parameters for RSNGS Surface Soil Dose Modeling Probabilistic Analysis of Detected Radionuclides – Industrial Worker Scenario					
Parameter	Class[1]	Priority[2]	Units	Parameter Value	Basis for Parameter Selection
Building foundation bulk density	P	3	g/m^3	Not Used	The Radon Exposure Pathway is not used
Building foundation total porosity	P	3	-	Not Used	The Radon Exposure Pathway is not used
Building foundation volumetric water content	P	3	-	Not Used	The Radon Exposure Pathway is not used
Building foundation radon diffusion coefficient	P	3	m^2/s	Not Used	The Radon Exposure Pathway is not used
Contaminated soil zone radon diffusion coefficient	P	3	m^2/s	Not Used	The Radon Exposure Pathway is not used
Radon vertical dimension of mixing	P	3	m	Not Used	The Radon Exposure Pathway is not used
Building air exchange rate	P, B	3	1/hr	Not Used	The Radon Exposure Pathway is not used
Building (room) height	P	3	m	Not Used	The Radon Exposure Pathway is not used
Building indoor area factor	P	3	-	Not Used	The Radon Exposure Pathway is not used
Foundation depth below ground surface	P	3	m	Not Used	The Radon Exposure Pathway is not used
Radon-222 emanation coefficient	P	3	-	Not Used	The Radon Exposure Pathway is not used
Radon-220 emanation coefficient	P	3	-	Not Used	The Radon Exposure Pathway is not used
Indoor time fraction	B	3	-	0.114	50% of a work year (2000 hrs.) spent inside an industrial facility
Outdoor time fraction	B	3	-	0.114	50% of a work year (2000 hrs.) spent outside at an industrial facility
Exposure duration	B	3	yr	30	Behavioral RESRAD v6.22 default value

[1]Parameter Classification: P = Physical; B = Behavioral; M = Metabolic
[2]1 = high priority parameter, 2 = medium priority parameter, 3 = low priority parameter

Attachment 8.2

Dose Modeling Statistical Distribution Parameters – Industrial Worker Scenario

RESRAD v6.22 Dose Modeling Distribution Parameters – Industrial Worker Scenario

Parameter	Priority[1]	Distribution	Distribution's Statistical Parameters[2]			
			1	2	3	4
Density of saturated zone	1	Normal	1.578	0.158	-	-
Contaminated zone distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Contaminated zone distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999
Contaminated zone distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Contaminated zone distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Contaminated zone distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 1 distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Unsaturated zone 1 distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999
Unsaturated zone 1 distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Unsaturated zone 1 distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Unsaturated zone 1 distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 1 distribution coefficient for Cs-137	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 2 distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Unsaturated zone 2 distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999
Unsaturated zone 2 distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Unsaturated zone 2 distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Unsaturated zone 2 distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 2 distribution coefficient for Cs-137	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 3 distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Unsaturated zone 3 distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999
Unsaturated zone 3 distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Unsaturated zone 3 distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Unsaturated zone 3 distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 3 distribution coefficient for Cs-137	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 4 distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Unsaturated zone 4 distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999
Unsaturated zone 4 distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Unsaturated zone 4 distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Unsaturated zone 4 distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Unsaturated zone 4 distribution coefficient for Cs-137	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Saturated zone distribution coefficient for C-14	1	Truncated lognormal-n	2.40	3.22	0.001	0.999
Saturated zone distribution coefficient for Ni-63	1	Truncated lognormal-n	6.05	1.46	0.001	0.999

RESRAD v6.22 Dose Modeling Distribution Parameters – Industrial Worker Scenario						
Parameter	Priority[1]	Distribution	Distribution's Statistical Parameters[2]			
			1	2	3	4
Saturated zone distribution coefficient for Co-60	1	Truncated lognormal-n	5.46	2.53	0.001	0.999
Saturated zone distribution coefficient for Sr-90	1	Truncated lognormal-n	3.45	2.12	0.001	0.999
Saturated zone distribution coefficient for Cs-134	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Saturated zone distribution coefficient for Cs-137	1	Truncated lognormal-n	6.10	2.33	0.001	0.999
Contaminated zone b parameter	2	Bounded lognormal-n	1.06	0.66	0.5	30
Contaminated zone erosion rate	2	Continuous logarithmic	Default[3]	-	-	-
Contaminated zone total porosity	2	Truncated normal	0.425	0.0867	0.001	0.999
Contaminated zone hydraulic conductivity	2	Bounded lognormal-n	2.66	0.475	3.302	62.2
Depth of soil mixing layer	2	Triangular	0.0	0.6	0.15	-
Drinking water intake	2	Truncated lognormal-n	6.015	0.489	0.001	0.999
Evapotranspiration coefficient	2	Uniform	0.5	0.75	-	-
Indoor dust filtration factor	2	Uniform	0.15	0.95	-	-
Mass loading for inhalation	2	Continuous linear	Default[3]	-	-	-
Runoff coefficient	2	Uniform	0.1	0.8	-	-
Saturated zone b parameter	2	Bounded lognormal-n	1.06	0.66	0.5	30
Saturated zone hydraulic gradient	2	Bounded lognormal-n	-5.11	1.77	7E-05	0.5
Soil ingestion rate	2	Triangular	0	36.5	18.3	-
Unsaturated zone 1 density	2	Normal	1.33	0.202	-	-
Unsaturated zone 1 effective porosity	2	Truncated normal	0.425	0.110	0.0839	0.766
Unsaturated zone 1 hydraulic conductivity	2	Bounded lognormal-n	2.66	0.475	3.302	62.2
Unsaturated zone 1 b parameter	2	Bounded lognormal-n	1.16	0.140	2.06	4.89
Unsaturated zone 1 total porosity	2	Truncated normal	0.46	0.11	0.1161	0.7959
Unsaturated zone 2 density	2	Normal	1.578	0.158	-	-
Unsaturated zone 2 effective porosity	2	Truncated normal	0.383	0.0610	0.195	0.572
Unsaturated zone 2 hydraulic conductivity	2	Bounded lognormal-n	1.398	1.842	110	5870
Unsaturated zone 2 b parameter	2	Bounded lognormal-n	-0.0253	0.216	0.501	1.90
Unsaturated zone 2 total porosity	2	Truncated normal	0.43	0.06	0.2446	0.6154
Unsaturated zone 3 density	2	Normal	1.33	0.202	-	-
Unsaturated zone 3 hydraulic conductivity	2	Bounded lognormal-n	2.66	0.475	3.302	62.2
Unsaturated zone 3 b parameter	2	Bounded lognormal-n	1.16	0.140	2.06	4.89
Unsaturated zone 4 density	2	Normal	1.578	0.158	-	-
Unsaturated zone 4 hydraulic conductivity	2	Bounded lognormal-n	1.398	1.842	110	5870
Unsaturated zone 4 b parameter	2	Bounded lognormal-n	-0.0253	0.216	0.501	1.90
Thickness of evasion layer of C-14 in soil	2	Triangular	0.5	1.0	0.75	-
Unsaturated zone 1 field capacity	3	Truncated normal	0.236	0.0578	0.0575	0.415
Unsaturated zone 2 field capacity	3	Truncated normal	0.0607	0.0150	0.0280	0.124
Inhalation rate	3	Triangular	4,380	13,100	8,400	-

Notes:

[1]1 = high priority parameter, 2 = medium priority parameter

[2]Distribution's Statistical Parameter
Bounded lognormal-n: 1 = underlying mean value, 2 = underlying standard deviation, 3 = lower limit, 4 = upper limit
Lognormal: 1 = mean; 2 = error factor
Normal: 1 = mean, 2 = standard deviation
Triangular: 1 = minimum, 2 = maximum, 3 = most likely

Truncated lognormal-n: 1 = underlying mean value, 2 = underlying standard deviation, 3 = lower quantile, 4 = upper quantile
Truncated normal: 1 = mean, 2 = standard deviation, 3 = lower quantile, 4 = upper quantile
Uniform: 1 = minimum, 2 = maximum

[3]Default RESRAD v6.22 distribution parameters were used

Attachment 8.3

RESRAD v6.22 Deterministic and Probabilistic 10,000 m^2 Input Parameters for Surface Soil Area Factor Calculations

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): C-14	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): C-14	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for C-14				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.505E+00	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	8.894E+01	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

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 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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	DCACTC(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
2	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
3	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
4	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
5	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
6	DMC	TRIANGULAR	.5	.75	1						
7	DENSUZ(1)	NORMAL	1.33	.202							
8	DCACTU1(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
9	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
10	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
11	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
12	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
13	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
14	DENSUZ(2)	NORMAL	1.578	.158							
15	DCACTU2(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
16	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
17	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
18	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
19	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
20	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
21	DENSUZ(3)	NORMAL	1.33	.202							
22	DCACTU3(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
23	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
24	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
25	DENSUZ(4)	NORMAL	1.578	.158							
26	DCACTU4(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
27	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
28	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
29	DENSAQ	NORMAL	1.578	.158							
30	DCACTS(1)	TRUNCATED LOGNORMAL-N	2.4	3.22	.001	.999					
31	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
32	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
33	EVAPTR	UNIFORM	.5	.75							
34	RUNOFF	UNIFORM	.1	.8							
35	SOIL	TRIANGULAR	0	18.3	36.5						
36	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
37	DM	TRIANGULAR	0	.15	.6						
38	INHALR	TRIANGULAR	4380	8400	13100						
39	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006 .9937	.000076	.9983	.0001	1					
40	SHF3	UNIFORM	.15	.95							

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Co-60	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.143E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

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)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	DCACTC(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
2	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
3	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
4	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
5	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
6	DENSUZ(1)	NORMAL	1.33	.202							
7	DCACTU1(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
8	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
9	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
10	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
11	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
12	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
13	DENSUZ(2)	NORMAL	1.578	.158							
14	DCACTU2(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
15	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
16	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
17	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
18	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
19	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
20	DENSUZ(3)	NORMAL	1.33	.202							
21	DCACTU3(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
22	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
23	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
24	DENSUZ(4)	NORMAL	1.578	.158							
25	DCACTU4(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
26	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
27	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
28	DENSAQ	NORMAL	1.578	.158							
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	5.46	2.53	.001	.999					
30	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
31	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
32	EVAPTR	UNIFORM	.5	.75							
33	RUNOFF	UNIFORM	.1	.8							
34	SOIL	TRIANGULAR	0	18.3	36.5						
35	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
36	DM	TRIANGULAR	0	.15	.6						
37	INHALR	TRIANGULAR	4380	8400	13100						
38	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006	.9937	.000076	.9983	.0001	1				
39	SHF3	UNIFORM	.15	.95							

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ni-63	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Ni-63	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for Ni-63				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.143E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

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)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
2	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
3	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
4	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
5	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
6	DENSUZ(1)	NORMAL	1.33	.202							
7	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
8	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
9	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
10	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
11	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
12	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
13	DENSUZ(2)	NORMAL	1.578	.158							
14	DCACTU2(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
15	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
16	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
17	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
18	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
19	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
20	DENSUZ(3)	NORMAL	1.33	.202							
21	DCACTU3(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
22	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
23	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
24	DENSUZ(4)	NORMAL	1.578	.158							
25	DCACTU4(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
26	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
27	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
28	DENSAQ	NORMAL	1.578	.158							
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
30	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
31	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
32	EVAPTR	UNIFORM	.5	.75							
33	RUNOFF	UNIFORM	.1	.8							
34	SOIL	TRIANGULAR	0	18.3	36.5						
35	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
36	DM	TRIANGULAR	0	.15	.6						
37	INHALR	TRIANGULAR	4380	8400	13100						
38	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006	.9937	.000076	.9983	.0001	1				
39	SHF3	UNIFORM	.15	.95							

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Sr-90	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.783E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

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)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	DCACTC(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
2	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
3	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
4	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
5	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
6	DENSUZ(1)	NORMAL	1.33	.202							
7	DCACTU1(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
8	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
9	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
10	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
11	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
12	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
13	DENSUZ(2)	NORMAL	1.578	.158							
14	DCACTU2(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
15	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
16	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
17	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
18	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
19	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
20	DENSUZ(3)	NORMAL	1.33	.202							
21	DCACTU3(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
22	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
23	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
24	DENSUZ(4)	NORMAL	1.578	.158							
25	DCACTU4(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
26	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
27	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
28	DENSAQ	NORMAL	1.578	.158							
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	3.45	2.12	.001	.999					
30	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
31	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
32	EVAPTR	UNIFORM	.5	.75							
33	RUNOFF	UNIFORM	.1	.8							
34	SOIL	TRIANGULAR	0	18.3	36.5						
35	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
36	DM	TRIANGULAR	0	.15	.6						
37	INHALR	TRIANGULAR	4380	8400	13100						
38	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006	.9937	.000076	.9983	.0001	1				
39	SHF3	UNIFORM	.15	.95							

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Cs-134	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Cs-134	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for Cs-134				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.143E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

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)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
2	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
3	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
4	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
5	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
6	DENSUZ(1)	NORMAL	1.33	.202							
7	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
8	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
9	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
10	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
11	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
12	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
13	DENSUZ(2)	NORMAL	1.578	.158							
14	DCACTU2(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
15	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
16	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
17	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
18	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
19	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
20	DENSUZ(3)	NORMAL	1.33	.202							
21	DCACTU3(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
22	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
23	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
24	DENSUZ(4)	NORMAL	1.578	.158							
25	DCACTU4(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
26	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
27	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
28	DENSAQ	NORMAL	1.578	.158							
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
30	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
31	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
32	EVAPTR	UNIFORM	.5	.75							
33	RUNOFF	UNIFORM	.1	.8							
34	SOIL	TRIANGULAR	0	18.3	36.5						
35	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
36	DM	TRIANGULAR	0	.15	.6						
37	INHALR	TRIANGULAR	4380	8400	13100						
38	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006 .9937	.000076	.9983	.0001	1					
39	SHF3	UNIFORM	.15	.95							

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)	1.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.130E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(1)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.470E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.130E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	3.800E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-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+07	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	3.400E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.700E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	7.000E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	7.830E-01	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	2.300E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	MB	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	4	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	3.050E-01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R015	Unsat. zone 2, thickness (m)	3.050E+00	0.000E+00	---	H(2)
R015	Unsat. zone 2, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(2)
R015	Unsat. zone 2, total porosity	4.000E-01	4.000E-01	---	TPUZ(2)
R015	Unsat. zone 2, effective porosity	2.000E-01	2.000E-01	---	EPUZ(2)
R015	Unsat. zone 2, field capacity	2.000E-01	2.000E-01	---	FCUZ(2)
R015	Unsat. zone 2, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(2)
R015	Unsat. zone 2, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(2)
R015	Unsat. zone 3, thickness (m)	2.560E+01	0.000E+00	---	H(3)
R015	Unsat. zone 3, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(3)
R015	Unsat. zone 3, total porosity	3.500E-01	4.000E-01	---	TPUZ(3)
R015	Unsat. zone 3, effective porosity	1.200E-01	2.000E-01	---	EPUZ(3)
R015	Unsat. zone 3, field capacity	2.300E-01	2.000E-01	---	FCUZ(3)
R015	Unsat. zone 3, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(3)
R015	Unsat. zone 3, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(3)
R015	Unsat. zone 4, thickness (m)	1.082E+01	0.000E+00	---	H(4)
R015	Unsat. zone 4, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(4)
R015	Unsat. zone 4, total porosity	3.500E-01	4.000E-01	---	TPUZ(4)
R015	Unsat. zone 4, effective porosity	2.700E-01	2.000E-01	---	EPUZ(4)
R015	Unsat. zone 4, field capacity	7.000E-02	2.000E-01	---	FCUZ(4)
R015	Unsat. zone 4, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(4)
R015	Unsat. zone 4, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(4)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	2.130E+03	1.000E+03	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,1)
R016	Unsaturated zone 2 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,2)
R016	Unsaturated zone 3 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,3)
R016	Unsaturated zone 4 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(1,4)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.365E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.970E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+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	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

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)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	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	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	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
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	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	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters								
1	VCZ	CONTINUOUS LOGARITHMIC	4	5.E-8	0	.0007	.22	.005	.95	.2	1
2	TPCZ	TRUNCATED NORMAL	.425	.0867	.001	.999					
3	HCCZ	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
4	BCZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
5	DENSUZ(1)	NORMAL	1.33	.202							
6	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
7	TPUZ(1)	TRUNCATED NORMAL	.46	.11	.1161	.7959					
8	EPUZ(1)	TRUNCATED NORMAL	.425	.11	.0839	.766					
9	FCUZ(1)	TRUNCATED NORMAL	.236	.0578	.0575	.415					
10	HCUZ(1)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
11	BUZ(1)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
12	DENSUZ(2)	NORMAL	1.578	.158							
13	DCACTU2(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
14	TPUZ(2)	TRUNCATED NORMAL	.43	.06	.2446	.6154					
15	EPUZ(2)	TRUNCATED NORMAL	.383	.061	.195	.572					
16	FCUZ(2)	TRUNCATED NORMAL	.0607	.015	.028	.124					
17	HCUZ(2)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
18	BUZ(2)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
19	DENSUZ(3)	NORMAL	1.33	.202							
20	DCACTU3(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
21	HCUZ(3)	BOUNDED LOGNORMAL-N	2.66	.475	3.302	62.2					
22	BUZ(3)	BOUNDED LOGNORMAL-N	1.16	.14	2.06	4.89					
23	DENSUZ(4)	NORMAL	1.578	.158							
24	DCACTU4(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
25	HCUZ(4)	BOUNDED LOGNORMAL-N	1.398	1.842	110	5870					
26	BUZ(4)	BOUNDED LOGNORMAL-N	-.0253	.216	.501	1.9					
27	DENSAQ	NORMAL	1.578	.158							
28	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999					
29	HGWT	BOUNDED LOGNORMAL-N	-5.11	1.77	.00007	.5					
30	BSZ	BOUNDED LOGNORMAL-N	1.06	.66	.5	30					
31	EVAPTR	UNIFORM	.5	.75							
32	RUNOFF	UNIFORM	.1	.8							
33	SOIL	TRIANGULAR	0	18.3	36.5						
34	DWI	TRUNCATED LOGNORMAL-N	6.015	.489	.001	.999					
35	DM	TRIANGULAR	0	.15	.6						
36	INHALR	TRIANGULAR	4380	8400	13100						
37	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365	.00003	.8119
.00004	.9495	.00006 .9937	.000076	.9983	.0001	1					
38	SHF3	UNIFORM	.15	.95							

Attachment 8.4

Peak of the Mean DSR Results for Surface Soil Area Factor Calculations

Probabilistic results summary : Peak of the Mean DSR for C-14 at 10,000 Sq. Ft.
File: CAF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.921E-06

Probabilistic results summary : Peak of the Mean DSR for C-14 at 3,000 Sq. Ft.
File : CAF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.759E-06

Probabilistic results summary : Peak of the Mean DSR for C-14 at 1,000 Sq. Ft.
File : CAF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.163E-06

Probabilistic results summary : Peak of the Mean DSR for C-14 at 300 Sq. Ft.
File : CAF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.082E-07

Probabilistic results summary : Peak of the Mean DSR for C-14 at 100 Sq. Ft.
File : CAF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.627E-07

Probabilistic results summary : Peak of the Mean DSR for C-14 at 30 Sq. Ft.
File : CAF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.149E-07

Probabilistic results summary : Peak of the Mean DSR for C-14 at 10 Sq. Ft.
File : CAF7.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.338E-07

Probabilistic results summary : Peak of the Mean DSR for C-14 at 3 Sq. Meters
File : CAF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.044E-08

Probabilistic results summary : Peak of the Mean DSR for C-14 at 1 Sq. Meter
File : CAF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.842E-08

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 10,000 Sq. Meters
File: CoAF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.928E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 3,000 Sq. Meters
File: CoAF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.887E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 1,000 Sq. Meters
File: CoAF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.846E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 300 Sq. Meter-
s File: CoAF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.724E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 100 Sq. Meter-
s File: CoAF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.555E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 30 Sq. Meters
File: CoAF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.194E+00

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 10 Sq. Meters
File: CoAF7.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	8.094E-01

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 3 Sq. Meters
File : CoAF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.819E-01

Probabilistic results summary : Peak of the Mean DSR for Co-60 at 1 Sq. Meter
File : CoAF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.631E-01

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 10,000 Sq. Meters
File: NiAF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.605E-06

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 3,000 Sq. Meters
File: NiAF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.603E-06

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 1,000 Sq. Meters
File: NiAF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.601E-06

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 300 Sq. Meter-
s
File: NiAF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.902E-07

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 100 Sq. Meter-
s
File: NiAF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.719E-07

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 30 Sq. Meters
File: NiAF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.938E-08

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 10 Sq. Meters
File: NiAF7.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.638E-08

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 3 Sq. Meters
File : NiAF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.400E-08

Probabilistic results summary : Peak of the Mean DSR for Ni-63 at 1 Sq. Meter
File : NiAF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.781E-09

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 10,000 Sq. Meters
File: SrAF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.755E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 3,000 Sq. Meters
File: SrAF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.686E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 1,000 Sq. Meters
File: SrAF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.616E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 300 Sq. Meter-
s File: SrAF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.132E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 100 Sq. Meter-
s File: SrAF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.773E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 30 Sq. Meters
File: SrAF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.121E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 10 Sq. Meters
File: SrAF7.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.442E-03

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 3 Sq. Meters
File : SrAF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.823E-04

Probabilistic results summary : Peak of the Mean DSR for Sr-90 at 1 Sq. Meter
File : SrAF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.938E-04

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 10,000 Sq. M-
eters File: Cs4AF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.087E+00

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 3,000 Sq. Meters
File: Cs4AF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.067E+00

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 1,000 Sq. Meters
File: Cs4AF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.046E+00

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 300 Sq. Meters
File: Cs4AF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.770E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 100 Sq. Meters
File: Cs4AF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	8.859E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 30 Sq. Meter-
s
File: Cs4AF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.879E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 10 Sq. Meter-
s File: Cs4AF7.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.713E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 3 Sq. Meters
File: Cs4AF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.234E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-134 at 1 Sq. Meter
File : Cs4AF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.647E-02

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 10,000 Sq. Meters
File: Cs7AF1.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.616E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 3,000 Sq. Meters
File: Cs7AF2.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.529E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 1,000 Sq. Meters
File: Cs7AF3.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.438E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 300 Sq. Meters
File: Cs7AF4.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.146E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 100 Sq. Meters
File: Cs7AF5.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.759E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 30 Sq. Meter-
s File: Cs7AF6.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.919E-01

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.999E-01

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 3 Sq. Meters
File: Cs7AF8.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.477E-02

Probabilistic results summary : Peak of the Mean DSR for Cs-137 at 1 Sq. Meter
File : Cs7AF9.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.093E-02

Attachment 8.5

RESRAD-BUILD v3.22 Input Parameters for Probabilistic Derivation of Structural Surface Area Factors

RESRAD-BUILD v3.22 Parameters for RSNGS Structural Surface Area Factor Derivation – Industrial Worker Building Occupancy Scenario

Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
TIME PARAMETERS							
TTIME	Exposure duration	B	3	D	d	365.25	NUREG/CR-5512, Vol. 1
FTIN	Indoor fraction	B	2	D	-	0.267	NUREG/CR-5512, Vol. 3 Section 5.2.2.4 to match the 97.4 d/yr time in the building. This is the time the average member of the group spends in the building.
NTIME	Number of times for calculation	P	3	D	-	2	RESRAD-BUILD current default
DOSE_TIME	Time	P	3	D	yr	1	NUREG/CR-5512, Vol. 3 Section 5.2.2.4
POINT	Maximum time integration points	P	3	D	-	1	Argonne recommended value for probabilistic calculations
BUILDING PARAMETERS							
NROOM	Number of rooms	P	3	D	-	1	NUREG/CR-5512 building occupancy scenario assumes only one contaminated room
UD	Deposition velocity	P	2	D	m/s	4.78E-04	The result of sensitivity analysis in DTBD-04-004
DKSUS	Resuspension rate	P, B	1	D	s^{-1}	1.33E-09	Calculated from the NUREG-1720 recommended DandD resuspension factor of 9.6E-07 m^{-1}, deposition velocity, air exchange rate and room height (see Section 6.2 of DTBD-04-004)
H	Room height	P	2	D	m	3.89	Result of sensitivity analysis in DTBD-04-004
AREA	Room area	P	2	D	m^2	137	Result of sensitivity analysis in DTBD-04-004
LAMBDAT (building); LINPUT (room)	Air exchange rate	B	2	D	1/h	0.835	The result of sensitivity analysis in DTBD-04-004

RESRAD-BUILD v3.22 Parameters for RSNGS Structural Surface Area Factor Derivation – Industrial Worker Building Occupancy Scenario

Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
Q12 and Q21; Q23 and Q32	Flow rate between rooms	B	3	D	m^3/h	0	This dose model contains only one receptor room
Q10 and Q01; Q20 and Q02; Q30 and Q03	Outdoor inflow and outflow	B, P	3	N/A	m^3/h	Not used	Outdoor inflow is calculated from room volume and air exchange rate
RECEPTOR PARAMETERS							
ND	Number of receptors	B	3	D	-	1	This dose model contains only one receptor
DLVL	Receptor room	B	3	D	-	1	This dose model contains only one receptor room
DX	Receptor location (x, y, z)	B	3	D	m	5.85, 5.85, 1	Center of the room's floor
TWGHT	Receptor time fraction	B	3	D	-	1	NUREG/CR-5512, Vol. 3
BRTRATE	Receptor breathing/inhalation rate	M, B	2	S	m^3/d	Triangular distribution	NUREG/CR-6755, Appendix A
BRTRATE	Receptor breathing/inhalation rate	M, B	2	D	m^3/d	35.7	For Ni-59, Ni-63, Nb-94, Ag-108m, Pm-147, Pu-238, Pu-239, Pu-240, Pu-241, and Am-241, the result of sensitivity analysis in DTBD-04-004
INGE2	Indirect ingestion rate	B	2	S	m^2/h	Loguniform distribution	NUREG/CR-6755, Appendix A
INGE2	Indirect ingestion rate	B	2	D	m^2/h	1.61E-04	For Pu-238 and Pu-241, the result of sensitivity analysis in DTBD-04-004
SOURCE PARAMETERS							
NS	Number of sources	P	3	D	-	1	Assumes contamination on the floor
Source 1: Floor							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	z	NUREG/CR-5512

RESRAD-BUILD v3.22 Parameters for RSNGS Structural Surface Area Factor Derivation – Industrial Worker Building Occupancy Scenario

Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
SX	Source location (x, y, z)	P	3	D	m	5.85, 5.85, 0	X and Y distances are half of the square root of the room area derived from sensitivity analysis in DTBD-04-004
SAREA	Source area	P	2	D	m^2	137, 68, 36, 25, 16, 9, 4, 1, and 0.5	Maximum floor area from derived from sensitivity analysis in DTBD-04-004 – reduced areas used to calculate area factors
AIRFR	Air release fraction	B	2	S	-	Triangular distribution	NUREG/CR-6755, Appendix A
AIRFR	Air release fraction	B	2	D		0.517	For Nb-94, Ag-108m, Pm-147, Pu-238, Pu-239, Pu-240, Pu-241, and Am-241, the result of sensitivity analysis in DTBD-04-004
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	3.45E-07	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 3.45E-07 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 319 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	S	d	Triangular distribution	NUREG/CR-6755, Section 3.6
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	For Co-60, Nb-94, Ag-108m, Pu-238, Pu-239, Pu-240, Pu-241, and Am-241, the result of sensitivity analysis in DTBD-04-004

RESRAD-BUILD v3.22 Parameters for RSNGS Structural Surface Area Factor Derivation – Industrial Worker Building Occupancy Scenario

Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	N/A	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	N/A	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	N/A	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	N/A	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	N/A	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	N/A	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			N/A	-	Not used	A volume source is not used in this dose model
SHIELDING PARAMETERS							
DSTH	Shielding thickness	P, B	2	S	cm	0	Shielding is not used in this dose model
DSDEN	Shielding density	P	1	S	g/cm^3	0	Shielding is not used in this dose model
MTLC	Shielding material	P	3	N/A	-	None	Shielding is not used in this dose model
TRITIUM MODEL PARAMETERS							
DRYTHICK	Dry zone thickness	P	3	N/A	cm	Not Used	This parameter is not used for a surface source
H3THICK	Wet + dry zone thickness	P	2	N/A	cm	Not Used	This parameter is not used for a surface source

RESRAD-BUILD v3.22 Parameters for RSNGS Structural Surface Area Factor Derivation – Industrial Worker Building Occupancy Scenario							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
H3VOLFRACT	Volumetric water content	P	2	N/A	-	Not Used	This parameter is not used for a surface source
H3RMVF	Water fraction available for vaporization	P	2	N/A	-	Not Used	This parameter is not used for a surface source
HUMIDITY	Humidity	P, B	2	N/A	g/m^3	Not Used	This parameter is not used for a surface source

Notes:

[1]Parameter Classification: P = Physical; B = Behavioral; M = Metabolic

[2]1 = high priority parameter, 2 = medium priority parameter, 3 = low priority parameter

[3]D = Deterministic treatment, S = Stochastic treatment

Attachment 8.6

RESRAD-BUILD v3.22 Statistical Distribution Parameters

RESRAD-BUILD v3.22 Distribution Parameters– Industrial Worker Scenario						
Parameter	Priority[1]	Distribution	Distribution's Statistical Parameters[2]			
			1	2	3	4
Receptor breathing/inhalation rate	2	Triangular	12	46	33.6	
Indirect ingestion rate	2	Loguniform	2.8E-05	2.9E-04		
Air release fraction	2	Triangular	1E-06	1	0.07	
Source lifetime	2	Triangular	1,000	100,000	10,000	

Notes:

[1]1 = high priority parameter, 2 = medium priority parameter

[2]Distribution's Statistical Parameter
Loguniform: 1 = minimum, 2 = maximum
Triangular: 1 = minimum, 2 = maximum, 3 = most likely

Attachment 8.7

RESRAD-BUILD v3.22 Output Report Nuclide Specific Information for Deterministic and Stochastic Input Parameters Used In 137 m^2 Area Factor Calculations

Title : Tritium Area Factor DSR at 137 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\H3AF1.bld

```
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ÍÍÍ      RESRAD-BUILD Input Parameters               ÍÍÍ
ÍÍÍ                                                  ÍÍÍ
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```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ÍÍÍÍÍÍÍÍÍÍ Receptor Information ÍÍÍÍÍÍÍÍÍÍ

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

ÍÍÍ Receptor-Source Shielding Relationship ÍÍÍ

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

Title : Tritium Area Factor DSR at 137 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\H3AF1.bld

ÍÍÍÍÍÍÍÍ Source Information ÍÍÍÍÍÍÍÍ

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
H-3	1.000E+02	2.883E-08	2.883E-08	0.000E+00

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : C-14 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\C14AF1.bld

```
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ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
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```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]        Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                            <=Q01: 4.45E+02
H1:   3.890       *          Room  1           *      Q10 :  4.45E+02
                  *   LAMBDA: 8.35E-01         *
Area 137.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ïïïïïïïï Source Information ïïïïïïïï

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
C-14	1.000E+02	9.414E-07	9.414E-07	1.180E-08

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : Fe-55 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Fe55AF1.bld

```
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ÍÍÍ                                                ÍÍÍ
ÍÍÍ      RESRAD-BUILD Input Parameters             ÍÍÍ
ÍÍÍ                                                ÍÍÍ
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```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ÍÍÍÍÍÍÍÍÍÍ Receptor Information ÍÍÍÍÍÍÍÍÍÍ

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

ÍÍÍ Receptor-Source Shielding Relationship ÍÍÍ

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
 Height [m]        Air Exchanges [m3/hr]
 Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            *
                                               <=Q01: 4.45E+02
 H1:   3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
 Area 137.000      *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ïïïïïïïï Source Information ïïïïïïïï

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
FE-55	1.000E+02	2.734E-07	1.212E-06	0.000E+00

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : Ni-59 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni59AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ƒƒƒƒƒƒƒƒ Building Information ƒƒƒƒƒƒƒƒ

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height[m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ïïïïïïïï Source Information ïïïïïïïï

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/(dpm/m3)]
NI-59	1.000E+02	9.459E-08	1.216E-06	0.000E+00

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	INGE2(1)	LOGUNIFORM	.000028	.00029	
2	AIRFR(1)	TRIANGULAR	.000001	.07	1
3	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : Co-60 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF1.bld

```
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fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
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```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ïïïïïïïï Source Information ïïïïïïïï

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/(dpm/m3)]
CO-60	1.000E+02	1.212E-05	9.865E-05	6.622E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1

Title : Ni-63 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni63AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                              fff
fff    RESRAD-BUILD Input Parameters             fff
fff                                              fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ïïïïïïïï Building Information ïïïïïïïï

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

Title : Ni-63 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni63AF1.bld

ÍÍÍÍÍÍÍÍ Source Information ÍÍÍÍÍÍÍÍ

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
NI-63	1.000E+02	2.599E-07	2.833E-06	0.000E+00

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	INGE2(1)	LOGUNIFORM	.000028	.00029	
2	AIRFR(1)	TRIANGULAR	.000001	.07	1
3	RFO(1, 1)	TRIANGULAR	1000	10000	100000

Title : Sr-90 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Sr90AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                           <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ÍÍÍÍÍÍÍÍ Source Information ÍÍÍÍÍÍÍÍ

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
SR-90	1.000E+02	6.892E-05	5.901E-04	1.041E-05

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : Nb-94 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Nb94AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                              fff
fff      RESRAD-BUILD Input Parameters           fff
fff                                              fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
 Height [m]          Air Exchanges [m3/hr]
 Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                            <=Q01: 4.45E+02
 H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                    *   LAMBDA: 8.35E-01         *
Area 137.000        *                            *
                    *                            *
                    ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

íííííííí Source Information íííííííí

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
NB-94	1.000E+02	3.216E-06	1.865E-04	4.059E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	INGE2(1)	LOGUNIFORM	.000028 .00029

Title : Tc-99 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Tc99AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ïïïïïïïï Building Information ïïïïïïïï

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *           Room  1          *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ÍÍÍÍÍÍÍÍ Source Information ÍÍÍÍÍÍÍÍ

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
TC-99	1.000E+02	6.577E-07	3.752E-06	8.559E-08

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

Title : Ag-108m Area Factor DCF at 137 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Ag108AF1.bld

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                              fff
fff      RESRAD-BUILD Input Parameters           fff
fff                                              fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ÍÍÍÍÍÍÍÍ Source Information ÍÍÍÍÍÍÍÍ

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AG-108M	1.000E+02	3.432E-06	1.275E-04	4.117E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	INGE2(1)	LOGUNIFORM	.000028 .00029

```
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
fff                                                fff
fff      RESRAD-BUILD Input Parameters             fff
fff                                                fff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
ffffffffffffffffffffffffffffffffffffffffffffffffffff
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

ffffffffff Receptor Information ffffffffff

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

fff Receptor-Source Shielding Relationship fff

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

ffffffff Building Information ffffffff

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

ïïïïïïïï Source Information ïïïïïïïï

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
CS-134	1.000E+02	3.302E-05	2.086E-05	3.991E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

```
=================================================
=================================================
===                                           ===
===      RESRAD-BUILD Input Parameters        ===
===                                           ===
=================================================
=================================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	1.80E+01	1.00E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area: 1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
CS-137	1.000E+02	2.252E-05	1.437E-05	1.437E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	BRTRATE(1)	TRIANGULAR	12	33.6	46
2	INGE2(1)	LOGUNIFORM	.000028	.00029	
3	AIRFR(1)	TRIANGULAR	.000001	.07	1
4	RF0(1, 1)	TRIANGULAR	1000	10000	100000

```
================================================
================================================
===                                          ===
===      RESRAD-BUILD Input Parameters       ===
===                                          ===
================================================
================================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.00E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
 H1:   3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

Title : Pm-147 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pm147AF1.bld

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
SM-147	0.000E+00	8.333E-05	3.365E-02	0.000E+00
PM-147	1.000E+02	4.730E-07	1.766E-05	3.653E-08

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters		
1	INGE2(1)	LOGUNIFORM	.000028	.00029	
2	RF0(1, 1)	TRIANGULAR	1000	10000	100000

```
==============================================
==============================================
===                                        ===
===      RESRAD-BUILD Input Parameters     ===
===                                        ===
==============================================
==============================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *           Room  1          *     Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-238	1.000E+02	1.441E-03	1.766E-01	2.572E-07
U-234	0.000E+00	1.275E-04	5.946E-02	4.023E-07
TH-230	0.000E+00	2.468E-04	1.468E-01	9.189E-07
RA-226	0.000E+00	5.991E-04	3.874E-03	4.685E-03
PB-210	0.000E+00	3.275E-03	1.045E-02	4.730E-06

```
==============================================
==============================================
===                                        ===
===      RESRAD-BUILD Input Parameters     ===
===                                        ===
==============================================
==============================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-239	1.000E+02	1.595E-03	1.932E-01	2.234E-07
U-235	0.000E+00	1.203E-04	5.541E-02	4.068E-04
PA-231	0.000E+00	4.775E-03	5.766E-01	9.054E-05
AC-227	0.000E+00	6.667E-03	3.027E+00	9.730E-04

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	INGE2(1)	LOGUNIFORM	.000028 .00029

```
==================================================
==================================================
===                                            ===
===      RESRAD-BUILD Input Parameters         ===
===                                            ===
==================================================
==================================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *          Room  1           *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/(dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.505E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.640E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.595E-07
TH-228	0.000E+00	3.640E-04	1.554E-01	4.239E-03
RA-228	0.000E+00	6.486E-04	2.288E-03	2.518E-03

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	INGE2(1)	LOGUNIFORM	.000028 .00029

```
================================================
================================================
===                                          ===
===      RESRAD-BUILD Input Parameters       ===
===                                          ===
================================================
================================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:    3.890       *           Room  1          *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00[m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.086E-05	3.716E-03	1.153E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.311E-05
NP-237	0.000E+00	2.000E-03	2.432E-01	5.450E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.604E-07
TH-229	0.000E+00	1.815E-03	9.730E-01	7.748E-04

```
=============================================
=============================================
===                                       ===
===     RESRAD-BUILD Input Parameters     ===
===                                       ===
=============================================
=============================================
```

Number of Sources : 1
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 2.670000E-01

========== Receptor Information ==========

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	5.850	5.850	1.000	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete

======== Building Information ========

Building Air Exchange Rate: 8.35E-01 1/hr

```
Height [m]          Air Exchanges [m3/hr]
Area [m2]
                   ******************************
                   *                            *
                   *                            *
                   *                            <=Q01: 4.45E+02
H1:   3.890        *          Room 1            *      Q10 :  4.45E+02
                   *   LAMBDA: 8.35E-01         *
Area 137.000       *                            *
                   *                            *
                   ******************************
```

Deposition velocity: 4.78E-04 [m/s] Resuspension Rate: 1.33E-09 [1/s]

Title : Am-241 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Am241AF1.bld

======== Source Information ========

Source: 1
Location:: Room : 1 x: 5.85 y: 5.85 z: 0.00 [m]
Geometry:: Type: Area Area:1.37E+02 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 3.450E-07 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: BUILD Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	1.000E+02	1.640E-03	2.000E-01	4.311E-05
NP-237	0.000E+00	2.000E-03	2.432E-01	5.450E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.604E-07
TH-229	0.000E+00	1.815E-03	9.730E-01	7.748E-04

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	INGE2(1)	LOGUNIFORM	.000028 .00029

Attachment 8.8

RESRAD-BUILD v3.22 Probabilistic Output Report Nuclide Specific DSR Results Used for Area Factor Calculations

Title : Tritium Area Factor DSR at 137 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\H3AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.19E-08	3.19E-08
Maximum	5.57E-08	5.57E-08
Average	3.39E-08	3.39E-08
Std.Dev	2.90E-09	2.90E-09
* Total *		
Minimum	3.19E-08	3.19E-08
Maximum	5.57E-08	5.57E-08
Average	3.39E-08	3.39E-08
Std.Dev	2.90E-09	2.90E-09

Title : Tritium Area Factor DSR at 0.5 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\H3AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.17E-10	1.17E-10
Maximum	2.03E-10	2.03E-10
Average	1.24E-10	1.24E-10
Std.Dev	1.06E-11	1.06E-11
* Total *		
Minimum	1.17E-10	1.17E-10
Maximum	2.03E-10	2.03E-10
Average	1.24E-10	1.24E-10
Std.Dev	1.06E-11	1.06E-11

Title : C-14 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\C14AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.06E-06	1.06E-06
Maximum	3.33E-06	3.33E-06
Average	1.24E-06	1.24E-06
Std.Dev	2.73E-07	2.73E-07
* Total *		
Minimum	1.06E-06	1.06E-06
Maximum	3.33E-06	3.33E-06
Average	1.24E-06	1.24E-06
Std.Dev	2.73E-07	2.73E-07

Title : C-14 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\C14AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	4.23E-09	4.23E-09
Maximum	1.25E-08	1.25E-08
Average	4.89E-09	4.89E-09
Std.Dev	9.97E-10	9.97E-10
* Total *		
Minimum	4.23E-09	4.23E-09
Maximum	1.25E-08	1.25E-08
Average	4.89E-09	4.89E-09
Std.Dev	9.97E-10	9.97E-10

Title : Fe-55 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Fe55AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.03E-07	3.03E-07
Maximum	3.93E-07	3.93E-07
Average	3.13E-07	3.13E-07
Std.Dev	1.35E-08	1.35E-08
* Total *		
Minimum	3.03E-07	3.03E-07
Maximum	3.93E-07	3.93E-07
Average	3.13E-07	3.13E-07
Std.Dev	1.35E-08	1.35E-08

Title : Fe-55 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Fe55AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.10E-09	1.10E-09
Maximum	1.43E-09	1.43E-09
Average	1.14E-09	1.14E-09
Std.Dev	4.93E-11	4.93E-11
* Total *		
Minimum	1.10E-09	1.10E-09
Maximum	1.43E-09	1.43E-09
Average	1.14E-09	1.14E-09
Std.Dev	4.93E-11	4.93E-11

Title : Ni-59 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni59AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.05E-07	1.05E-07
Maximum	4.98E-07	4.98E-07
Average	1.32E-07	1.32E-07
Std.Dev	4.29E-08	4.29E-08
* Total *		
Minimum	1.05E-07	1.05E-07
Maximum	4.98E-07	4.98E-07
Average	1.32E-07	1.32E-07
Std.Dev	4.29E-08	4.29E-08

Title : Ni-59 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni59AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.83E-10	3.83E-10
Maximum	1.82E-09	1.82E-09
Average	4.82E-10	4.82E-10
Std.Dev	1.56E-10	1.56E-10
* Total *		
Minimum	3.83E-10	3.83E-10
Maximum	1.82E-09	1.82E-09
Average	4.82E-10	4.82E-10
Std.Dev	1.56E-10	1.56E-10

Title : Co-60 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.19E-03	1.19E-03
Maximum	1.19E-03	1.19E-03
Average	1.19E-03	1.19E-03
Std.Dev	6.36E-07	6.36E-07
* Total *		
Minimum	1.19E-03	1.19E-03
Maximum	1.19E-03	1.19E-03
Average	1.19E-03	1.19E-03
Std.Dev	6.36E-07	6.36E-07

Title : Co-60 Area Factor DCF at 68 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF2.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	9.74E-04	9.74E-04
Maximum	9.76E-04	9.76E-04
Average	9.75E-04	9.75E-04
Std.Dev	3.16E-07	3.16E-07
* Total *		
Minimum	9.74E-04	9.74E-04
Maximum	9.76E-04	9.76E-04
Average	9.75E-04	9.75E-04
Std.Dev	3.16E-07	3.16E-07

Title : Co-60 Area Factor DCF at .36 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF3.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	7.86E-04	7.86E-04
Maximum	7.87E-04	7.87E-04
Average	7.87E-04	7.87E-04
Std.Dev	1.67E-07	1.67E-07
* Total *		
Minimum	7.86E-04	7.86E-04
Maximum	7.87E-04	7.87E-04
Average	7.87E-04	7.87E-04
Std.Dev	1.67E-07	1.67E-07

Title : Co-60 Area Factor DCF at 25 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF4.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	6.83E-04	6.83E-04
Maximum	6.84E-04	6.84E-04
Average	6.83E-04	6.83E-04
Std.Dev	1.16E-07	1.16E-07
* Total *		
Minimum	6.83E-04	6.83E-04
Maximum	6.84E-04	6.84E-04
Average	6.83E-04	6.83E-04
Std.Dev	1.16E-07	1.16E-07

Title : Co-60 Area Factor DCF at 16 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF5.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	5.63E-04	5.63E-04
Maximum	5.63E-04	5.63E-04
Average	5.63E-04	5.63E-04
Std.Dev	7.43E-08	7.43E-08
* Total *		
Minimum	5.63E-04	5.63E-04
Maximum	5.63E-04	5.63E-04
Average	5.63E-04	5.63E-04
Std.Dev	7.43E-08	7.43E-08

Title : Co-60 Area Factor DCF at 9 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF6.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	4.21E-04	4.21E-04
Maximum	4.21E-04	4.21E-04
Average	4.21E-04	4.21E-04
Std.Dev	4.18E-08	4.18E-08
* Total *		
Minimum	4.21E-04	4.21E-04
Maximum	4.21E-04	4.21E-04
Average	4.21E-04	4.21E-04
Std.Dev	4.18E-08	4.18E-08

Title : Co-60 Area Factor DCF at 4 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF7.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.56E-04	2.56E-04
Maximum	2.56E-04	2.56E-04
Average	2.56E-04	2.56E-04
Std.Dev	1.86E-08	1.86E-08
* Total *		
Minimum	2.56E-04	2.56E-04
Maximum	2.56E-04	2.56E-04
Average	2.56E-04	2.56E-04
Std.Dev	1.86E-08	1.86E-08

Title : Co-60 Area Factor DCF at 1 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF8.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	8.60E-05	8.60E-05
Maximum	8.60E-05	8.60E-05
Average	8.60E-05	8.60E-05
Std.Dev	4.64E-09	4.64E-09
* Total *		
Minimum	8.60E-05	8.60E-05
Maximum	8.60E-05	8.60E-05
Average	8.60E-05	8.60E-05
Std.Dev	4.64E-09	4.64E-09

** RESRAD-BUILD Probabilistic Output 3.22 04/04/05 11:34:02 Page: 3 **
Title : Co-60 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Co60AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	4.60E-05	4.60E-05
Maximum	4.60E-05	4.60E-05
Average	4.60E-05	4.60E-05
Std.Dev	2.32E-09	2.32E-09
* Total *		
Minimum	4.60E-05	4.60E-05
Maximum	4.60E-05	4.60E-05
Average	4.60E-05	4.60E-05
Std.Dev	2.32E-09	2.32E-09

Title : Ni-63 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni63AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.88E-07	2.88E-07
Maximum	1.14E-06	1.14E-06
Average	3.47E-07	3.47E-07
Std.Dev	9.31E-08	9.31E-08
* Total *		
Minimum	2.88E-07	2.88E-07
Maximum	1.14E-06	1.14E-06
Average	3.47E-07	3.47E-07
Std.Dev	9.31E-08	9.31E-08

Title : Ni-63 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Ni63AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.05E-09	1.05E-09
Maximum	4.16E-09	4.16E-09
Average	1.27E-09	1.27E-09
Std.Dev	3.40E-10	3.40E-10
* Total *		
Minimum	1.05E-09	1.05E-09
Maximum	4.16E-09	4.16E-09
Average	1.27E-09	1.27E-09
Std.Dev	3.40E-10	3.40E-10

Title : Sr-90 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Sr90AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	7.93E-05	7.93E-05
Maximum	1.84E-04	1.84E-04
Average	8.92E-05	8.92E-05
Std.Dev.	1.38E-05	1.38E-05
* Total *		
Minimum	7.93E-05	7.93E-05
Maximum	1.84E-04	1.84E-04
Average	8.92E-05	8.92E-05
Std.Dev	1.38E-05	1.38E-05

Title : Sr-90 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Sr90AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.90E-07	3.90E-07
Maximum	7.72E-07	7.72E-07
Average	4.26E-07	4.26E-07
Std.Dev	5.04E-08	5.04E-08
* Total *		
Minimum	3.90E-07	3.90E-07
Maximum	7.72E-07	7.72E-07
Average	4.26E-07	4.26E-07
Std.Dev	5.04E-08	5.04E-08

Title : Nb-94 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Nb94AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	7.86E-04	7.86E-04
Maximum	7.86E-04	7.86E-04
Average	7.86E-04	7.86E-04
Std.Dev	2.46E-07	2.46E-07
* Total *		
Minimum	7.86E-04	7.86E-04
Maximum	7.86E-04	7.86E-04
Average	7.86E-04	7.86E-04
Std.Dev	2.46E-07	2.46E-07

Title : Tc-99 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Tc99AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	7.70E-07	7.70E-07
Maximum	2.47E-06	2.47E-06
Average	9.16E-07	9.16E-07
Std.Dev	2.11E-07	2.11E-07
* Total *		
Minimum	7.70E-07	7.70E-07
Maximum	2.47E-06	2.47E-06
Average	9.16E-07	9.16E-07
Std.Dev	2.11E-07	2.11E-07

Title : Tc-99 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Tc99AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	4.16E-09	4.16E-09
Maximum	1.04E-08	1.04E-08
Average	4.69E-09	4.69E-09
Std.Dev	7.71E-10	7.71E-10
* Total *		
Minimum	4.16E-09	4.16E-09
Maximum	1.04E-08	1.04E-08
Average	4.69E-09	4.69E-09
Std.Dev	7.71E-10	7.71E-10

Title : Ag-108m Area Factor DCF at 137 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Ag108AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	8.19E-04	8.19E-04
Maximum	8.20E-04	8.20E-04
Average	8.19E-04	8.19E-04
Std.Dev	2.19E-07	2.19E-07
* Total *		
Minimum	8.19E-04	8.19E-04
Maximum	8.20E-04	8.20E-04
Average	8.19E-04	8.19E-04
Std.Dev	2.19E-07	2.19E-07

Title : Ag-108m Area Factor DCF at 0.5 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Ag108AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.17E-05	3.17E-05
Maximum	3.17E-05	3.17E-05
Average	3.17E-05	3.17E-05
Std.Dev	8.01E-10	8.01E-10
* Total *		
Minimum	3.17E-05	3.17E-05
Maximum	3.17E-05	3.17E-05
Average	3.17E-05	3.17E-05
Std.Dev	8.01E-10	8.01E-10

Title : Cs-134 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	8.06E-04	8.06E-04
Maximum	8.14E-04	8.14E-04
Average	8.07E-04	8.07E-04
Std.Dev	1.29E-06	1.29E-06
* Total *		
Minimum	8.06E-04	8.06E-04
Maximum	8.14E-04	8.14E-04
Average	8.07E-04	8.07E-04
Std.Dev	1.29E-06	1.29E-06

Title : Cs-134 Area Factor DCF at 68 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF2.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	6.50E-04	6.50E-04
Maximum	6.55E-04	6.55E-04
Average	6.51E-04	6.51E-04
Std.Dev	6.38E-07	6.38E-07
* Total *		
Minimum	6.50E-04	6.50E-04
Maximum	6.55E-04	6.55E-04
Average	6.51E-04	6.51E-04
Std.Dev	6.38E-07	6.38E-07

Title : Cs-134 Area Factor DCF at 36 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF3.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	5.21E-04	5.21E-04
Maximum	5.23E-04	5.23E-04
Average	5.21E-04	5.21E-04
Std.Dev	3.38E-07	3.38E-07
* Total *		
Minimum	5.21E-04	5.21E-04
Maximum	5.23E-04	5.23E-04
Average	5.21E-04	5.21E-04
Std.Dev	3.38E-07	3.38E-07

Title : Cs-134 Area Factor DCF at 25 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF4.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	4.51E-04	4.51E-04
Maximum	4.53E-04	4.53E-04
Average	4.52E-04	4.52E-04
Std.Dev	2.35E-07	2.35E-07
* Total *		
Minimum	4.51E-04	4.51E-04
Maximum	4.53E-04	4.53E-04
Average	4.52E-04	4.52E-04
Std.Dev	2.35E-07	2.35E-07

Title : Cs-134 Area Factor DCF at 16 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF5.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.71E-04	3.71E-04
Maximum	3.72E-04	3.72E-04
Average	3.71E-04	3.71E-04
Std.Dev	1.50E-07	1.50E-07
* Total *		
Minimum	3.71E-04	3.71E-04
Maximum	3.72E-04	3.72E-04
Average	3.71E-04	3.71E-04
Std.Dev	1.50E-07	1.50E-07

Title : Cs-134 Area Factor DCF at 9 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF6.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.77E-04	2.77E-04
Maximum	2.77E-04	2.77E-04
Average	2.77E-04	2.77E-04
Std.Dev	8.45E-08	8.45E-08
* Total *		
Minimum	2.77E-04	2.77E-04
Maximum	2.77E-04	2.77E-04
Average	2.77E-04	2.77E-04
Std.Dev	8.45E-08	8.45E-08

Title : Cs-134 Area Factor DCF at 4 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF7.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.68E-04	1.68E-04
Maximum	1.68E-04	1.68E-04
Average	1.68E-04	1.68E-04
Std.Dev	3.75E-08	3.75E-08
* Total *		
Minimum	1.68E-04	1.68E-04
Maximum	1.68E-04	1.68E-04
Average	1.68E-04	1.68E-04
Std.Dev	3.75E-08	3.75E-08

Title : Cs-134 Area Factor DCF at 1 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF8.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	5.64E-05	5.64E-05
Maximum	5.64E-05	5.64E-05
Average	5.64E-05	5.64E-05
Std.Dev	9.39E-09	9.39E-09
* Total *		
Minimum	5.64E-05	5.64E-05
Maximum	5.64E-05	5.64E-05
Average	5.64E-05	5.64E-05
Std.Dev	9.39E-09	9.39E-09

** RESRAD-BUILD Probabilistic Output 3.22 04/04/05 15:57:29 Page: 3 **
Title : Cs-134 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs134AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.01E-05	3.01E-05
Maximum	3.02E-05	3.02E-05
Average	3.01E-05	3.01E-05
Std.Dev	4.69E-09	4.69E-09
* Total *		
Minimum	3.01E-05	3.01E-05
Maximum	3.02E-05	3.02E-05
Average	3.01E-05	3.01E-05
Std.Dev	4.69E-09	4.69E-09

Title : Cs-137 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	3.06E-04	3.06E-04
Maximum	3.41E-04	3.41E-04
Average	3.09E-04	3.09E-04
Std.Dev	4.74E-06	4.74E-06
* Total *		
Minimum	3.06E-04	3.06E-04
Maximum	3.41E-04	3.41E-04
Average	3.09E-04	3.09E-04
Std.Dev	4.74E-06	4.74E-06

Title : Cs-137 Area Factor DCF at 68 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF2.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.43E-04	2.43E-04
Maximum	2.61E-04	2.61E-04
Average	2.45E-04	2.45E-04
Std.Dev	2.35E-06	2.35E-06
* Total *		
Minimum	2.43E-04	2.43E-04
Maximum	2.61E-04	2.61E-04
Average	2.45E-04	2.45E-04
Std.Dev	2.35E-06	2.35E-06

Title : Cs-137 Area Factor DCF at 36 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF3.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.93E-04	1.93E-04
Maximum	2.03E-04	2.03E-04
Average	1.94E-04	1.94E-04
Std.Dev	1.25E-06	1.25E-06
* Total *		
Minimum	1.93E-04	1.93E-04
Maximum	2.03E-04	2.03E-04
Average	1.94E-04	1.94E-04
Std.Dev	1.25E-06	1.25E-06

Title : Cs-137 Area Factor DCF at 25 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF4.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.67E-04	1.67E-04
Maximum	1.73E-04	1.73E-04
Average	1.67E-04	1.67E-04
Std.Dev	8.65E-07	8.65E-07
* Total *		
Minimum	1.67E-04	1.67E-04
Maximum	1.73E-04	1.73E-04
Average	1.67E-04	1.67E-04
Std.Dev	8.65E-07	8.65E-07

Title : Cs-137 Area Factor DCF at 16 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF5.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.37E-04	1.37E-04
Maximum	1.41E-04	1.41E-04
Average	1.37E-04	1.37E-04
Std.Dev	5.54E-07	5.54E-07
* Total *		
Minimum	1.37E-04	1.37E-04
Maximum	1.41E-04	1.41E-04
Average	1.37E-04	1.37E-04
Std.Dev	5.54E-07	5.54E-07

Title : Cs-137 Area Factor DCF at 9 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF6.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.02E-04	1.02E-04
Maximum	1.04E-04	1.04E-04
Average	1.02E-04	1.02E-04
Std.Dev	3.11E-07	3.11E-07
* Total *		
Minimum	1.02E-04	1.02E-04
Maximum	1.04E-04	1.04E-04
Average	1.02E-04	1.02E-04
Std.Dev	3.11E-07	3.11E-07

Title : Cs-137 Area Factor DCF at 4 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF7.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	6.15E-05	6.15E-05
Maximum	6.26E-05	6.26E-05
Average	6.16E-05	6.16E-05
Std.Dev	1.38E-07	1.38E-07
* Total *		
Minimum	6.15E-05	6.15E-05
Maximum	6.26E-05	6.26E-05
Average	6.16E-05	6.16E-05
Std.Dev	1.38E-07	1.38E-07

Title : Cs-137 Area Factor DCF at 1 Sq. Meter
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF8.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.06E-05	2.06E-05
Maximum	2.09E-05	2.09E-05
Average	2.07E-05	2.07E-05
Std.Dev	3.46E-08	3.46E-08
* Total *		
Minimum	2.06E-05	2.06E-05
Maximum	2.09E-05	2.09E-05
Average	2.07E-05	2.07E-05
Std.Dev	3.46E-08	3.46E-08

Title : Cs-137 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Cs137AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.10E-05	1.10E-05
Maximum	1.12E-05	1.12E-05
Average	1.10E-05	1.10E-05
Std.Dev	1.73E-08	1.73E-08
* Total *		
Minimum	1.10E-05	1.10E-05
Maximum	1.12E-05	1.12E-05
Average	1.10E-05	1.10E-05
Std.Dev	1.73E-08	1.73E-08

Title : Pm-147 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pm147AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	5.73E-07	5.73E-07
Maximum	2.43E-06	2.43E-06
Average	6.86E-07	6.86E-07
Std.Dev	1.65E-07	1.65E-07
* Total *		
Minimum	5.73E-07	5.73E-07
Maximum	2.43E-06	2.43E-06
Average	6.86E-07	6.86E-07
Std.Dev	1.65E-07	1.65E-07

Title : Pm-147 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pm147AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.70E-09	2.70E-09
Maximum	9.48E-09	9.48E-09
Average	3.11E-09	3.11E-09
Std.Dev	6.04E-10	6.04E-10
* Total *		
Minimum	2.70E-09	2.70E-09
Maximum	9.48E-09	9.48E-09
Average	3.11E-09	3.11E-09
Std.Dev	6.04E-10	6.04E-10

Title : Pu-238 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu238AF1.bld
Evaluation Time: 0.00000000E+00 years

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===       RESRAD-BUILDDose Tables          ===
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Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Total
Receptor 1	2.50E-03	2.50E-03
Total	2.50E-03	2.50E-03

Title : Pu-238 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu238AF9.bld
Evaluation Time: 0.00000000E+00 years

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===        RESRAD-BUILDDose Tables             ===
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Source Contributions to Receptor Doses
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[mrem]

	Source 1	Total
Receptor 1	9.17E-06	9.17E-06
Total	9.17E-06	9.17E-06

Title : Pu-239 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu239AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.66E-03	2.66E-03
Maximum	3.10E-03	3.10E-03
Average	2.80E-03	2.80E-03
Std.Dev	1.22E-04	1.22E-04
* Total *		
Minimum	2.66E-03	2.66E-03
Maximum	3.10E-03	3.10E-03
Average	2.80E-03	2.80E-03
Std.Dev	1.22E-04	1.22E-04

Title : Pu-239 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu239AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	9.74E-06	9.74E-06
Maximum	1.13E-05	1.13E-05
Average	1.03E-05	1.03E-05
Std.Dev	4.46E-07	4.46E-07
* Total *		
Minimum	9.74E-06	9.74E-06
Maximum	1.13E-05	1.13E-05
Average	1.03E-05	1.03E-05
Std.Dev	4.46E-07	4.46E-07

Title : Pu-240 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu240AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.66E-03	2.66E-03
Maximum	3.09E-03	3.09E-03
Average	2.80E-03	2.80E-03
Std.Dev	1.22E-04	1.22E-04
* Total *		
Minimum	2.66E-03	2.66E-03
Maximum	3.09E-03	3.09E-03
Average	2.80E-03	2.80E-03
Std.Dev	1.22E-04	1.22E-04

Title : Pu-240 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu240AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	9.74E-06	9.74E-06
Maximum	1.13E-05	1.13E-05
Average	1.03E-05	1.03E-05
Std.Dev	4.44E-07	4.44E-07
* Total *		
Minimum	9.74E-06	9.74E-06
Maximum	1.13E-05	1.13E-05
Average	1.03E-05	1.03E-05
Std.Dev	4.44E-07	4.44E-07

Title : Pu-241 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu241AF1.bld
Evaluation Time: 0.00000000E+00 years

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===        RESRAD-BUILDDose Tables             ===
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Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Total
Receptor 1	4.87E-05	4.87E-05
Total	4.87E-05	4.87E-05

Title : Pu-241 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Pu241AF9.bld
Evaluation Time: 0.00000000E+00 years

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===        RESRAD-BUILDDose Tables           ===
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Source Contributions to Receptor Doses
[mrem]

	Source 1	Total
Receptor 1	1.78E-07	1.78E-07
Total	1.78E-07	1.78E-07

Title : Am-241 Area Factor DCF at 137 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Am241AF1.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	2.74E-03	2.74E-03
Maximum	3.16E-03	3.16E-03
Average	2.88E-03	2.88E-03
Std.Dev	1.19E-04	1.19E-04
* Total *		
Minimum	2.74E-03	2.74E-03
Maximum	3.16E-03	3.16E-03
Average	2.88E-03	2.88E-03
Std.Dev	1.19E-04	1.19E-04

Title : Am-241 Area Factor DCF at 0.5 Sq. Meters
Input File : C:\Program Files\RESRAD_Family\BUILD\Am241AF9.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	1	Source Total
*** 1***		
Minimum	1.07E-05	1.07E-05
Maximum	1.23E-05	1.23E-05
Average	1.12E-05	1.12E-05
Std.Dev	4.33E-07	4.33E-07
* Total *		
Minimum	1.07E-05	1.07E-05
Maximum	1.23E-05	1.23E-05
Average	1.12E-05	1.12E-05
Std.Dev	4.33E-07	4.33E-07