



BARTLETT

ENGINEERING CALCULATION

Calculation Number: ENG-HB-003

Revision Number: 0

Calculation Title: Humboldt Bay Soil Derived Concentration Guideline Levels

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1.0 PURPOSE

The purpose of this calculation is to develop derived concentration guideline levels (DCGLs) for assessing soil at the Pacific Gas & Electric (PGE) Humboldt Bay nuclear power site. This calculation is a deliverable product specified in the scope of work section in Contract No. GT012 3500895165.

2.0 APPLICABILITY

This calculation addresses only the development of DCGLs for surface soils at the PGE Humboldt Bay site.

3.0 REFERENCES

- 3.1 ENG-HB-001, *RESRAD Input Parameter Sensitivity Analysis – Humboldt Bay*
- 3.2 ANL/EAIS-8, Data Collection Handbook to Support Modeling the Impacts of Radioactive Material in Soil; U.S. Department of Energy – Argonne National Laboratory, April 1993.
- 3.3 NUREG/CR-5512, Volume 1, Residual Radioactive Contamination from Decommissioning: Technical Basis for Translating Contamination Levels to Annual Total Effective Dose Equivalent, Final Report, U.S. Nuclear Regulatory Commission, October 1992.
- 3.4 ANL/EAD-4, User's Manual for RESRAD Version 6, U.S. Department of Energy – Argonne National Laboratory, July, 2001.
- 3.5 NUREG/CR-6697, Development of Probabilistic RESRAD 6.0 and RESRAD-BUILD 3.0 Computer Codes, U.S. Nuclear Regulatory Commission, December 2000.
- 3.6 Procedure ENG-AP-02, Verification of Software Operability
- 3.7 NUREG/CR-6676, Probabilistic Dose Analysis Using Parameter Distributions Developed for RESRAD and RESRAD-Build Codes, May 2000 (ANL/EAD/TM-89)
- 3.8 HBPP-TBD-001, *Site-Specific Suite of Radionuclides*, 8/2007.
- 3.9 Humboldt Bay SAFSTOR Environmental Report, July 1984.
- 3.10 Humboldt Bay Power Plant License Termination Plan, Chapter 6, *Compliance with the Radiological Criteria for License Termination*, draft 11/2010
- 3.11 Humboldt Bay Power Plant *Historical Site Assessment*, 9/2008

4.0 METHOD OF CALCULATION

The operability of the RESRAD Version 6.5 code was verified on each computer used for code executions in accordance with Bartlett Engineering procedure ENG-AP- 02, *Verification of Software Operability* [ref. 3.5]. The RESRAD User's manual [ref. 3.3] provided guidance for code operation and execution. The RESRAD code has undergone extensive review, benchmarking, verification, and validation. Details on reviews, benchmarking, verification, and

validation for the RESRAD code are summarized in Sections 5.1–5.4 of RESRAD User's manual [ref. 3.3].

The RESidual RADIOactivity (RESRAD) model and computer code was developed at Argonne National Laboratory (ANL) as a multifunctional tool to assist in developing radiological criteria for unrestricted release and assessing the dose or risk associated with residual radioactive material. The RESRAD computer code is a pathway analysis model designed to evaluate the potential radiological dose associated with residual radioactive material for a defined receptor scenario. The RESRAD software allows the user to evaluate radiation exposure through several pathways: direct external radiation, inhalation, ingestion of plants, meat, milk, aquatic foods, and drinking water, inadvertent ingestion of contaminated soil, and radon exposure.

In the previous Bartlett Engineering Calculation ENG-HB-001 (ref. 3.1), the probabilistic modules in RESRAD Ver. 6.5 were used to perform a sensitivity analysis to identify parameters that have the greatest impact on dose. The results from these RESRAD Ver. 6.5 Uncertainty Analysis output reports were used to determine which stochastic parameters were sensitive based on an absolute value of the PRCC exceeding the sensitivity threshold (0.25). The RESRAD Ver. 6.5 Interactive Report was then used to identify the 25th or 75th percentile values for the sensitive parameters shown in Table 1.

The values summarized in Table 2, which include reasonably conservative values for the identified sensitive RESRAD parameters, were used as input in separate executions of the RESRAD code for each of the radionuclides of concern (ROCs) at the Humboldt Bay site. The probabilistic module of RESRAD software was used to compute a "peak of the mean" (POM) dose. The POM dose for each ROC was used to determine the DCGL value that corresponded to the NRC dose criteria established in 10CFR20.1403 (i.e., 25 mrem/y). The DCGL value for each ROC was calculated as follows:

$$\text{DCGL(pCi/g)} = 25 \text{ mrem/y divided by POM dose (mrem/y per pCi/g)}.$$

5.0 ASSUMPTIONS AND INPUT

5.1 Assumptions

5.1.1. Radionuclides of Concern (ROC). Twenty-two ROCs are identified for the Humboldt Bay [refs. 3.8 and 3.10]: Am-241, C-14, Cm243/244/245/246, Co-60, Cs-137, Eu-152, Eu-154, H-3, I-129, Nb-94, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, and Tc-99.

5.1.2. Resident Farmer Scenario: The dose model used to perform the sensitivity analyses is based upon the Resident Farmer Scenario defined in NUREG/CR-5512 Volume 3 (Ref. 3.2). The average member of the critical group is the resident farmer that lives on the plant site, grows all or a portion of his / her diet onsite, and drinks water from a groundwater source onsite. The pathways used to estimate human radiation exposure resulting from residual radioactivity in the soil for this scenario includes the following:

- Direct external radiation exposure pathway;
- Inhalation exposure pathway;
- Ingestion exposure pathway:
 - plant foods grown in the soil material containing residual radioactivity,

- meat and milk from livestock fed with fodder grown in soil containing residual radioactivity and watercontaining residual radioactivity,
- drinking water containing residual radioactivity from a well, and
- aquatic food from a pond containing residual radioactivity;
- Inadvertent ingestion of contaminated soil

5.1.3. Conceptual Model: The conceptual hydrological model for this resident farmer scenario has three geological strata: 1) a contaminated zone, 2) an unsaturated zone, and 3) a saturated zone. The contaminated zone is assumed to be uncovered, equivalent in size to the largest contiguous Class 1 and 2 area at the Humboldt Bay site (see Figure 2), and variable in thickness. The unsaturated zone is initially uncontaminated and also variable in thickness. The groundwater in the saturated zone is assumed initially uncontaminated.

5.2 Input

The bases and derivations for input listed below have been documented in Reference 3.1 and are only summarized here. For additional details, refer to Reference 3.1.

5.2.1. Contaminated zone: The thickness of the contaminated zone was determined from characterization soil sample data that showed plant-related radioactivity was detected in surface soil samples (6 inches or less in depth) to a sub-surface depth of approximately 12 feet. A site-specific uniform distribution was developed and used in the sensitivity analysis (Ref. 3.1). The thickness of the contaminated zone was identified as a sensitive RESRAD input parameter for most ROCs (Ref. 3.1). Therefore, to increase conservatism and to account for the uncertainty in the thickness of the contaminated zone, the 75th percentile value from the site-specific distribution (provided in Table 1) is used as input for developing DCGLs.

"Clay loam" was selected from the soil type as a reasonably representative soil type for the contaminated zone (refer to ENG-HB-001 [ref. 3.1] for a detailed description of the approach). The "clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as hydraulic conductivity and the RESRAD soil-b parameter.

5.2.2. Unsaturated zone: A uniform distribution was established based groundwater well data showing on a minimum thickness equal to 0 inches and a maximum thickness equal to 26.5 feet (details are provided in ENG-HB-001 [ref. 3.1]).

"Clay loam" was selected from the soil type as reasonably representative soil type for the unsaturated zone. The "clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as effective porosity, hydraulic conductivity, and the RESRAD soil-b parameter.

5.2.3. Saturated zone: "Silty clay loam" was selected as reasonably representative soil type for the saturated zone. The "silty clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as effective porosity, hydraulic conductivity, and the RESRAD soil-b parameter.

5.2.4. The value of the Lower Elk River Watershed [from the Humboldt Bay Power Plant FSAR], $2.52\text{E}+07 \text{ m}^2$, was used as input for the RESRAD parameter "Watershed Area for Nearby Streams and Ponds."

5.2.5. Input values for annual precipitation and evapo-transpiration were obtained from the SAFSTOR Environmental Report [ref 3.9]. NOAA recorded average wind speed data obtained from the National Climate Data Center website were used as the basis for wind speed.

5.2.6. Calculations for input values for the following RESRAD parameters are provided in ENG-HB-001 [ref. 3.1]:

- Area of the Contaminated Zone and length parallel to the aquifer
- Contaminated zone erosion rate
- Field capacity for the contaminated, unsaturated, and saturated zones
- Hydraulic conductivity in the unsaturated zone
- Runoff Coefficient
- Fraction of Time Spent Indoors and Fraction of Time Spent Outdoor
- Irrigation Rate and Well Pumping Rate
- Inhalation Rate
- Soil Ingestion Rate
- Drinking Water Intake

5.2.7. Table 2 summarizes the parameter name, type, priority, treatment, values/distribution and the reference source that provides the bases for each input parameter.

6.0 RESULTS

6.1 RESRAD 6.5 was executed for each ROCs using the input values provided in Table 2. Table 3 summarizes the POM dose for each ROC. Selected pages from the RESRAD 6.5 Summary and Uncertainty Reports from each code execution are provided in Appendix A.

6.2 The DCGL for each ROC was calculated from POM dose using the following relationship:

$$\text{DCGL(pCi/g)} = 25 \text{ mrem/y divided by POM (mrem/y per pCi/g)}$$

6.3 Table 3 provides the DCGL corresponding to an annual dose equal to 25 mrem under the resident farmer scenario.

6.4 For practical application, the DCGL values were rounded down to 2 significant digits. Table 4 presents the rounded DCGL values.

Table 1: RESRAD-Generated Percentile Values for Sensitive Input Parameters
(copy of Table 4 in Reference 3.1)

Sensitive Input Parameter	Affected Nuclide	RESRAD Percentile Value ^a	
		25 th	75 th
Thickness of contaminated zone (m)	Am-241, C-14, Cm-243/244/245/246, Co-60, Cs-137, H-3, I-129, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, Tc-99		2.67E+00
Depth of roots (m)	Am-241, C-14, Cm-243/244/245/246, Co-60, Cs-137, H-3, I-129, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, Tc-99	1.22E+00	
External shielding factor	Cm-243, Co-60, Cs-137, Eu-152, Eu-154, Nb-94		3.98E-01
Thickness of evasion layer (m)	C-14		4.27E-01
Plant transfer factor (pCi/g plant per pCi/g soil)	Am-241 (the plant transfer factor was also found sensitive for the Am-241 as a daughter product for Pu-241)		1.83E-03
	Cm-243/244/245/246		1.83E-03
	Co-60		1.46E-01
	Cs-137		7.82E-02
	I-129		3.67E-02
	Ni-59/63		9.12E-02
	Np-237		3.67E-02
	Pu-238/239/240		1.83E-03
	Sr-90		5.90E-01
	Tc-99		9.16E+00
Meat transfer factor (pCi/kg per pCi/d)	Co-60		5.86E-02
	Cs-137		6.52E-02
	I-129		5.23E-02
Milk transfer factor (pCi/l per pCi/d)	Cs-137		1.39E-02
	I-129		1.39E-02
	Ni-59/63		3.21E-02
Kd in contaminated zone (cm ³ /g)	Am-241 (as daughter product for Pu-241)		1.20E+04
	Eu-152		7.22E+03
	H-3	4.30E-02	
	Nb-94		3.56E+03
	Tc-99		4.28E+00

^a The 75th percentile value was selected when the absolute value of the PRCC for a given parameter was ≥ 0.25 and PRCC had a positive value. The 25th percentile value was selected when the absolute value of the PRCC value for a given parameter was ≥ 0.25 and the PRCC had a negative value. Refer to Reference 3.1 for additional details.

Table 2: Summary of Values for RESRAD Input Parameters

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Soil Concentrations										
Basic radiation dose limit (mrem/y)		3	D	25	10 CFR 20.1402	NR	NR	NR	NR	
Initial principal radionuclide (pCi/g)	P	2	D	1	Unit Value	NR	NR	NR	NR	
Distribution coefficients (applied to contaminated, unsaturated, and saturated zones unless otherwise noted) (cm ³ /g)										
Ac-227 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
Am-241 (also daughter for Cm-245 and Pu-241)	P	1	S D	Truncated lognormal-n 1.20E+04	NUREG/CR-6697, Att. C 75 th percentile value – applied to Am-241 as daughter for Pu-241 in contaminated zone	7.28	3.15	0.001	0.999	1445
Am-243 (daughter for Cm-243)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	7.28	3.15	0.001	0.999	1445
C-14	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	2.4	3.22	0.001	0.999	11
Cm-243	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-244	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-245	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-246	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Co-60	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.46	2.53	0.001	0.999	235
Cs-137	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.1	2.33	0.001	0.999	446
Eu-152	P	1	D	7.22E+03 Truncated lognormal-n	75 th percentile value applied to contaminated zone only. NUREG/CR-6697, Att. C; distribution applied to saturated and unsaturated zones.	6.72	3.22	0.001	0.999	825
Eu-154	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
Gd-152 (daughter for Eu-152)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
H-3	P	1	S	4.30E-02 Truncated lognormal-n	25 th percentile value applied to contaminated zone only. NUREG/CR-6697, Att. C; distribution applied to saturated and unsaturated zones. 25 th percentile value	-2.81	0.5	0.001	0.999	0.06
I-129	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	1.52	2.19	0.001	0.999	4.6
Nb-94	P	1	D	3.56E+03 Truncated lognormal-n	75 th percentile value applied to contaminated zone only. NUREG/CR-6697, Att. C; distribution applied to saturated and unsaturated zones.	5.94	3.22	0.001	0.999	380
Ni-59	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.05	1.46	0.001	0.999	424
Ni-63	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.05	1.46	0.001	0.999	424
Np-237 (also daughter for Am-241, Cm-245, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	2.84	2.25	0.001	0.999	17
Pa-231 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.94	3.22	0.001	0.999	380
Po-210 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.20	1.68	0.001	0.999	181
Pb-210 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	7.78	2.76	0.001	0.999	2392
Pu-238	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-239 (also daughter for Cm-243)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-240 (also daughter for Cm-244)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-241 (also daughter for Cm-245)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-242 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Ra-226 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.17	1.7	0.001	0.999	3533
Ra-228 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.17	1.7	0.001	0.999	3533
Sr-90	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	3.45	2.12	0.001	0.999	32

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Tc-99	P	1	D	4.28E+00 Truncated lognormal-n	75 th percentile value applied to contaminated zone only. NUREG/CR-6697, Att. C; distribution applied to saturated and unsaturated zones.	-0.67	3.16	0.001	0.999	0.51
Th-228 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-229 (daughter for Am-241, Cm-245, Np-237, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-230 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-232 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
U-233 (daughter for Am-241, Cm-245, Np-237, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-234 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-235 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-236 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-238 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
Initial concentration of radionuclides present in groundwater (pCi/l)	P	3	D	0	Ground water initially uncontaminated for this scenario	NR	NR	NR	NR	
Calculation Times										
Time since placement of material (y)	P	3	D	0		NR	NR	NR	NR	
Time for calculations (y)	P	3	D	0, 1, 3, 10, 30, 100, 300, 1000	RESRAD Default	NR	NR	NR	NR	
Contaminated Zone										
Area of contaminated zone (m ²)	P	2	D	30,000	Site-specific: largest contiguous class 1/class 2 area (rounded to nearest thousands)	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Thickness of contaminated zone (m)	P	2	D	2.67	75 th percentile value – applied to all ROCs except those listed below.					
			S	Uniform	Site-specific distribution applied to Eu-152, Eu-154, and Nb-94	0.15	3.51			1.83
Length parallel to aquifer flow (m)	P	2	D	195	Site-specific - diameter of circle with an area of 30,000 m ²	NR	NR	NR	NR	
Contaminated fraction below water table	P	2	D	0	Ground water initially uncontaminated for this scenario	NR	NR	NR	NR	
Cover and Contaminated Zone Hydrological Data										
Cover depth (m)	P	2	D	0	Site-specific - no cover assumed	NR	NR	NR	NR	
Density of contaminated zone (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	1.5635	0.2385	0.827	2.3	1.5635
Contaminated zone erosion rate (m/y)	P	2	D	2.2E-3	Calculated value based on site-specific slope of 6%	NR	NR	NR	NR	
Contaminated zone total porosity	P	2	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.41	0.09	0.1319	0.6881	0.41
Contaminated zone field capacity	P	3	D	0.095	Calculated site-specific value (ref. 3.1)	NR	NR	NR	NR	0.095
Contaminated zone hydraulic conductivity (m/y)	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.36	2.17	0.00478	3190	3.90
Contaminated zone b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.73	0.323	2.08	15.3	5.6
Humidity in air (g/m ³)	P	3	D	8.2	Regional value for northern CA as represented by San Francisco	NR	NR	NR	NR	
Evapotranspiration coefficient	P	2	S	Uniform	NUREG/CR-6697 Att. C	0.5	0.75	NR	NR	0.625
Average annual wind speed (m/s)	P	2	D	3.04	Site-specific value (from NCDC website)	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ⁹				Mean/ Median
						1	2	3	4	
Precipitation (m/y)	P	2	D	0.91	Site-specific value from HB SAFSTOR Environmental Report, section 4.1.1	NR	NR	NR	NR	
Irrigation (m/y)	B	3	S	Uniform	NUREG/CR-6697, Att C methodology	0.36	0.76	NR	NR	0.56
Irrigation mode	B	3	D	Overhead	Overhead irrigation is common practice in U. S.	NR	NR	NR	NR	
Runoff coefficient	P	2	D	0.5	Site-specific value; NUREG/CR-6697, Att. C section 4.2 methodology	NR	NR	NR	NR	
Watershed area for nearby stream or pond (m ²)	P	3	D	2.52E+07	Site-specific value from (HB SAFSTOR Environmental Report)	NR	NR	NR	NR	
Accuracy for water/soil computations	-	3	D	1.00E-03	RESRAD Default	NR	NR	NR	NR	
Saturated Zone Hydrological Data										
Density of saturated zone (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	1.5105	0.1855	0.937	2.084	1.5105
Saturated zone total porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	0.43	0.0699	0.214	0.646	0.43
Saturated zone effective porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	0.342	0.0705	0.124	0.56	0.342
Saturated zone field capacity	P	3	D	0.088	Calculated site-specific value (ref. 3.1)	NR	NR	NR	NR	0.088
Saturated zone hydraulic conductivity (m/y)	P	1	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - silty clay loam	0.362	1.59	0.0106	195	1.44
Saturated zone hydraulic gradient	P	2	D	0.002	Site-specific value determined using method described in NUREG/CR-6697, App. C (calculated in ref. 3.1)	NR	NR	NR	NR	
Saturated zone b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - silty clay loam	1.96	0.265	3.02	15.5	7.1
Water table drop rate (m/y)	P	3	D	1.00E-03	RESRAD User Manual	NR	NR	NR	NR	
Well pump intake depth (m below water table)	P	2	S	Triangular	NUREG/CR-6697, Att. C	6	10	30		10
Model: Nondispersion (ND) or Mass-Balance (MB)	P	3	D	ND	ND model recommended for contaminant areas > 1,000 m ²	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Well pumping rate (m ³ /y)	P	2	S	Uniform	Min, Max, median value based on site irrigation and area and calculated according to NUREG/CR-6697, Att. C section 3.10 method. (calculated in ref. 3.1)	1173	1973			1573
Unsaturated Zone Hydrological Data										
Number of unsaturated zone strata	P	3	D	1	Site-specific value	NR	NR	NR	NR	
Unsat. zone thickness (m)	P	2	S	Uniform	Site-specific distribution base on thickness of CZ and groundwater elevations	0.00	8.08			4.04
Unsat. zone soil density (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	1.5635	0.2385	0.827	2.3	1.5635
Unsat. zone total porosity	P	2	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.41	0.09	0.1319	0.6881	0.41
Unsat. zone effective porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.315	0.0905	0.0349	0.594	0.315
Unsat. zone field capacity	P	3	D	0.095	Site-specific value (calculated in ref. 3.1)	NR	NR	NR	NR	0.095
Unsat. zone hydraulic conductivity (m/y)	P	1	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.36	2.17	0.00478	3190	3.90
Unsat. zone soil-specific b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.73	0.323	2.08	15.3	5.6
Occupancy										
Inhalation rate (m ³ /y)	B	3	D	8400	NUREG/CR-6697, Att C	NR	NR	NR	NR	
Mass loading for inhalation (g/m ³)	P	2	S	Continuous linear	NUREG/CR-6697, Att. C					2.33E-05
Exposure duration	B	3	D	30	User's Manual for RESRAD Version 6; parameter value not used in dose calculation	NR	NR	NR	NR	
Indoor dust filtration factor	P	2	S	Uniform	NUREG/CR-6697, Att. C	0.15	0.95			0.55

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Shielding factor, external gamma	P	2	D	3.98E-01	75 th percentile value – applied for Cm-243, Co-60, Cs-137, Eu-152, Eu-154, and Nb-94					
			S	Bounded lognormal-n	NUREG/CR-6697, Att. C – applied to all ROCs except those listed above	-1.3	0.59	0.044	1	0.2725
Fraction of time spent indoors	B	3	D	0.6571	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Fraction of time spent outdoors (on site)	B	3	D	0.1181	NUREG/CR-5512, Vol. 3 Table 6.87 (outdoors + gardening)	NR	NR	NR	NR	
Shape factor flag, external gamma	P	3	D	Circular	Circular contaminated zone assumed for modeling purposes	NR	NR	NR	NR	
Ingestion, Dietary										
Fruits, vegetables, grain consumption (kg/y)	B	2	D	112	NUREG/CR-5512, Vol. 3 (other vegetables + fruits + grain)	NR	NR	NR	NR	
Leafy vegetable consumption (kg/y)	B	3	D	21.4	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Milk consumption (L/y)	B	2	D	233	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Meat and poultry consumption (kg/y)	B	3	D	65.1	NUREG/CR-5512, Vol. 3 (beef + poultry)	NR	NR	NR	NR	
Fish consumption (kg/y)	B	3	D	20.6	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Other seafood consumption (kg/y)	B	3	D	0.9	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Soil ingestion rate (g/y)	B	2	D	18.26	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Drinking water intake (L/y)	B	2	D	511	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Contamination fraction of drinking water	P	3	D	1	All water assumed contaminated	NR	NR	NR	NR	
Contamination fraction of household water (if used)	P	3		NA						
Contamination fraction of livestock water	P	3	D	1	All water assumed contaminated	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Contamination fraction of irrigation water	P	3	D	1	All water assumed contaminate	NR	NR	NR	NR	
Contamination fraction of aquatic food	P	2	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of plant food	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of meat	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of milk	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Ingestion, Non-Dietary										
Livestock fodder intake for meat (kg/day)	M	3	D	27.1	NUREG/CR5512, Vol. 3 Table 6.87, beef cattle + poultry + layer hen	NR	NR	NR	NR	
Livestock fodder intake for milk (kg/day)	M	3	D	63.2	NUREG/CR5512, Vol. 3 Table 6.87, forage + grain + hay	NR	NR	NR	NR	
Livestock water intake for meat (L/day)	M	3	D	50.6	NUREG/CR5512, Vol. 3 Table 6.87, beef cattle + poultry + layer hen	NR	NR	NR	NR	
Livestock water intake for milk (L/day)	M	3	D	60	NUREG/CR5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Livestock soil intake (kg/day)	M	3	D	0.5	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Mass loading for foliar deposition (g/m ²)	P	3	D	4.00E-04	NUREG/CR-5512, Vol. 3 Table 6.87, gardening	NR	NR	NR	NR	
Depth of soil mixing layer (m)	P	2	S	Triangular	NUREG/CR-6697, Att. C	0	0.15	0.6		0.23
Depth of roots (m)	P	1	D	1.22E+00	25 th percentile value (Ref. 3.1) – applied to all ROCs except those listed below.					
			S	Uniform	NUREG/CR-6697, Att. C – applied for Eu-152, Eu-154, and Nb-94	0.3	4.0			2.15
Drinking water fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Household water fraction from ground water (if used)	P	3		NA						

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Livestock water fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Irrigation fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Wet weight crop yield for Non-Leafy (kg/m ²)	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	0.56	0.48	0.001	0.999	1.75
Wet weight crop yield for Leafy (kg/m ²)	P	3	D	2.88921	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Wet weight crop yield for Fodder (kg/m ²)	P	3	D	1.8868	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Non-Leafy (y)	P	3	D	0.246	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Leafy (y)	P	3	D	0.123	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Fodder (y)	P	3	D	0.082	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Translocation Factor for Non-Leafy	P	3	D	0.1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Translocation Factor for Leafy	P	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Translocation Factor for Fodder	P	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Weathering Removal Constant for Vegetation (1/y)	P	2	S	Triangular	NUREG/CR-6697, Att. C	5.1	18	84		33
Wet Foliar Interception Fraction for Non-Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Wet Foliar Interception Fraction for Leafy	P	2	S	Triangular	NUREG/CR-6697, Att. C	0.06	0.67	0.95		0.58
Wet Foliar Interception Fraction for Fodder	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Non-Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Fodder	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Storage times of contaminated foodstuffs (days):										

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Fruits, non-leafy vegetables, and grain	B	3	D	14	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Leafy vegetables	B	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Milk	B	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Meat and poultry	B	3	D	20	NUREG/CR-5512, Vol. 3 Table 6.87 (holdup period for beef)	NR	NR	NR	NR	
Fish	B	3	D	7	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Crustacea and mollusks	B	3	D	7	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Well water	B	3	D	1	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Surface water	B	3	D	1	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Livestock fodder	B	3	D	45	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Special Radionuclides (C-14)										
C-12 concentration in water (g/cm ³)	P	3	D	2.00E-05	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-12 concentration in contaminated soil (g/g)	P	3	D	3.00E-02	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of vegetation carbon from soil	P	3	D	2.00E-02	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of vegetation carbon from air	P	3	D	9.80E-01	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-14 evasion layer thickness in soil (m)	P	2	D	4.27E-01	75 th percentile value					

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
C-14 evasion flux rate from soil (1/sec)	P	3	D	7.00E-07	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-12 evasion flux rate from soil (1/sec)	P	3	D	1.00E-10	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of grain in beef cattle feed	B	3	D	0.2500	NUREG/CR-6697, Att. B	NR	NR	NR	NR	
Fraction of grain in milk cow feed	B	3	D	0.1000	NUREG/CR-6697, Att. B	NR	NR	NR	NR	
Dose Conversion Factors (Inhalation mrem/pCi)										
Ac-227	M	3	D	6.72E+00	FGR11 (RESRAD Dose Conversion Library)	NR	NR	NR	NR	
Am-241	M	3	D	4.44E-01	FGR11	NR	NR	NR	NR	
Am-243	M	3	D	4.40E-01	FGR11	NR	NR	NR	NR	
C-14	M	3	D	2.09E-06	FGR11	NR	NR	NR	NR	
Cm-243	M	3	D	3.07E-01	FGR11	NR	NR	NR	NR	
Cm-244	M	3	D	2.48E-01	FGR11	NR	NR	NR	NR	
Cm-245	M	3	D	4.55E-01	FGR11	NR	NR	NR	NR	
Cm-246	M	3	D	4.51E-01	FGR11	NR	NR	NR	NR	
Co-60	M	3	D	2.19E-04	FGR11	NR	NR	NR	NR	
Cs-137	M	3	D	3.19E-05	FGR11	NR	NR	NR	NR	
Eu-152	M	3	D	2.21E-04	FGR11	NR	NR	NR	NR	
Eu-154	M	3	D	2.86E-04	FGR11	NR	NR	NR	NR	
Gd-152	M	3	D	2.43E-01	FGR11	NR	NR	NR	NR	
H-3	M	3	D	6.40E-08	FGR11	NR	NR	NR	NR	
I-129	M	3	D	1.74E-04	FGR11	NR	NR	NR	NR	
Nb-94	M	3	D	4.14E-04	FGR11	NR	NR	NR	NR	
Ni-59	M	3	D	2.70E-06	FGR11	NR	NR	NR	NR	
Ni-63	M	3	D	6.29E-06	FGR11	NR	NR	NR	NR	
Np-237	M	3	D	5.40E-01	FGR11	NR	NR	NR	NR	
Pa-231	M	3	D	1.28E+00	FGR11	NR	NR	NR	NR	
Pb-210	M	3	D	1.38E-02	FGR11	NR	NR	NR	NR	
Po-210	M	3	D	9.40E-03	FGR11	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Pu-238	M	3	D	3.92E-01	FGR11	NR	NR	NR	NR	
Pu-239	M	3	D	4.29E-01	FGR11	NR	NR	NR	NR	
Pu-240	M	3	D	4.29E-01	FGR11	NR	NR	NR	NR	
Pu-241	M	3	D	8.25E-03	FGR11	NR	NR	NR	NR	
Pu-242	M	3	D	4.11E-01	FGR11	NR	NR	NR	NR	
Ra-226	M	3	D	8.59E-03	FGR11	NR	NR	NR	NR	
Ra-228	M	3	D	5.08E-03	FGR11	NR	NR	NR	NR	
Sr-90	M	3	D	1.31E-03	FGR11	NR	NR	NR	NR	
Tc-99	M	3	D	8.32E-06	FGR11	NR	NR	NR	NR	
Th-228	M	3	D	3.43E-01	FGR11	NR	NR	NR	NR	
Th-229	M	3	D	2.17E+00	FGR11	NR	NR	NR	NR	
Th-230	M	3	D	3.26E-01	FGR11	NR	NR	NR	NR	
Th232	M	3	D	1.64e+00	FGR11	NR	NR	NR	NR	
U-233	M	3	D	1.35E-01	FGR11	NR	NR	NR	NR	
U-234	M	3	D	1.32E-01	FGR11	NR	NR	NR	NR	
U-235	M	3	D	1.23E-01	FGR11	NR	NR	NR	NR	
U-236	M	3	D	1.25E-01	FGR11	NR	NR	NR	NR	
U-238	M	3	D	1.18E-01	FGR11	NR	NR	NR	NR	
Dose Conversion Factors (Ingestion mrem/pCi)										
Ac-227	M	3	D	1.48E-02	FGR11 (RESRAD Dose Conversion Library)	NR	NR	NR	NR	
Am-241	M	3	D	3.64E-03	FGR11	NR	NR	NR	NR	
Am-243	M	3	D	3.62E-03	FGR11	NR	NR	NR	NR	
C-14	M	3	D	2.09E-06	FGR11	NR	NR	NR	NR	
Cm-243	M	3	D	2.51E-03	FGR11	NR	NR	NR	NR	
Cm-244	M	3	D	2.02E-03	FGR11	NR	NR	NR	NR	
Cm-245	M	3	D	3.74E-03	FGR11	NR	NR	NR	NR	
Cm-246	M	3	D	3.70E-03	FGR11	NR	NR	NR	NR	
Co-60	M	3	D	2.69E-05	FGR11	NR	NR	NR	NR	
Cs-137	M	3	D	5.00E-05	FGR11	NR	NR	NR	NR	
Eu-152	M	3	D	6.48E-06	FGR11	NR	NR	NR	NR	
Eu-154	M	3	D	9.55E-06	FGR11	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Gd-152	M	3	D	1.61E-04	FGR11	NR	NR	NR	NR	
H-3	M	3	D	6.40E-08	FGR11	NR	NR	NR	NR	
I-129	M	3	D	2.76E-04	FGR11	NR	NR	NR	NR	
Nb-94	M	3	D	7.14E-06	FGR11	NR	NR	NR	NR	
Ni-59	M	3	D	2.10E-07	FGR11	NR	NR	NR	NR	
Ni-63	M	3	D	5.77E-07	FGR11	NR	NR	NR	NR	
Np-237	M	3	D	4.44E-03	FGR11	NR	NR	NR	NR	
Pa-231	M	3	D	1.06E-02	FGR11	NR	NR	NR	NR	
Pb-210	M	3	D	5.38E-03	FGR11	NR	NR	NR	NR	
Po-210	M	3	D	1.90E-03	FGR11	NR	NR	NR	NR	
Pu-238	M	3	D	3.20E-03	FGR11	NR	NR	NR	NR	
Pu-239	M	3	D	3.54E-03	FGR11	NR	NR	NR	NR	
Pu-240	M	3	D	3.54E-03	FGR11	NR	NR	NR	NR	
Pu-241	M	3	D	6.84E-05	FGR11	NR	NR	NR	NR	
Pu-242	M	3	D	3.36E-03	FGR11	NR	NR	NR	NR	
Ra-226	M	3	D	1.32E-03	FGR11	NR	NR	NR	NR	
Ra-228	M	3	D	1.44E-03	FGR11	NR	NR	NR	NR	
Sr-90	M	3	D	1.53E-04	FGR11	NR	NR	NR	NR	
Tc-99	M	3	D	1.46E-06	FGR11	NR	NR	NR	NR	
Th-228	M	3	D	3.96E-04	FGR11	NR	NR	NR	NR	
Th-229	M	3	D	4.03E-03	FGR11	NR	NR	NR	NR	
Th-230	M	3	D	5.48E-04	FGR11	NR	NR	NR	NR	
Th-232	M	3	D	2.73E-03	FGR11	NR	NR	NR	NR	
U-233	M	3	D	2.89E-04	FGR11	NR	NR	NR	NR	
U-234	M	3	D	2.83E-04	FGR11	NR	NR	NR	NR	
U-235	M	3	D	2.67E-04	FGR11	NR	NR	NR	NR	
U-236	M	3	D	2.69E-04	FGR11	NR	NR	NR	NR	
U-238	M	3	D	2.55E-04	FGR11	NR	NR	NR	NR	
Plant Transfer Factors (pCi/g plant)/(pCi/g soil)										
Ac-227	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	1.1	0.001	0.999	1.0E-03
Am-241	P	1	D	1.83E-03	75 th percentile value					
Am-243	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
C-14	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-0.36	0.9	0.001	0.999	7.0E-01
Cm-243	P	1	S	1.83E-03	75 th percentile value					
Cm-244	P	1	D	1.83E-03	75 th percentile value					
Cm-245	P	1	D	1.83E-03	75 th percentile value					
Cm-246	P	1	D	1.83E-03	75 th percentile value					
Co-60	P	1	D	1.46E-01	75 th percentile value					
Cs-137	P	1	D	7.82E-01	75 th percentile value					
Eu-152	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
Eu-154	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
Gd-152	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
H-3	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	1.57	1.1	0.001	0.999	4.8E+00
I-129	P	1	D	3.67E-02	75 th percentile value					
Nb-94	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	1.1	0.001	0.999	1.0E-02
Ni-59	P	1	D	9.12E-02	75 th percentile value					
Ni-63	P	1	D	9.12E-02	75 th percentile value					
Np-237	P	1	D	3.67E-02	75 th percentile value					
Pa-231	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	1.1	0.001	0.999	1.0E-02
Pb-210	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.52	0.9	0.001	0.999	4.0E-03
Po-210	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.90	0.9	0.001	0.999	1.0E-03
Pu-238	P	1	D	1.83E-03	75 th percentile value					
Pu-239	P	1	D	1.83E-03	75 th percentile value					
Pu-240	P	1	D	1.83E-03	75 th percentile value					
Pu-241	P	1	D	1.83E-03	75 th percentile value					
Pu-242	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Ra-226	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	0.9	0.001	0.999	4.0E-02
Ra-228	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	0.9	0.001	0.999	4.0E-02
Sr-90	P	1	D	5.90E-01	75 th percentile value					
Tc-99	P	1	D	9.16E+00	75 th percentile value					
Th-228	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-229	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-230	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-232	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
U-233	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-234	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-235	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-236	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-238	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
Meat Transfer Factors (pCi/kg)/(pCi/d)										
Ac-227	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Am-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.90	0.2	0.001	0.999	5.0E-05
Am-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.90	0.2	0.001	0.999	5.0E-05
C-14	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.47	1.0	0.001	0.999	3.1E-02
Cm-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-244	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-245	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-246	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Co-60	P	2	D	5.86E-02	75 th percentile value					
Cs-137	P	2	D	6.52E-02	75 th percentile value					
Eu-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03
Eu-154	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03
Gd-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03
H-3	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.42	1.0	0.001	0.999	1.2E-02
I-129	P	2	D	5.23E-02	75 th percentile value					
Nb-94	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.9	0.001	0.999	1.0E-06
Ni-59	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.9	0.001	0.999	5.0E-03
Ni-63	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.9	0.001	0.999	5.0E-03
Np-237	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Pa-231	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	1.0	0.001	0.999	5.0E-06
Po-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.7	0.001	0.999	5.0E-03
Pb-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
Pu-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-239	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-240	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Pu-242	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Ra-226	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Ra-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Sr-90	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	0.4	0.001	0.999	1.0E-02
Tc-99	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.7	0.001	0.999	1.0E-04
Th-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-229	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-230	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-232	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
U-233	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-234	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-235	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-236	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
Milk Transfer Factors (pCi/L)/(pCi/d)										
Ac-227	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Am-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06
Am-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06
C-14	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.4	0.9	0.001	0.999	1.2E-02
Cm-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-244	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-245	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-246	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Co-60	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.7	0.001	0.999	2.0E-03
Cs-137	P	2	D	1.39E-02	75 th percentile value					
Eu-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
Eu-154	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
Gd-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
H-3	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.6	0.9	0.001	0.999	1.0E-02
I-129	P	2	D	1.39E-02	75 th percentile value					
Nb-94	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Ni-59	P	2	D	3.21E-02	75 th percentile value					
Ni-63	P	2	D	3.21E-02	75 th percentile value					
Np-237	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-11.51	0.7	0.001	0.999	1.0E-05
Pa-231	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Po-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.7	0.001	0.999	4.0E-04
Pb-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-8.11	0.9	0.001	0.999	3.0E-04
Pu-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-239	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-240	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-242	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Ra-226	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.5	0.001	0.999	1.0E-03
Ra-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.5	0.001	0.999	1.0E-03
Sr-90	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.5	0.001	0.999	2.0E-03
Tc-99	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Th-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Th-229	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Th-230	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Th-232	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
U-233	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-234	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-235	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-236	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
Bioaccumulation Factors for Fish ((pCi/kg)/(pCi/L))										
Ac-227	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.7	1.1			1.5E+01
Am-241	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Am-243	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
C-14	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	10.8	1.1			4.9E+04
Cm-243	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Cm-244	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Cm-245	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Cm-246	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Co-60	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Cs-137	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	7.6	0.7			2.0E+03
Eu-152	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Eu-154	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Gd-152	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.2	1.1			2.5E+01
H-3	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	0	0.1			1.0E+00
I-129	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.7	1.1			4.0E+01
Nb-94	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Ni-59	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Ni-63	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Np-237	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pa-231	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			9.9E+00
Po-210	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			1.0E+01
Pb-210	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Pu-238	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-239	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-240	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-241	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-242	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Ra-226	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Ra-228	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Sr-90	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.1	1.1			6.0E+01
Tc-99	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3	1.1			2.0E+01
Th-228	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-229	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-230	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-232	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
U-233	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-234	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-235	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-236	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
U-238	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
Bioaccumulation Factors for Crustacea/ Mollusks ((pCi/kg)/(pCi/L))										
Ac-227	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Am-241	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Am-243	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
C-14	P	3	D	9.10E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-243	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-244	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-245	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-246	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Co-60	P	3	D	2.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cs-137	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Eu-152	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Eu-154	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Gd-152	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
H-3	P	3	D	1.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
I-129	P	3	D	5.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Nb-94	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ni-59	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ni-63	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Np-237	P	3	D	4.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pa-231	P	3	D	1.10E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pb-210	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Po-210	P	3	D	2.00E+04	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-238	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-239	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-240	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-241	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-242	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Ra-226	P	3	D	2.50E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ra-228	P	3	D	2.50E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Sr-90	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Tc-99	P	3	D	5.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-228	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-229	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-230	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-232	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-233	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-234	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-235	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-236	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-238	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Graphics Parameters										
Number of points				32	RESRAD Default	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Spacing				log	RESRAD Default	NR	NR	NR	NR	
Time integration parameters										
Maximum number of points for dose				17	RESRAD Default	NR	NR	NR	NR	

Table 1 Notes:

^a P = physical, B = behavioral, M = metabolic; (see NUREG/CR-6697, Attachment B, Table 4.)

^b 1 = high-priority parameter, 2 = medium-priority parameter; 3 = low-priority parameter (see NUREG/CR-6697, Attachment B, Table 4.1)

^c D = deterministic, S = stochastic

^d Distributions Statistical Parameters:

Lognormal-n: 1 = mean, 2 = standard deviation

Bounded lognormal-n: 1 = mean, 2 = standard deviation, 3 = minimum, 4 = maximum

Truncated lognormal-n: 1 = mean, 2 = standard deviation, 3 = lower quantile, 4 = upper quantile

Bounded normal: 1 = mean, 2 = standard deviation, 3 = minimum, 4 = maximum

Triangular: 1 = minimum, 2 = mode, 3 = maximum

Uniform: 1 = minimum, 2 = maximum

Table 3: RESRAD 6.5 Generated POM Doses and DCGL Values by ROC

ROC	POM Dose (mrem/y)	DCGL (pCi/g)
Am-241	9.68E-01	2.58E+01
C-14	3.97E+00	6.30E+00
Cm-243	8.61E-01	2.90E+01
Cm-244	5.20E-01	4.81E+01
Cm-245	1.41E+00	1.78E+01
Cm-246	9.70E-01	2.58E+01
Co-60	6.55E+00	3.82E+00
Cs-137	3.15E+00	7.93E+00
Eu-152	2.48E+00	1.01E+01
Eu-154	2.66E+00	9.40E+00
H-3	3.65E-02	6.86E+02
I-129	5.17E+00	4.83E+00
Nb-94	3.51E+00	7.13E+00
Ni-59	1.27E-02	1.97E+03
Ni-63	3.45E-02	7.24E+02
Np-237	2.25E+01	1.11E+00
Pu238	8.43E-01	2.97E+01
Pu239	9.36E-01	2.67E+01
Pu240	9.36E-01	2.67E+01
Pu241	2.90E-02	8.61E+02
Sr-90	1.66E+01	1.51E+00
Tc-99	2.02E+00	1.24E+01

Table 4: Soil DCGL Values by Radionuclide

ROC	DCGL (pCi/g)
Am-241	2.5E+01
C-14	6.3E+00
Cm-243	2.9E+01
Cm-244	4.8E+01
Cm-245	1.7E+01
Cm-246	2.5E+01
Co-60	3.8E+00
Cs-137	7.9E+00
Eu-152	1.0E+01
Eu-154	9.4E+00
H-3	6.8E+02
I-129	4.8E+00
Nb-94	7.1E+00
Ni-59	1.9E+03
Ni-63	7.2E+02
Np-237	1.1E+00
Pu238	2.9E+01
Pu239	2.6E+01
Pu240	2.6E+01
Pu241	8.6E+02
Sr-90	1.5E+00
Tc-99	1.2E+01

Appendix A
Selected Pages from RESRAD Code Executions

Am-241 Results:

1RESRAD, Version 6.5 T« Limit = 30 days 11/26/2011 12:36 Page 1
Summary : HB soil DCGL_Am241
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241_DCGL\HB SOIL DCGL_AM241.RAD

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Time = 0.000E+00	10
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Time = 3.000E+00	12
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Summary : HB soil DCGL_Am241
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241_DCGL\HB SOIL DCGL_AM241.RAD

Dose Conversion Factor (and Related) Parameter Summary Dose Library: HB DCGLs Plus FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	Am-241 (Source: FGR 12)	4.372E-02	4.372E-02	DCF1(2)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(3)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(4)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(5)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(6)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(7)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(8)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(9)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(10)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(11)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(12)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(13)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Am-241	4.440E-01	4.440E-01	DCF2(1)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(2)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(3)
B-1	U-233	1.350E-01	1.350E-01	DCF2(4)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Am-241	3.640E-03	3.640E-03	DCF3(1)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(2)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(3)
D-1	U-233	2.890E-04	2.890E-04	DCF3(4)
D-34	Food transfer factors:			
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.830E-03	1.000E-03	RTF(1,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(1,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(1,3)
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	3.670E-02	2.000E-02	RTF(2,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(2,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(3,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(3,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(3,3)
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(4,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(4,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(4,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(1,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(2,2)

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Summary : HB soil DCGL_Am241
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241_DCGL\HB SOIL DCGL_AM241.RAD

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

Dose Library: HB DCGLs Plus FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(3,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(3,2)
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(4,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(4,2)

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

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Summary : HB soil DCGL_Am241
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241_DCGL\HB SOIL DCGL_AM241.RAD

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Am-241	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Am-241	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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGMT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Summary : HB soil DCGL_Am241
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.309E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	1.700E+01	1.000E+00	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	1.700E+01	1.000E+00	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	1.700E+01	1.000E+00	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.294E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.550E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(4)
R016	Unsat. zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
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	---	MLNH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHE3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHE1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND

R017 Fraction of time spent outdoors (on site) 1.181E-01 2.500E-01 --- FOTD
R017 Shape factor flag, external gamma 1.000E+00 1.000E+00 --- FS
1RESRAD, Version 6.5 T₀ Limit = 30 days 11/26/2011 12:36 Page 6 >0 shows circular AREA.
Summary : HB soil DCGL_Am241
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA					
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
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Summary : HB soil DCGL_Am241					
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA					
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGMHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R198	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R198	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R198	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R198	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R198	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R198	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)
R198	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R198	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R198	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R198	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRV(1)
R198	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRV(2)
R198	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRV(3)
R198	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R198	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R198	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R198	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	CL2WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	CL2CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR-T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR-T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR-T(3)
STOR	Meat and poultry	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)

Number	Name	Distribution	Parameters			
AAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	DENS CZ	BOUNDED NORMAL	1.5635	.2385	.827	2.3
2	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3
5	EVAPTR	UNIFORM	.5	.75		
6	RI	UNIFORM	.36	.76		
7	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084
8	TPSZ	BOUNDED NORMAL	.52	.0699	.214	.66
9	EPSZ	BOUNDED NORMAL	.342	.0703	.124	.56
10	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	.195
11	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5

12	DWIBWT	TRIANGULAR	6	10	30				
13	UN	UNIFORM	1173	1973					
14	H(1)	UNIFORM	0	8.08					
15	DENSUZ(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
16	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881			
17	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594			
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
20	MLNH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1
21	SHF3	UNIFORM	.15	.95					
22	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1			
23	DM	TRIANGULAR	0	.15	.6				
24	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999			
25	WLAM	TRIANGULAR	5.1	18	.84				
26	RWET(2)	TRIANGULAR	.06	.67	.95				
27	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
28	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
30	DCACTC(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
31	DCACTU1(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
32	DCACTS(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
33	DCACTC(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
34	DCACTU1(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
35	DCACTS(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
36	DCACTC(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
37	DCACTU1(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
38	DCACTS(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
39	BRTF(95, 2)	TRUNCATED LOGNORMAL-N	-9.9	.7	.001	.999			
40	BRTF(95, 3)	TRUNCATED LOGNORMAL-N	-13.12	.7	.001	.999			
41	BBIO(95, 1)	LOGNORMAL-N	3.4	1.1					
42	BRTF(93, 1)	TRUNCATED LOGNORMAL-N	-3.91	.9	.001	.999			
43	BRTF(93, 2)	TRUNCATED LOGNORMAL-N	-6.91	.7	.001	.999			
44	BRTF(93, 3)	TRUNCATED LOGNORMAL-N	-11.51	.7	.001	.999			
45	BBIO(93, 1)	LOGNORMAL-N	3.4	1.1					
46	BRTF(90, 1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999			
47	BRTF(90, 2)	TRUNCATED LOGNORMAL-N	-9.21	1	.001	.999			
48	BRTF(90, 3)	TRUNCATED LOGNORMAL-N	-12.21	.9	.001	.999			

1RESRAD, Version 6.5 T« Limit = 30 days 11/26/2011 12:36 Page
Probabilistic results summary : HB soil DCGL_Am241
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241_DCGL\HB SOIL DCGL_AM241.RAD

Number	Name	Distribution	Parameters
49	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
50	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
51	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
52	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
53	BBIO(92,1)	LOGNORMAL-N	2.3 1.1

R014 Saturated zone hydraulic conductivity (m/yr) 2.880E+01 1.000E+02 --- HCSZ
R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HGWT
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 --- VWT
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWIBWT
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND --- MODEL
R014 Well pumping rate (m**3/yr) 1.573E+03 2.500E+02 --- UW

RESRAD, Version 6.5 T« Limit = 30 days 11/26/2011 14:02 Page 4
Summary : HB soil DCGL_C14
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\C14_DCGL\HB SOIL DCGL_C14-1.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for C-14				
R016	Contaminated zone (cm**3/g)	1.100E+01	0.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	1.100E+01	0.000E+00	---	DCNUCUC(1,1)
R016	Saturated zone (cm**3/g)	1.100E+01	0.000E+00	---	DCNUCUC(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.124E-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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radial 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)

RESRAD, Version 6.5 T« Limit = 30 days 11/26/2011 14:02 Page 5
Summary : HB soil DCGL_C14
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\C14_DCGL\HB SOIL DCGL_C14-1.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFIS
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LWIS
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DRQOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)

³ TE(3)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

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

```

ORESRAD Uncertainty Analysis Results
Probabilistic Input ..... 2
Total Dose ..... 3
Total Risk ..... 4

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1RESRAD, Version 6.5      T« Limit = 30 days      11/28/2011 09:51 Page 1
Summary : HB soil DCGL_Cm243
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD
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1RESRAD, Version 6.5      Tc Limit = 30 days      11/28/2011 09:51 Page 2
Summary : HB soil DCGL_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD

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RESRAD, Version 6.5 T_{1/2} Limit = 30 days 11/28/2011 09:51 Page 3
Summary : HB soil DCGL_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD

[illegible]

D-5 Ac-227+D, crustacea and mollusks 1.000E+03 1.000E+03 BIOFAC(1,2)
D-5 Am-243+D, fish 3.000E+01 3.000E+01 BIOFAC(2,1)
D-5 Am-243+D, crustacea and mollusks 1.000E+03 1.000E+03 BIOFAC(2,2)
D-5 Cm-243, fish 3.000E+01 3.000E+01 BIOFAC(3,1)
D-5 Cm-243, crustacea and mollusks 1.000E+03 1.000E+03 BIOFAC(3,2)
D-5 Pa-231, fish 1.000E+01 1.000E+01 BIOFAC(5,1)
D-5 Pa-231, crustacea and mollusks 1.100E+02 1.100E+02 BIOFAC(5,2)
D-5 Pu-239, fish 3.000E+01 3.000E+01 BIOFAC(6,1)
D-5 Pu-239, crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC(6,2)
D-5 U-235+D, fish 1.000E+01 1.000E+01 BIOFAC(7,1)
D-5 U-235+D, crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC(7,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.
IRESRAD, Version 6.5 T Limit = 30 days 11/28/2011 09:51 Page 4
Summary : HB soil DCGL_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD

Site-Specific Parameter Summary

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRAC
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Cm-243	1.000E+00	0.000E+00	---	SI(3)
R012	Concentration in groundwater (pCi/L): Cm-243	not used	0.000E+00	---	WL(3)
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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGMT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Cm-243				
R016	Contaminated zone (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	8.250E+02	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.105E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Am-243				
R016	Contaminated zone (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCU(2,1)

R016	Saturated zone (cm**3/g)	1.445E+03	2.000E+01	---	DCNUCC(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.309E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	3.800E+02	5.000E+01	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	3.800E+02	5.000E+01	---	DCNUCC(5,1)
R016	Saturated zone (cm**3/g)	3.800E+02	5.000E+01	---	DCNUCC(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.398E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Pu-239				
R016	Contaminated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCC(6,1)
R016	Saturated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCC(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.565E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(7,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)

```
R19B 3 Growing Season for Fodder (years) 3 8.200E-02 3 8.000E-02 3 --- 3 TE(3)
R19B 3 Translocation Factor for Non-Leafy 3 1.000E-01 3 1.000E-01 3 --- 3 TIV(1)
R19B 3 Translocation Factor for Leafy 3 1.000E+00 3 1.000E+00 3 --- 3 TIV(2)
R19B 3 Translocation Factor for Fodder 3 1.000E+00 3 1.000E+00 3 --- 3 TIV(3)
R19B 3 Dry Foliar Interception Fraction for Non-Leafy 3 3.500E-01 3 2.500E-01 3 --- 3 RDRY(1)
R19B 3 Dry Foliar Interception Fraction for Leafy 3 3.500E-01 3 2.500E-01 3 --- 3 RDRY(2)
R19B 3 Dry Foliar Interception Fraction for Fodder 3 3.500E-01 3 2.500E-01 3 --- 3 RDRY(3)
R19B 3 Wet Foliar Interception Fraction for Non-Leafy 3 3.500E-01 3 2.500E-01 3 --- 3 RWET(1)
R19B 3 Wet Foliar Interception Fraction for Leafy 3 5.800E-01 3 2.500E-01 3 --- 3 RWET(2)
R19B 3 Wet Foliar Interception Fraction for Fodder 3 3.500E-01 3 2.500E-01 3 --- 3 RWET(3)
R19B 3 Weathering Removal Constant for Vegetation 3 3.300E+01 3 2.000E+01 3 --- 3 WLAM
C14 3 C-12 concentration in water (g/cm**3) 3 not used 3 2.000E-05 3 --- 3 C12WTR
C14 3 C-12 concentration in contaminated soil (g/g) 3 not used 3 3.000E-02 3 --- 3 C12CZ
C14 3 Fraction of vegetation carbon from soil 3 not used 3 2.000E-02 3 --- 3 CSOIL
C14 3 Fraction of vegetation carbon from air 3 not used 3 9.800E-01 3 --- 3 CAIR
C14 3 C-14 evasion layer thickness in soil (m) 3 not used 3 3.000E-01 3 --- 3 DMC
C14 3 C-14 evasion flux rate from soil (1/sec) 3 not used 3 7.000E-07 3 --- 3 EVSN
C14 3 C-12 evasion flux rate from soil (1/sec) 3 not used 3 1.000E-10 3 --- 3 REVSN
C14 3 Fraction of grain in beef cattle feed 3 not used 3 8.000E-01 3 --- 3 AVFG4
C14 3 Fraction of grain in milk cow feed 3 not used 3 2.000E-01 3 --- 3 AVFG5
STOR 3 Storage times of contaminated foodstuffs (days):
STOR 3 Fruits, non-leafy vegetables, and grain 3 1.400E+01 3 1.400E+01 3 --- 3 STOR_T(1)
STOR 3 Leafy vegetables 3 1.000E+00 3 1.000E+00 3 --- 3 STOR_T(2)
STOR 3 Milk 3 1.000E+00 3 1.000E+00 3 --- 3 STOR_T(3)
STOR 3 Meat and poultry 3 2.000E+01 3 2.000E+01 3 --- 3 STOR_T(4)
STOR 3 Fish 3 7.000E+00 3 7.000E+00 3 --- 3 STOR_T(5)
STOR 3 Crustacea and mollusks 3 7.000E+00 3 7.000E+00 3 --- 3 STOR_T(6)
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```
Site-Specific Parameter Summary (continued)
0 Menu 3 Parameter 3 User 3 Default 3 (If different from user input) 3 Parameter
AAAAA 3 3 3 3 3 3
STOR 3 Well water 3 1.000E+00 3 1.000E+00 3 --- 3 STOR_T(7)
STOR 3 Surface water 3 1.000E+00 3 1.000E+00 3 --- 3 STOR_T(8)
STOR 3 Livestock fodder 3 4.500E+01 3 4.500E+01 3 --- 3 STOR_T(9)
R021 3 Thickness of building foundation (m) 3 not used 3 1.500E-01 3 --- 3 FLOOR1
R021 3 Bulk density of building foundation (g/cm**3) 3 not used 3 2.400E+00 3 --- 3 DENSFL
R021 3 Total porosity of the cover material 3 not used 3 4.000E-01 3 --- 3 TPCV
R021 3 Total porosity of the building foundation 3 not used 3 1.000E-01 3 --- 3 TPFL
R021 3 Volumetric water content of the cover material 3 not used 3 5.000E-02 3 --- 3 PH20CV
R021 3 Volumetric water content of the foundation 3 not used 3 3.000E-02 3 --- 3 PH20FL
R021 3 Diffusion coefficient for radon gas (m/sec):
R021 3 in cover material 3 not used 3 2.000E-06 3 --- 3 DIFCV
R021 3 in foundation material 3 not used 3 3.000E-07 3 --- 3 DIFFL
R021 3 in contaminated zone soil 3 not used 3 2.000E-06 3 --- 3 DIFCZ
R021 3 Radon vertical dimension of mixing (m) 3 not used 3 2.000E+00 3 --- 3 HMXV
R021 3 Average building air exchange rate (1/hr) 3 not used 3 5.000E-01 3 --- 3 REXG
R021 3 Height of the building (room) (m) 3 not used 3 2.500E+00 3 --- 3 HRM
R021 3 Building interior area factor 3 not used 3 0.000E+00 3 --- 3 FAI
R021 3 Building depth below ground surface (m) 3 not used 3 1.000E+00 3 --- 3 DMFL
R021 3 Emanating power of Rn-222 gas 3 not used 3 2.500E-01 3 --- 3 EMANA(1)
R021 3 Emanating power of Rn-220 gas 3 not used 3 1.500E-01 3 --- 3 EMANA(2)
TITL 3 Number of graphical time points 3 32 3 --- 3 NPTS
TITL 3 Maximum number of integration points for dose 3 17 3 --- 3 LYMAX
TITL 3 Maximum number of integration points for risk 3 1 3 --- 3 KYMAX
=====
```

Summary of Pathway Selections

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

```
Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g
AAAAA 3 AAAAA 3
Area: 30000.00 square meters Cm-243 1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters
```

```
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```

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Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	DENSZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
2	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
5	EVAPTR	UNIFORM	.5 .75
6	RT	UNIFORM	.36 .76
7	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
8	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
9	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
10	HCSZ	BOUNDED LOGNORMAL-N	1.362 1.59 .0106 195
11	BSZ	BOUNDED LOGNORMAL-N	1.96 3.265 3.02 15.5
12	DWIBWT	TRIANGULAR	6 10 30
13	UW	UNIFORM	1173 1973
14	H(1)	UNIFORM	0 8.08
15	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
16	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
17	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
20	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
21	SHF3	UNIFORM	.15 .95
22	DM	TRIANGULAR	0 .15 .6
23	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
24	WLAM	TRIANGULAR	5.1 18 84
25	RWET(2)	TRIANGULAR	.06 .67 .95
26	DCACTC(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
27	DCACTU(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
28	DCACTS(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
30	DCACTU(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
32	DCACTC(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
33	DCACTU(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
34	DCACTS(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
35	DCACTC(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
36	DCACTU(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
37	DCACTS(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
38	DCACTC(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
39	DCACTU(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
40	DCACTS(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
41	DCACTC(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
42	DCACTU(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
43	DCACTS(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
44	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
45	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
46	BBIO(96,1)	LOGNORMAL-N	3.4 1.1 .001 .999
47	BRTF(89,1)	TRUNCATED LOGNORMAL-N	-6.91 1.1 .001 .999
48	BRTF(89,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999

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Probabilistic results summary : HB soil DCGL_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD

Probabilistic Input (cont.)

Number	Name	Distribution	Parameters
49	BRTF(89,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
50	BBIO(89,1)	LOGNORMAL-N	2.7 1.1 .001 .999
51	BRTF(95,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
52	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9 .2 .001 .999
53	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
54	BBIO(95,1)	LOGNORMAL-N	3.4 1.1 .001 .999
55	BRTF(91,1)	TRUNCATED LOGNORMAL-N	-4.61 1.1 .001 .999
56	BRTF(91,2)	TRUNCATED LOGNORMAL-N	-12.21 1 .001 .999
57	BRTF(91,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
58	BBIO(91,1)	LOGNORMAL-N	2.3 1.1 .001 .999
59	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
60	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
61	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
62	BBIO(94,1)	LOGNORMAL-N	3.4 1.1 .001 .999
63	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
64	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
65	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
66	BBIO(92,1)	LOGNORMAL-N	2.3 1.1 .001 .999

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Probabilistic results summary : HB soil DCGL_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243 DCGL\HB SOIL DCGL_CM243.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition Time of peak mean dose Peak mean dose
Years mrem/yr
1 0.000E+00 8.611E-01

D-5 Pu-240 , crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC(4,2)
D-5 Ra-228+D , fish 5.000E+01 5.000E+01 BIOFAC(6,1)
D-5 Ra-228+D , crustacea and mollusks 2.500E+02 2.500E+02 BIOFAC(6,2)
D-5 Th-228+D , fish 1.000E+02 1.000E+02 BIOFAC(7,1)
D-5 Th-228+D , crustacea and mollusks 5.000E+02 5.000E+02 BIOFAC(7,2)
D-5 Th-232 , fish 1.000E+02 1.000E+02 BIOFAC(8,1)
D-5 Th-232 , crustacea and mollusks 5.000E+02 5.000E+02 BIOFAC(8,2)
D-5 U-236 , fish 1.000E+01 1.000E+01 BIOFAC(9,1)
D-5 U-236 , crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC(9,2)

#For DCFL(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.
IRESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 17:38 Page 4
Summary : HB soil DCGL_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244 DCGL\HB SOIL DCGL_CM244.RAD

Site-Specific Parameter Summary					Used by RESRAD		Parameter	
Menu	Parameter	User	Default	(If different from user input)			Name	
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---			AREA	
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---			THICK0	
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---			SUBMFRACT	
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---			LCZPAQ	
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---			BRDL	
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---			TI	
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---			T(2)	
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---			T(3)	
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---			T(4)	
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---			T(5)	
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---			T(6)	
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---			T(7)	
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---			T(8)	
R011	Times for calculations (yr)	not used	0.000E+00	---			T(9)	
R011	Times for calculations (yr)	not used	0.000E+00	---			T(10)	
R012	Initial principal radionuclide (pCi/g): Cm-244	1.000E+00	0.000E+00	---			SI(1)	
R012	Concentration in groundwater (pCi/L): Cm-244	not used	0.000E+00	---			WI(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)	1.564E+00	1.500E+00	---			DENSCZ	
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---			VCZ	
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---			TPCZ	
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---			FCFZ	
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---			HCCZ	
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---			BCZ	
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---			WIND	
R013	Humidity in air (g/m**3)	not used	8.000E+00	---			HUMID	
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---			EVAPTR	
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---			PRECIP	
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---			RI	
R013	Irrigation mode	overhead	overhead	---			IDITCH	
R013	Runoff coefficient	5.000E-01	2.000E-01	---			RUNOFF	
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---			DENSAQ	
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---			TPSZ	
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---			EPSZ	
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---			FCSZ	
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---			HCSZ	
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---			HGMT	
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---			BSZ	
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---			VWT	
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---			DWLBWT	
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---			MODEL	
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---			UW	

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Summary : HB soil DCGL_Cm244
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Site-Specific Parameter Summary (continued)					Used by RESRAD		Parameter	
Menu	Parameter	User	Default	(If different from user input)			Name	
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
R015	Number of unsaturated zone strata	1	1	---			NS	
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---			H(1)	
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---			DENSUZ(1)	
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---			TPUZ(1)	
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---			EPUZ(1)	
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---			FCUZ(1)	
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---			BUZ(1)	
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---			HCUZ(1)	
R016	Distribution coefficients for Cm-244							
R016	Contaminated zone (cm**3/g)	6.761E+03	-1.000E+00	---			DCNUCC(1)	
R016	Unsat. zone 1 (cm**3/g)	6.761E+03	-1.000E+00	---			DCNUCU(1,1)	
R016	Saturated zone (cm**3/g)	6.761E+03	-1.000E+00	---			DCNUS(1)	
R016	Leach rate (/yr)	0.000E+00	0.000E+00	---	1.349E-05		ALEACH(1)	
R016	Solubility constant	0.000E+00	0.000E+00	---	not used		SOLUBK(1)	
R016	Distribution coefficients for daughter Pu-240							
R016	Contaminated zone (cm**3/g)	9.530E+02	2.000E+03	---			DCNUCC(4)	
R016	Unsat. zone 1 (cm**3/g)	9.530E+02	2.000E+03	---			DCNUCU(4,1)	
R016	Saturated zone (cm**3/g)	9.530E+02	2.000E+03	---			DCNUS(4)	
R016	Leach rate (/yr)	0.000E+00	0.000E+00	---	9.565E-05		ALEACH(4)	
R016	Solubility constant	0.000E+00	0.000E+00	---	not used		SOLUBK(4)	
R016	Distribution coefficients for daughter Ra-228							
R016	Contaminated zone (cm**3/g)	3.533E+03	7.000E+01	---			DCNUCC(6)	
R016	Unsat. zone 1 (cm**3/g)	3.533E+03	7.000E+01	---			DCNUCU(6,1)	
R016	Saturated zone (cm**3/g)	3.533E+03	7.000E+01	---			DCNUS(6)	
R016	Leach rate (/yr)	0.000E+00	0.000E+00	---	2.581E-05		ALEACH(6)	
R016	Solubility constant	0.000E+00	0.000E+00	---	not used		SOLUBK(6)	

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R016 Distribution coefficients for daughter Th-228
R016 Contaminated zone (cm**3/g) -NaN 6.000E+04 --- DCNUCC( 7)
R016 Unsaturated zone 1 (cm**3/g) -NaN 6.000E+04 --- DCNUCU( 7,1)
R016 Saturated zone (cm**3/g) -NaN 6.000E+04 --- DCNUCS( 7)
R016 Leach rate (/yr) -NaN 0.000E+00 --- ALEACH( 7)
R016 Solubility constant 5.000E+00 0.000E+00 Sol. Kd =-NaN used SOLUBK( 7)

R016 Distribution coefficients for daughter Th-232
R016 Contaminated zone (cm**3/g) 5.884E+03 6.000E+04 --- DCNUCC( 8)
R016 Unsaturated zone 1 (cm**3/g) 5.884E+03 6.000E+04 --- DCNUCU( 8,1)
R016 Saturated zone (cm**3/g) 5.884E+03 6.000E+04 --- DCNUCS( 8)
R016 Leach rate (/yr) 0.000E+00 0.000E+00 1.550E-05 ALEACH( 8)
R016 Solubility constant 0.000E+00 0.000E+00 not used SOLUBK( 8)

R016 Distribution coefficients for daughter U-236
R016 Contaminated zone (cm**3/g) 1.260E+02 5.000E+01 --- DCNUCC( 9)
R016 Unsaturated zone 1 (cm**3/g) 1.260E+02 5.000E+01 --- DCNUCU( 9,1)
R016 Saturated zone (cm**3/g) 1.260E+02 5.000E+01 --- DCNUCS( 9)
R016 Leach rate (/yr) 0.000E+00 0.000E+00 7.224E-04 ALEACH( 9)
R016 Solubility constant 0.000E+00 0.000E+00 not used SOLUBK( 9)

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Site-Specific Parameter Summary (continued)
Menu Parameter User Input Default Used by RESRAD Parameter
AAAAA Input Default (If different from user input) Name
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 5.500E-01 4.000E-01 --- SHF3
R017 Shielding factor, external gamma 2.725E-01 7.000E-01 --- SHF1
R017 Fraction of time spent indoors 6.571E-01 5.000E-01 --- FIND
R017 Fraction of time spent outdoors (on site) 1.181E-01 2.500E-01 --- FOTD
R017 Shape factor flag, external gamma 1.000E+00 1.000E+00 >0 shows circular AREA. FS
R017 Radii of shape factor array (used if FS = -1):
R017 Outer annular radius (m), ring 1: not used 5.000E+01 --- RAD_SHAPE( 1)
R017 Outer annular radius (m), ring 2: not used 7.071E+01 --- RAD_SHAPE( 2)
R017 Outer annular radius (m), ring 3: not used 0.000E+00 --- RAD_SHAPE( 3)
R017 Outer annular radius (m), ring 4: not used 0.000E+00 --- RAD_SHAPE( 4)
R017 Outer annular radius (m), ring 5: not used 0.000E+00 --- RAD_SHAPE( 5)
R017 Outer annular radius (m), ring 6: not used 0.000E+00 --- RAD_SHAPE( 6)
R017 Outer annular radius (m), ring 7: not used 0.000E+00 --- RAD_SHAPE( 7)
R017 Outer annular radius (m), ring 8: not used 0.000E+00 --- RAD_SHAPE( 8)
R017 Outer annular radius (m), ring 9: not used 0.000E+00 --- RAD_SHAPE( 9)
R017 Outer annular radius (m), ring 10: not used 0.000E+00 --- RAD_SHAPE(10)
R017 Outer annular radius (m), ring 11: not used 0.000E+00 --- RAD_SHAPE(11)
R017 Outer annular radius (m), ring 12: not used 0.000E+00 --- RAD_SHAPE(12)

R017 Fractions of annular areas within AREA:
R017 Ring 1 not used 1.000E+00 --- FRACA( 1)
R017 Ring 2 not used 2.732E-01 --- FRACA( 2)
R017 Ring 3 not used 0.000E+00 --- FRACA( 3)
R017 Ring 4 not used 0.000E+00 --- FRACA( 4)
R017 Ring 5 not used 0.000E+00 --- FRACA( 5)
R017 Ring 6 not used 0.000E+00 --- FRACA( 6)
R017 Ring 7 not used 0.000E+00 --- FRACA( 7)
R017 Ring 8 not used 0.000E+00 --- FRACA( 8)
R017 Ring 9 not used 0.000E+00 --- FRACA( 9)
R017 Ring 10 not used 0.000E+00 --- FRACA(10)
R017 Ring 11 not used 0.000E+00 --- FRACA(11)
R017 Ring 12 not used 0.000E+00 --- FRACA(12)

R018 Fruits, vegetables and grain consumption (kg/yr) 1.120E+02 1.600E+02 --- DIET(1)
R018 Leafy vegetable consumption (kg/yr) 2.140E+01 1.400E+01 --- DIET(2)
R018 Milk consumption (L/yr) 2.330E+02 9.200E+01 --- DIET(3)
R018 Meat and poultry consumption (kg/yr) 6.510E+01 6.300E+01 --- DIET(4)
R018 Fish consumption (kg/yr) 2.060E+01 5.400E+00 --- DIET(5)
R018 Other seafood consumption (kg/yr) 9.000E-01 9.000E-01 --- DIET(6)
R018 Soil ingestion rate (g/yr) 1.826E+01 3.650E+01 --- SOIL
R018 Drinking water intake (L/yr) 4.785E+02 5.100E+02 --- DWI
R018 Contamination fraction of drinking water 1.000E+00 1.000E+00 --- FDW
R018 Contamination fraction of household water not used 1.000E+00 --- FHHW
R018 Contamination fraction of livestock water 1.000E+00 1.000E+00 --- FLW
R018 Contamination fraction of irrigation water 1.000E+00 1.000E+00 --- FIRW
R018 Contamination fraction of aquatic food 1.000E+00 5.000E-01 --- FR9
R018 Contamination fraction of plant food 1.000E+00 -1 --- FPLANT

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Site-Specific Parameter Summary (continued)
Menu Parameter User Input Default Used by RESRAD Parameter
AAAAA Input Default (If different from user input) Name
R018 Contamination fraction of meat 1.000E+00 -1 --- FMEAT
R018 Contamination fraction of milk 1.000E+00 -1 --- FMILK

R019 Livestock fodder intake for meat (kg/day) 2.710E+01 6.800E+01 --- LFI5
R019 Livestock fodder intake for milk (kg/day) 6.320E+01 5.500E+01 --- LFI6
R019 Livestock water intake for meat (L/day) 5.060E+01 5.000E+01 --- LWI5
R019 Livestock water intake for milk (L/day) 6.000E+01 1.600E+02 --- LWI6
R019 Livestock soil intake (kg/day) 5.000E-01 5.000E-01 --- LSI
R019 Mass loading for foliar deposition (g/m**3) 4.000E-04 1.000E-04 --- MLFD
R019 Depth of soil mixing layer (m) 2.300E-01 1.500E-01 --- DM
R019 Depth of roots (m) 1.220E+00 9.000E-01 --- DROOT
R019 Drinking water fraction from ground water 1.000E+00 1.000E+00 --- FGWDW
R019 Household water fraction from ground water not used 1.000E+00 --- FGWHH
R019 Livestock water fraction from ground water 1.000E+00 1.000E+00 --- FGWLW
R019 Irrigation fraction from ground water 1.000E+00 1.000E+00 --- FGWIR

R198 Wet weight crop yield for Non-Leafy (kg/m**2) 1.750E+00 7.000E-01 --- YV(1)
R198 Wet weight crop yield for Leafy (kg/m**2) 2.889E+00 1.500E+00 --- YV(2)
R198 Wet weight crop yield for Fodder (kg/m**2) 1.887E+00 1.100E+00 --- YV(3)
R198 Growing Season for Non-Leafy (years) 2.460E-01 1.700E-01 --- TE(1)
R198 Growing Season for Leafy (years) 1.230E-01 2.500E-01 --- TE(2)
R198 Growing Season for Fodder (years) 8.200E-02 8.000E-02 --- TE(3)
R198 Translocation Factor for Non-Leafy 1.000E-01 1.000E-01 --- TIV(1)
R198 Translocation Factor for Leafy 1.000E+00 1.000E+00 --- TIV(2)

```

Site-Specific		Parameter Summary (continued)			Used by RESRAD		Parameter
Menu	Parameter	Input	Default	(If different from user input)		Name	
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	---		PH20CV	
R021	Volumetric water content of the foundation	not used	3.000E-02	---		PH20FL	
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	---		HMX1	
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	

```

Pathway                                     3      User Selection
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
1 -- external gamma                         3      active
2 -- inhalation (w/o radon)                 3      active
3 -- plant ingestion                        3      active
4 -- meat ingestion                         3      active
5 -- milk ingestion                        3      active
6 -- aquatic foods                          3      active
7 -- drinking water                        3      active
8 -- soil ingestion                        3      active
9 -- radon                                 3      suppressed
Find peak pathway doses                     3      active
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii
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Contaminated Zone Dimensions      Initial Soil Concentrations, pci/g
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA      AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Area: 30000.00 square meters      Cm-244      1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters

```

AAAAAAAAAAAAAAAAAAAA	
Part VI: Uncertainty Analysis	
ii	
ORESRAD Uncertainty Analysis Results	
Probabilistic Input	2
Total Dose	4
Total Risk	5
Dose vs Pathway: Group External	4
Dose vs Pathway: Inhalation (w/o Radon)	7
Dose vs Pathway: Radon (Water Ind.)	8
Dose vs Pathway: Plant (Water Ind.)	9
Dose vs Pathway: Meat (Water Ind.)	10
Dose vs Pathway: Milk (Water Ind.)	11
Dose vs Pathway: Soil Ingestion	12
Dose vs Pathway: Water Ingestion	13
Dose vs Pathway: Fish Ingestion	14
Dose vs Pathway: Radon (Water Dep.)	15

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Probabilistic results summary : HB soil DCGL_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244 DCGL\HB SOIL DCGL_CM244.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters						
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
1	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3						
2	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881						
3	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190						
4	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3						
5	EVAPTR	UNIFORM	.5 .76						
6	RI	UNIFORM	.36 .76						
7	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084						
8	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646						
9	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56						
10	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195						
11	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5						
12	DWIBWT	TRIANGULAR	6 10 30						
13	UW	UNIFORM	1173 1973						
14	H(1)	UNIFORM	0 8.08						
15	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3						
16	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881						
17	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594						
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190						
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3						
20	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365						
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1						
21	SHF3	UNIFORM	.15 .95						
22	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1						
23	DM	TRIANGULAR	0 .15 .6						
24	VV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999						
25	WLAM	TRIANGULAR	5.1 18 84						
26	RWET(2)	TRIANGULAR	.06 .67 .95						
27	DCACTC(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999						
28	DCACTU1(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999						
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999						
30	DCACTC(4)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999						
31	DCACTU1(4)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999						
32	DCACTS(4)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999						
33	DCACTC(6)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999						
34	DCACTU1(6)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999						
35	DCACTS(6)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999						
36	DCACTC(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
37	DCACTU1(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
38	DCACTS(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
39	DCACTC(8)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
40	DCACTU1(8)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
41	DCACTS(8)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999						
42	DCACTC(9)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999						
43	DCACTU1(9)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999						
44	DCACTS(9)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999						
45	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999						
46	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999						
47	BBIO(96,1)	LOGNORMAL-N	3.4 1.1						
48	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999						

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Probabilistic results summary : HB soil DCGL_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244 DCGL\HB SOIL DCGL_CM244.RAD

Probabilistic Input (cont.)

Number	Name	Distribution	Parameters						
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
49	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999						
50	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999						
51	BBIO(94,1)	LOGNORMAL-N	3.4 1.1						
52	BRTF(88,1)	TRUNCATED LOGNORMAL-N	-3.22 .9 .001 .999						
53	BRTF(88,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999						
54	BRTF(88,3)	TRUNCATED LOGNORMAL-N	-6.91 .5 .001 .999						
55	BBIO(88,1)	LOGNORMAL-N	3.9 1.1						
56	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999						
57	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999						
58	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999						
59	BBIO(90,1)	LOGNORMAL-N	4.6 1.1						
60	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999						
61	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999						
62	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999						
63	BBIO(92,1)	LOGNORMAL-N	2.3 1.1						
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

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Probabilistic results summary : HB soil DCGL_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244 DCGL\HB SOIL DCGL_CM244.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition Time of peak mean dose Peak mean dose
Years mrem/yr
1 0.000E+00 5.197E-01


```
D-34 3 U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) 3 3.400E-04 3 3.400E-04 3 RTF( 8,2)
D-34 3 U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 3 6.000E-04 3 6.000E-04 3 RTF( 8,3)
D-5 3 Bioaccumulation factors, fresh water, L/kg:
D-5 3 Am-241 , fish 3 3.000E+01 3 3.000E+01 3 BIOFAC( 1,1)
D-5 3 Am-241 , crustacea and mollusks 3 1.000E+03 3 1.000E+03 3 BIOFAC( 1,2)
D-5 3 Cm-245 , fish 3 3.000E+01 3 3.000E+01 3 BIOFAC( 2,1)
D-5 3 Cm-245 , crustacea and mollusks 3 1.000E+03 3 1.000E+03 3 BIOFAC( 2,2)
D-5 3 Np-237+D , fish 3 3.000E+01 3 3.000E+01 3 BIOFAC( 4,1)
D-5 3 Np-237+D , crustacea and mollusks 3 4.000E+02 3 4.000E+02 3 BIOFAC( 4,2)
D-5 3 Pu-241 , fish 3 3.000E+01 3 3.000E+01 3 BIOFAC( 5,1)
D-5 3 Pu-241 , crustacea and mollusks 3 1.000E+02 3 1.000E+02 3 BIOFAC( 5,2)
D-5 3 Pu-241+D , fish 3 3.000E+01 3 3.000E+01 3 BIOFAC( 6,1)
D-5 3 Pu-241+D , crustacea and mollusks 3 1.000E+02 3 1.000E+02 3 BIOFAC( 6,2)
D-5 3 Th-229+D , fish 3 1.000E+02 3 1.000E+02 3 BIOFAC( 7,1)
D-5 3 Th-229+D , crustacea and mollusks 3 5.000E+02 3 5.000E+02 3 BIOFAC( 7,2)
D-5 3 U-233 , fish 3 1.000E+01 3 1.000E+01 3 BIOFAC( 8,1)
D-5 3 U-233 , crustacea and mollusks 3 6.000E+01 3 6.000E+01 3 BIOFAC( 8,2)
#####
#For DCGL(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.
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Summary : HB soil DCGL_Cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD
```

```
Site-Specific Parameter Summary
0 3 User 3 Input 3 Default 3 (If different from user input) 3 Parameter
Menu 3 Parameter 3 Name
#####
R011 3 Area of contaminated zone (m**2) 3 3.000E+04 3 1.000E+04 3 --- 3 AREA
R011 3 Thickness of contaminated zone (m) 3 2.670E+00 3 2.000E+00 3 --- 3 THICK0
R011 3 Fraction of contamination that is submerged 3 0.000E+00 3 0.000E+00 3 --- 3 SUBMFRACT
R011 3 Length parallel to aquifer flow (m) 3 1.950E+02 3 1.000E+02 3 --- 3 LCZPAQ
R011 3 Basic radiation dose limit (mrem/yr) 3 2.500E+01 3 3.000E+01 3 --- 3 BRDL
R011 3 Time since placement of material (yr) 3 0.000E+00 3 0.000E+00 3 --- 3 TI
R011 3 Times for calculations (yr) 3 1.000E+00 3 1.000E+00 3 --- 3 T( 2)
R011 3 Times for calculations (yr) 3 3.000E+00 3 3.000E+00 3 --- 3 T( 3)
R011 3 Times for calculations (yr) 3 1.000E+01 3 1.000E+01 3 --- 3 T( 4)
R011 3 Times for calculations (yr) 3 3.000E+01 3 3.000E+01 3 --- 3 T( 5)
R011 3 Times for calculations (yr) 3 1.000E+02 3 1.000E+02 3 --- 3 T( 6)
R011 3 Times for calculations (yr) 3 3.000E+02 3 3.000E+02 3 --- 3 T( 7)
R011 3 Times for calculations (yr) 3 1.000E+03 3 1.000E+03 3 --- 3 T( 8)
R011 3 Times for calculations (yr) 3 not used 3 0.000E+00 3 --- 3 T( 9)
R011 3 Times for calculations (yr) 3 not used 3 0.000E+00 3 --- 3 T(10)
R012 3 Initial principal radionuclide (pCi/g): Cm-245 3 1.000E+00 3 0.000E+00 3 --- 3 S1(2)
R012 3 Concentration in groundwater (pCi/L): Cm-245 3 not used 3 0.000E+00 3 --- 3 w1( 2)
R013 3 Cover depth (m) 3 0.000E+00 3 0.000E+00 3 --- 3 COVER0
R013 3 Density of cover material (g/cm**3) 3 not used 3 1.500E+00 3 --- 3 DENSVCV
R013 3 Cover depth erosion rate (m/yr) 3 not used 3 1.000E-03 3 --- 3 VCV
R013 3 Density of contaminated zone (g/cm**3) 3 1.564E+00 3 1.500E+00 3 --- 3 DENSNCZ
R013 3 Contaminated zone erosion rate (m/yr) 3 2.200E-03 3 1.000E-03 3 --- 3 VCV
R013 3 Contaminated zone total porosity 3 4.100E-01 3 4.000E-01 3 --- 3 TPCZ
R013 3 Contaminated zone field capacity 3 9.500E-02 3 2.000E-01 3 --- 3 FCCZ
R013 3 Contaminated zone hydraulic conductivity (m/yr) 3 3.900E+00 3 1.000E+01 3 --- 3 HCCZ
R013 3 Contaminated zone b parameter 3 5.600E+00 3 5.300E+00 3 --- 3 BCZ
R013 3 Average annual wind speed (m/sec) 3 3.040E+00 3 2.000E+00 3 --- 3 WIND
R013 3 Humidity in air (g/m**3) 3 not used 3 8.000E+00 3 --- 3 HUMID
R013 3 Evapotranspiration coefficient 3 6.250E-01 3 5.000E-01 3 --- 3 EVAPTR
R013 3 Precipitation (m/yr) 3 9.100E-01 3 1.000E+00 3 --- 3 PRECIP
R013 3 Irrigation (m/yr) 3 5.600E-01 3 2.000E-01 3 --- 3 RI
R013 3 Irrigation mode 3 overhead 3 --- 3 IDITCH
R013 3 Runoff coefficient 3 5.000E-01 3 2.000E-01 3 --- 3 RUNOFF
R013 3 watershed area for nearby stream or pond (m**2) 3 2.520E+07 3 1.000E+06 3 --- 3 WAREA
R013 3 Accuracy for water/soil computations 3 1.000E-03 3 1.000E-03 3 --- 3 EPS
R014 3 Density of saturated zone (g/cm**3) 3 1.510E+00 3 1.500E+00 3 --- 3 DENSQAQ
R014 3 Saturated zone total porosity 3 4.300E-01 3 4.000E-01 3 --- 3 TPSZ
R014 3 Saturated zone effective porosity 3 3.420E-01 3 2.000E-01 3 --- 3 EPSZ
R014 3 Saturated zone field capacity 3 8.800E-02 3 2.000E-01 3 --- 3 FCSZ
R014 3 Saturated zone hydraulic conductivity (m/yr) 3 2.880E+01 3 1.000E+02 3 --- 3 HCSZ
R014 3 Saturated zone hydraulic gradient 3 2.000E-03 3 2.000E-02 3 --- 3 HGWT
R014 3 Saturated zone b parameter 3 7.100E+00 3 5.300E+00 3 --- 3 BSZ
R014 3 Water table drop rate (m/yr) 3 1.000E-03 3 1.000E-03 3 --- 3 VWT
R014 3 well pump intake depth (m below water table) 3 1.000E+01 3 1.000E+01 3 --- 3 DWIBWT
R014 3 Model: Nondispersion (ND) or Mass-Balance (MB) 3 ND 3 --- 3 MODEL
R014 3 well pumping rate (m**3/yr) 3 1.573E+03 3 2.500E+02 3 --- 3 UW
#####
```

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Summary : HB soil DCGL_Cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD
```

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Site-Specific Parameter Summary (continued)
0 3 User 3 Input 3 Default 3 (If different from user input) 3 Parameter
Menu 3 Parameter 3 Name
#####
R015 3 Number of unsaturated zone strata 3 1 3 1 3 --- 3 NS
R015 3 Unsat. zone 1, thickness (m) 3 4.040E+00 3 4.000E+00 3 --- 3 H(1)
R015 3 Unsat. zone 1, soil density (g/cm**3) 3 1.564E+00 3 1.500E+00 3 --- 3 DENSUZ(1)
R015 3 Unsat. zone 1, total porosity 3 4.100E-01 3 4.000E-01 3 --- 3 TPUZ(1)
R015 3 Unsat. zone 1, effective porosity 3 3.150E-01 3 2.000E-01 3 --- 3 EPUZ(1)
R015 3 Unsat. zone 1, field capacity 3 9.500E-02 3 2.000E-01 3 --- 3 FCUZ(1)
R015 3 Unsat. zone 1, soil-specific b parameter 3 5.600E+00 3 5.300E+00 3 --- 3 BUZ(1)
R015 3 Unsat. zone 1, hydraulic conductivity (m/yr) 3 3.900E+00 3 1.000E+01 3 --- 3 HCUZ(1)
R016 3 Distribution coefficients for Cm-245
R016 3 Contaminated zone (cm**3/g) 3 6.761E+03 3 -1.000E+00 3 --- 3 DCNUCC( 2)
R016 3 Unsaturated zone 1 (cm**3/g) 3 6.761E+03 3 -1.000E+00 3 --- 3 DCNUCU( 2,1)
R016 3 Saturated zone (cm**3/g) 3 6.761E+03 3 -1.000E+00 3 --- 3 DCNUCS( 2)
R016 3 Leach rate (/yr) 3 0.000E+00 3 0.000E+00 3 1.349E-05 3 ALEACH( 2)
R016 3 Solubility constant 3 0.000E+00 3 0.000E+00 3 not used 3 SOLUBK( 2)
R016 3 Distribution coefficients for daughter Am-241
R016 3 Contaminated zone (cm**3/g) 3 1.445E+03 3 2.000E+01 3 --- 3 DCNUCC( 1)
```


R016	Unsaturated zone 1 (cm**3/g)	1.445E+03	2.000E+01	---	DCNUC(1,1)
R016	Saturated zone (cm**3/g)	1.445E+03	2.000E+01	---	DCNUC(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.309E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUC(4,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUC(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.294E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Pu-241				
R016	Contaminated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	9.530E+02	2.000E+03	---	DCNUC(5,1)
R016	Saturated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUC(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.565E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.884E+03	6.000E+04	---	DCNUC(7,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUC(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.550E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUC(8,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUC(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
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Summary : HB soil DCGL_Cm245					
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD					

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
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Summary : HB soil DCGL_Cm245					
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD					

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LS1
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DR00T
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH

R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YW(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YW(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YW(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSIN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSIN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	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)
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Summary :	HB soil DCGL_Cm245				
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
STOR	well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMXZ
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	active
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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	Area: 30000.00 square meters
Thickness: 2.67 meters	CM-245 1.000E+00
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL_Cm245			
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Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	DENS CZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
2	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
5	EVAPTR	UNIFORM	.5 .75
6	RI	UNIFORM	.36 .76
7	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
8	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
9	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
10	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
11	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
12	DWIBWT	TRIANGULAR	6 10 30
13	UW	UNIFORM	1173 1973
14	H(1)	UNIFORM	0 8.08
15	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
16	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
17	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
20	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
21	SHF3	UNIFORM	.15 .95
22	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
23	DM	TRIANGULAR	0 .15 .6
24	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
25	WLAM	TRIANGULAR	5.1 18 84
26	RWET(2)	TRIANGULAR	.06 .67 .95
27	DCACTC(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
28	DCACTU1(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
29	DCACTS(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
30	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
31	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
32	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
33	DCACTC(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
34	DCACTU1(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
35	DCACTS(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
36	DCACTC(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
37	DCACTU1(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
38	DCACTS(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
39	DCACTC(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
40	DCACTU1(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
41	DCACTS(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
42	DCACTC(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
43	DCACTU1(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
44	DCACTS(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
45	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
46	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
47	BBIO(96,1)	LOGNORMAL-N	3.4 1.1
48	BRTF(95,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999

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Probabilistic results summary : HB soil DCGL_Cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD

Probabilistic Input (cont.)

Number	Name	Distribution	Parameters
49	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9 .2 .001 .999
50	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
51	BBIO(95,1)	LOGNORMAL-N	3.4 1.1
52	BRTF(93,1)	TRUNCATED LOGNORMAL-N	-3.91 .9 .001 .999
53	BRTF(93,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999
54	BRTF(93,3)	TRUNCATED LOGNORMAL-N	-11.51 .7 .001 .999
55	BBIO(93,1)	LOGNORMAL-N	3.4 1.1
56	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
57	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
58	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
59	BBIO(94,1)	LOGNORMAL-N	3.4 1.1
60	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
61	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999
62	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
63	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
64	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
65	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
66	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
67	BBIO(92,1)	LOGNORMAL-N	2.3 1.1

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Probabilistic results summary : HB soil DCGL_Cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM245 DCGL\HB SOIL DCGL_CM245.RAD

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

	Years	mrem/yr
1	5.878E+02	1.406E+00

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1RESRAD, Version 6.5      T< Limit = 30 days      11/28/2011 13:35 Page 1
Summary : HB soil DCGL_Cm246
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD
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Part I: Mixture Sums and Single Radionuclide Guidelines

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Time = 1.000E+00	13
Time = 3.000E+00	14
Time = 1.000E+01	14
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Time = 1.000E+02	16
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Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCGLs Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	AT-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(1)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(2)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(3)
A-1	Cm-246 (Source: FGR 12)	1.162E-04	1.162E-04	DCF1(4)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(5)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(6)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(7)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(10)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(11)
A-1	Pu-242 (Source: FGR 12)	1.280E-04	1.280E-04	DCF1(12)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(13)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(14)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(15)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(16)
A-1	Tl-210 (Source: no data)	0.000E+00	2.000E+00	DCF1(17)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(18)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(19)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Cm-246	4.510E-01	4.510E-01	DCF2(1)
B-1	Pb-210+D	1.380E-02	1.360E-02	DCF2(5)
B-1	Po-210	9.400E-03	9.400E-03	DCF2(6)
B-1	Pu-242	4.110E-01	4.110E-01	DCF2(7)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(10)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(11)
B-1	U-234	1.320E-01	1.320E-01	DCF2(12)
B-1	U-238	1.180E-01	1.180E-01	DCF2(13)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(14)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Cm-246	3.700E-03	3.700E-03	DCF3(1)
D-1	Pb-210+D	5.376E-03	5.370E-03	DCF3(5)
D-1	Po-210	1.900E-03	1.900E-03	DCF3(6)
D-1	Pu-242	3.360E-03	3.360E-03	DCF3(7)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(10)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(11)
D-1	U-234	2.830E-04	2.830E-04	DCF3(12)
D-1	U-238	2.550E-04	2.550E-04	DCF3(13)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(14)
D-34	Food transfer factors:			
D-34	Cm-246 , plant/soil concentration ratio, dimensionless	1.830E-03	1.000E-03	RTF(1,1)
D-34	Cm-246 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Cm-246 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(1,3)
D-34				
RESRAD, Version 6.5 T _o Limit = 30 days 11/28/2011 13:35 Page 3				
Summary : HB soil DCGL_Cm246				
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD				
Dose Conversion Factor (and Related) Parameter Summary (continued)				
Dose Library: HB DCGLs Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(5,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(5,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(5,3)
D-34	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Po-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(6,2)
D-34	Po-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.400E-04	3.400E-04	RTF(6,3)
D-34				
D-34	Pu-242 , plant/soil concentration ratio, dimensionless	1.830E-03	1.000E-03	RTF(7,1)
D-34	Pu-242 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(7,2)
D-34	Pu-242 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(7,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(10,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(10,2)

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D-34 Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 1.000E-03 1.000E-03 RTF( 10,3)
D-34 Th-230 , plant/soil concentration ratio, dimensionless 1.000E-03 1.000E-03 RTF( 11,1)
D-34 Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) 1.000E-04 1.000E-04 RTF( 11,2)
D-34 Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 5.000E-06 5.000E-06 RTF( 11,3)
D-34 U-234 , plant/soil concentration ratio, dimensionless 2.500E-03 2.500E-03 RTF( 12,1)
D-34 U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) 3.400E-04 3.400E-04 RTF( 12,2)
D-34 U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 6.000E-04 6.000E-04 RTF( 12,3)
D-34 U-238 , plant/soil concentration ratio, dimensionless 2.500E-03 2.500E-03 RTF( 13,1)
D-34 U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) 3.400E-04 3.400E-04 RTF( 13,2)
D-34 U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 6.000E-04 6.000E-04 RTF( 13,3)
D-34 U-238+D , plant/soil concentration ratio, dimensionless 2.500E-03 2.500E-03 RTF( 14,1)
D-34 U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) 3.400E-04 3.400E-04 RTF( 14,2)
D-34 U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) 6.000E-04 6.000E-04 RTF( 14,3)
D-5 Bioaccumulation factors, fresh water, L/kg:
D-5 Cm-246 , fish 3.000E+01 3.000E+01 BIOFAC( 1,1)
D-5 Cm-246 , crustacea and mollusks 1.000E+03 1.000E+03 BIOFAC( 1,2)
D-5 Pb-210+D , fish 3.000E+02 3.000E+02 BIOFAC( 5,1)
D-5 Pb-210+D , crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC( 5,2)
D-5 Po-210 , fish 1.000E+02 1.000E+02 BIOFAC( 6,1)
D-5 Po-210 , crustacea and mollusks 2.000E+04 2.000E+04 BIOFAC( 6,2)
D-5 Pu-242 , fish 3.000E+01 3.000E+01 BIOFAC( 7,1)
D-5 Pu-242 , crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC( 7,2)
D-5 Ra-226+D , fish 5.000E+01 5.000E+01 BIOFAC( 10,1)
D-5 Ra-226+D , crustacea and mollusks 2.500E+02 2.500E+02 BIOFAC( 10,2)
D-5 Th-230 , fish 1.000E+02 1.000E+02 BIOFAC( 11,1)
D-5 Th-230 , crustacea and mollusks 5.000E+02 5.000E+02 BIOFAC( 11,2)
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: HB DCGLs Plus FGR 12 & FGR 11

```
0 Menu Parameter Current Value# Base Case# Parameter Name
AAAAA U-234 , fish 1.000E+01 1.000E+01 BIOFAC( 12,1)
D-5 U-234 , crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC( 12,2)
D-5 U-238 , fish 1.000E+01 1.000E+01 BIOFAC( 13,1)
D-5 U-238 , crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC( 13,2)
D-5 U-238+D , fish 1.000E+01 1.000E+01 BIOFAC( 14,1)
D-5 U-238+D , crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC( 14,2)
#####
#For DCFL(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.
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Site-Specific Parameter Summary

```
0 Menu Parameter User Input Default (If different from user input) Parameter Name
AAAAA Area of contaminated zone (m**2) 3.000E+04 1.000E+04 --- AREA
R011 Thickness of contaminated zone (m) 2.670E+00 2.000E+00 --- THICK0
R011 Fraction of contamination that is submerged 0.000E+00 0.000E+00 --- SUBMFRAC
R011 Length parallel to aquifer flow (m) 1.950E+02 1.000E+02 --- LCZPAQ
R011 Basic radiation dose limit (mrem/yr) 2.500E+01 3.000E+01 --- BRDL
R011 Time since placement of material (yr) 0.000E+00 0.000E+00 --- TI
R011 Times for calculations (yr) 1.000E+00 1.000E+00 --- T( 2)
R011 Times for calculations (yr) 3.000E+00 3.000E+00 --- T( 3)
R011 Times for calculations (yr) 1.000E+01 1.000E+01 --- T( 4)
R011 Times for calculations (yr) 3.000E+01 3.000E+01 --- T( 5)
R011 Times for calculations (yr) 1.000E+02 1.000E+02 --- T( 6)
R011 Times for calculations (yr) 3.000E+02 3.000E+02 --- T( 7)
R011 Times for calculations (yr) 1.000E+03 1.000E+03 --- T( 8)
R011 Times for calculations (yr) not used 0.000E+00 --- T( 9)
R011 Times for calculations (yr) not used 0.000E+00 --- T(10)
R012 Initial principal radionuclide (pCi/g): Cm-246 1.000E+00 0.000E+00 --- SI(1)
R012 Concentration in groundwater (pCi/L): Cm-246 not used 0.000E+00 --- WI( 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 --- DENSVC
R013 Cover depth erosion rate (m/yr) not used 1.000E-03 --- VCV
R013 Density of contaminated zone (g/cm**3) 1.564E+00 1.500E+00 --- DENSVCZ
R013 Contaminated zone erosion rate (m/yr) 2.200E-03 1.000E-03 --- VCZ
R013 Contaminated zone total porosity 4.100E-01 4.000E-01 --- TPCZ
R013 Contaminated zone field capacity 9.500E-02 2.000E-01 --- FCCZ
R013 Contaminated zone hydraulic conductivity (m/yr) 3.900E+00 1.000E+01 --- HCCZ
R013 Contaminated zone b parameter 5.600E+00 5.300E+00 --- BCZ
R013 Average annual wind speed (m/sec) 3.040E+00 2.000E+00 --- WIND
R013 Humidity in air (g/m**3) not used 8.000E+00 --- HUMID
R013 Evapotranspiration coefficient 6.250E-01 5.000E-01 --- EVAPTR
R013 Precipitation (m/yr) 9.100E-01 1.000E+00 --- PRECIP
R013 Irrigation (m/yr) 5.600E-01 2.000E-01 --- RI
R013 Irrigation mode overhead --- IDITCH
R013 Runoff coefficient 5.000E-01 2.000E-01 --- RUNOFF
R013 Watershed area for nearby stream or pond (m**2) 2.520E+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) 1.510E+00 1.500E+00 --- DENSQAQ
R014 Saturated zone total porosity 4.300E-01 4.000E-01 --- TPSZ
R014 Saturated zone effective porosity 3.420E-01 2.000E-01 --- EPSZ
R014 Saturated zone field capacity 8.800E-02 2.000E-01 --- FCSZ
R014 Saturated zone hydraulic conductivity (m/yr) 2.880E+01 1.000E+02 --- HCSZ
R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HGWT
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 --- WVT
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWLBWT
```

R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
AAAAA	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Cm-246				
R016	Contaminated zone (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	6.761E+03	-1.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.349E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	2.392E+03	1.000E+02	---	DCNUCC(5)
R016	Unsat. zone 1 (cm**3/g)	2.392E+03	1.000E+02	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	2.392E+03	1.000E+02	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.811E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for daughter Po-210				
R016	Contaminated zone (cm**3/g)	1.810E+02	1.000E+01	---	DCNUCC(6)
R016	Unsat. zone 1 (cm**3/g)	1.810E+02	1.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	1.810E+02	1.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.031E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Pu-242				
R016	Contaminated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCC(7)
R016	Unsat. zone 1 (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	9.530E+02	2.000E+03	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.565E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	3.533E+03	7.000E+01	---	DCNUCC(10)
R016	Unsat. zone 1 (cm**3/g)	3.533E+03	7.000E+01	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	3.533E+03	7.000E+01	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.581E-05	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCC(11)
R016	Unsat. zone 1 (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.550E-05	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
AAAAA	Distribution coefficients for daughter U-234				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(12)
R016	Unsat. zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for daughter U-238				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(13)
R016	Unsat. zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radial 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)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRIY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRIY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRIY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMX
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 ---
TITL : Maximum number of integration points for risk 1 ---
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Summary : HB soil DCGL_Cm246
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD

Summary of Pathway Selections

Pathway User Selection
1 -- external gamma active
2 -- inhalation (w/o radon) active
3 -- plant ingestion active
4 -- meat ingestion active
5 -- milk ingestion active
6 -- aquatic foods active
7 -- drinking water active
8 -- soil ingestion active
9 -- radon suppressed
Find peak pathway doses active
IRESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 13:35 Page 11
Summary : HB soil DCGL_CM246
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters Cm-246 1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters

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Probabilistic results summary : HB soil DCGL_CM246
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Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	DENS CZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
2	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
5	EVAPTR	UNIFORM	.5 .75
6	RI	UNIFORM	.36 .76
7	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
8	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
9	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
10	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
11	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
12	DWIBWT	TRIANGULAR	6 10 30
13	UW	UNIFORM	1173 1973
14	H(1)	UNIFORM	0 8.08
15	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
16	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
17	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
20	MLTNH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
21	SHF3	UNIFORM	.15 .95
22	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
23	DM	TRIANGULAR	0 .15 .6
24	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
25	WLAM	TRIANGULAR	5.1 18 84
26	RWET(2)	TRIANGULAR	.06 .67 .95
27	DCACTC(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
28	DCACTU(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
30	DCACTC(5)	TRUNCATED LOGNORMAL-N	7.78 2.78 .001 .999
31	DCACTU(5)	TRUNCATED LOGNORMAL-N	7.78 2.78 .001 .999
32	DCACTC(5)	TRUNCATED LOGNORMAL-N	7.78 2.78 .001 .999
33	DCACTC(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
34	DCACTU(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
35	DCACTC(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
36	DCACTC(7)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999

37	DCACTU1(7)	TRUNCATED LOGNORMAL-N	6.86	1.89	.001	.999
38	DCACT5(7)	TRUNCATED LOGNORMAL-N	6.86	1.89	.001	.999
39	DCACTC(10)	TRUNCATED LOGNORMAL-N	8.17	1.7	.001	.999
40	DCACTU1(10)	TRUNCATED LOGNORMAL-N	8.17	1.7	.001	.999
41	DCACT5(10)	TRUNCATED LOGNORMAL-N	8.17	1.7	.001	.999
42	DCACTC(11)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
43	DCACTU1(11)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
44	DCACT5(11)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999
45	DCACTC(12)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
46	DCACTU1(12)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
47	DCACT5(12)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999
48	DCACTC(13)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999

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 Probabilistic results summary : HB soil DCGL_Cm246
 File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD

Probabilistic Input (cont.)

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
49	DCACTU1(13)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
50	DCACT5(13)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
51	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
52	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
53	BBIO(96,1)	LOGNORMAL-N	3.4 1.1
54	BRTF(82,1)	TRUNCATED LOGNORMAL-N	-5.52 .9 .001 .999
55	BRTF(82,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
56	BRTF(82,3)	TRUNCATED LOGNORMAL-N	-8.11 .9 .001 .999
57	BBIO(82,1)	LOGNORMAL-N	5.7 1.1
58	BRTF(84,1)	TRUNCATED LOGNORMAL-N	-6.9 .9 .001 .999
59	BRTF(84,2)	TRUNCATED LOGNORMAL-N	-5.3 .7 .001 .999
60	BRTF(84,3)	TRUNCATED LOGNORMAL-N	-7.82 .7 .001 .999
61	BBIO(84,1)	LOGNORMAL-N	4.6 1.1
62	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
63	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
64	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
65	BBIO(94,1)	LOGNORMAL-N	3.4 1.1
66	BRTF(88,1)	TRUNCATED LOGNORMAL-N	-3.22 .9 .001 .999
67	BRTF(88,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999
68	BRTF(88,3)	TRUNCATED LOGNORMAL-N	-6.91 .5 .001 .999
69	BBIO(88,1)	LOGNORMAL-N	3.9 1.1
70	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
71	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999
72	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
73	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
74	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
75	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
76	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
77	BBIO(92,1)	LOGNORMAL-N	2.3 1.1
iiiiii	iiiiii	iiiiii	iiiiii

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 Probabilistic results summary : HB soil DCGL_Cm246
 File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246 DCGL\HB SOIL DCGL_CM246.RAD
 Peak of the mean dose (averaged over observations) at graphical times
 Repetition Time of peak mean dose Peak mean dose
 1 Years mrem/yr
 0.000E+00 9.700E-01

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1RESRAD, Version 6.5      T« Limit = 30 days      11/26/2011 14:16 Page 1
Summary : HB soil DCGL Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL_CO60.RAD
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[illegible]

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Time = 3.000E+00	11
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Summary : HB soil DCGL Co-60
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL_CO60.RAD

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Dose Library: HB DCGL-Co60 plus FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)	1.622E+01	1.622E+01	DCF1(1)
A-1	Co-60 (Source: FGR 12)			
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Co-60	2.190E-04	2.190E-04	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Co-60	2.690E-05	2.690E-05	DCF3(1)
D-34	Food transfer factors:			
D-34	Co-60, plant/soil concentration ratio, dimensionless	1.460E-01	8.000E-02	RTF(1,1)
D-34	Co-60, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.860E-02	2.000E-02	RTF(1,2)
D-34	Co-60, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Co-60, fish	3.000E+02	3.000E+02	BIOFAC(1,1)
D-5	Co-60, crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(1,2)

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

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Summary : HB soil DCGL Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL CO60.RAD

Site-Specific Parameter Summary

Menu	Parameter	Input	Default	(If different from user input)	Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): 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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IIITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ

Parameter	Value	Unit	Used by RESRAD	Parameter
R014 Saturated zone hydraulic gradient	2.000E-03		---	HGWT
R014 Saturated zone b parameter	7.100E+00		---	BSZ
R014 Water table drop rate (m/yr)	1.000E-03		---	VWT
R014 Well pump intake depth (m below water table)	1.000E+01		---	DWIBWT
R014 Model: Nondispersion (ND) or Mass-Balance (MB)	ND		---	MODEL
R014 Well pumping rate (m ³ /yr)	1.573E+03		---	UW

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Summary : HB soil DCGL Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL CO60.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm ³ /g)	2.350E+02	1.000E+03	---	DCNUCC(1)
R016	Unsat. zone 1 (cm ³ /g)	2.350E+02	1.000E+03	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	2.350E+02	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.876E-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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radius 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)

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Summary : HB soil DCGL Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL CO60.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFIS
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m ³)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m ²)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m ²)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m ²)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)

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Summary : HB soil DCGL_Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL_CO60.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CACR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	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	---	PH20CV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH20FL
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	---	HMXI
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

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Summary : HB soil DCGL_Co-60
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

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

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Summary : HB soil DCGL_Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL_CO60.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	Co-60 1.000E+00
Thickness: 2.67 meters	
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL_Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCGL\HB SOIL DCGL_CO60.RAD

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1RESRAD Uncertainty Analysis Results	
Probabilistic Input	2
Total Dose	3

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Probabilistic results summary: HB soil DCLG_Co-60
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60 DCLG\HB SOIL DCLG_CO60.RAD
      Peak of the mean dose (averaged over observations) at graphical times
Repetition      Time of peak mean dose      Peak mean dose
                  Years      mrem/yr
1                0.000E+00      6.553E+00

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1RESRAD, Version 6.5      T< Limit = 30 days      11/27/2011 09:09 Page 1
Summary : HB soil DCGL-Cs137
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD
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Total Dose Components
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Time = 1.000E+00 .....
Time = 3.000E+00 .....
Time = 1.000E+01 .....
Time = 3.000E+01 .....
Time = 1.000E+02 .....
Time = 3.000E+02 .....
Time = 1.000E+03 .....
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Soil Concentration Per Nucleide ..... 18
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Summary : HB soil DCGL-Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

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Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCG_LCs137 Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ba-137m (Source: FGR 12)	3.606E+00	3.606E+00	DCF1(1)
A-1	Cs-137 (Source: FGR 12)	7.510E-04	7.510E-04	DCF1(2)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(1)
D-34	Food transfer factors:			
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	7.820E-02	4.000E-02	RTF(1,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	6.520E-02	3.000E-02	RTF(1,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.390E-02	8.000E-03	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(1,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
#For DCF1(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.				

*Base Case means Default.LTB w/o Associate Nuclide Contributions.
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Summary : HB soil DCGL_Cs137
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Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRAC
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCBPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Cs-137	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	WL(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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WTND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ

R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	WMT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Summary : HB soil DCGL_Cs137
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	4.460E+02	4.600E+03	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	4.460E+02	4.600E+03	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.460E+02	4.600E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.043E-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	---	MLTNH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	RadII of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Summary : HB soil DCGL_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R198	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R198	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R198	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R198	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R198	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)

R198 Growing Season for Fodder (years) 8.200E-02 8.000E-02 --- TE(3)
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Summary : HB soil DCGL_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R198	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R198	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R198	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R198	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRY(1)
R198	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R198	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R198	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R198	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R198	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R198	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSIN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSIN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMXZ
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

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Summary : HB soil DCGL_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

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

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Summary : HB soil DCGL_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	Cs-137 1.000E+00
Thickness: 2.67 meters	
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD

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      Probabilistic Input
Number of Sample Runs: 2000

Number Name Distribution Parameters
AAAAAA AAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAAAAAAAAA
1 DENSZCZ BOUNDED NORMAL 1.5635 .2385 .827 2.3
2 TPCZ BOUNDED NORMAL .41 .09 .1319 .6881
3 HCCZ BOUNDED LOGNORMAL-N 1.36 2.17 .00478 3190
4 BCZ BOUNDED LOGNORMAL-N 1.73 .323 2.08 15.3
5 EVAPTR UNIFORM .5 .75
6 RI UNIFORM .36 .76
7 DENSAQ BOUNDED NORMAL 1.5105 .1855 .937 2.084
8 TPSZ BOUNDED NORMAL .43 .0699 .214 .646
9 EPSZ BOUNDED NORMAL .342 .0705 .124 .56
10 HCSZ BOUNDED LOGNORMAL-N .362 1.59 .0106 195
11 BSZ BOUNDED LOGNORMAL-N 1.96 .265 3.02 15.5
12 DWIBWT TRIANGULAR 6 10 30
13 UW UNIFORM 1173 1973
14 H(1) UNIFORM 0 8.08
15 DENSUZ(1) BOUNDED NORMAL 1.5635 .2385 .827 2.3
16 TPUZ(1) BOUNDED NORMAL .41 .09 .1319 .6881
17 EPUZ(1) BOUNDED NORMAL .315 .0905 .0349 .594
18 HCUZ(1) BOUNDED LOGNORMAL-N 1.36 2.17 .00478 3190
19 BUZ(1) BOUNDED LOGNORMAL-N 1.73 .323 2.08 15.3
20 MLINH CONTINUOUS LINEAR 8 0 0 .000008 .0151 .000016 .1365
.00003 .8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1
21 SHF3 UNIFORM .15 .95
22 DM TRIANGULAR 0 .15 .6
23 YV(1) TRUNCATED LOGNORMAL-N .56 .48 .001 .999
24 WLAM TRIANGULAR 5.1 18 84
25 RWET(2) TRIANGULAR .06 .67 .95
26 DCACTC(1) TRUNCATED LOGNORMAL-N 6.1 2.33 .001 .999
27 DCACTU(1) TRUNCATED LOGNORMAL-N 6.1 2.33 .001 .999
28 DCACT(1) TRUNCATED LOGNORMAL-N 6.1 2.33 .001 .999
29 BBIO(55,1) LOGNORMAL-N 7.6 .7
#####

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Probabilistic results summary : HB soil DCGL_CS137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137 DCGL\HB SOIL DCGL_CS137.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition Time of peak mean dose Peak mean dose
Years mrem/yr
1 0.000E+00 3.151E+00

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1RESRAD, Version 6.5      T< Limit = 30 days      11/27/2011 09:29 Page 1
Summary : HB soil DCGL_Eu-152
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.RAD
```

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Time = 1.000E+00 .....
Time = 3.000E+00 .....
Time = 1.000E+01 .....
Time = 3.000E+01 .....
Time = 1.000E+02 .....
Time = 3.000E+02 .....
Time = 1.000E+03 .....
Dose/Source Ratios Summed Over All Pathways
Single Radionuclide Soil Guidelines
Dose Per Nuclide Summed Over All Pathways

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Summary : HB soil DCGL_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.RAD

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Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCGLs Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Eu-152 (Source: FGR 12)	7.006E+00	7.006E+00	DCF1(1)
A-1	Gd-152 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(2)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(1)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(1)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(3)
D-34	Food transfer factors:			
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(1,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(1,3)
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(3,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(1,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(3,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(3,2)
#For DCF1(XXX) only, factors are for infinite depth & area. See EFTG table in Ground Pathway of Detailed Report.				
*Base Case means Default.Lib w/o Associate Nuclide contributions.				

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Base Case means default.LIB w/o Associate Nuclide Contributions.
RESRAD, Version 6.5      Tk Limit = 30 days      11/27/2011 09:29 Page 3
Summary : HB soil DCGL_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.RAD

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Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.830E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Eu-152	1.000E+00	0.000E+00	---	SI(1)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	WL(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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI

R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Summary : HB soil DCGL_EU-152
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	7.220E+03	-1.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.842E-05	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.612E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R017	Inhalation rate (m**3/yr)	8.400E+03	8.400E+03	---	INHIALR
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Summary : HB soil DCGL_EU-152
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16

```

3 LWI5
3 LWI6
3 LSI
3 MLFD
3 DM
3 DROOT
3 FGWDW
3 FGWHH
3 FGWLW
3 FGWIR
3
3 YV(1)
3 YV(2)
3 YV(3)
3 TE(1)
3 TE(2)
3 TE(3)

```

Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)
				Parameter Name
TITL	Maximum number of integration points for dose	17	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	KYMAX

```

Pathway                                     User Selection
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
1 -- external gamma                         active
2 -- inhalation (w/o radon)                 active
3 -- plant ingestion                         active
4 -- meat ingestion                         active
5 -- milk ingestion                         active
6 -- aquatic foods                          active
7 -- drinking water                         active
8 -- soil ingestion                         active
9 -- radon                                 suppressed
Find peak pathway doses                     active
iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii
1RESRAD, Version 6.5      T« Limit = 30 days      11/27/2011 09:29 Page 8
Summary : HB soil DCLG_EU-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCLG\HB SOIL DCLG_EU152.RAD

```


BARTLETT

Area:	30000.00 square meters	Eu-152	1.000E+00
Thickness:	1.83 meters		
Cover Depth:	0.00 meters		

```
1RESRAD, Version 6.5      T« Limit = 30 days      11/27/2011 09:29 Page 1
Probabilistic results summary : HB soil DCGL_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.RAD
```

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 ffffffffffffffffffffffffffffffffff

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Dose vs Pathway: Plant (Water Ind.)	8
Dose vs Pathway: Meat (Water Ind.)	9
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File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.RAD

Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCHZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495 .00006 .9937	.000076 .9983	0 .0001 1
22	SHF3	UNIFORM	.15 .95
23	DM	TRIANGULAR	0 .15 .6
24	DROOT	UNIFORM	.3 4
25	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
26	WLAM	TRIANGULAR	5.1 18 84
27	RWET(2)	TRIANGULAR	.06 .67 .95
28	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
30	DCACTC(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
31	DCACTU1(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
32	DCACTS(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
33	BRTF(63,1)	TRUNCATED LOGNORMAL-N	-6.21 1.1 .001 .999
34	BRTF(63,2)	TRUNCATED LOGNORMAL-N	-6.21 1.1 .001 .999
35	BRTF(63,3)	TRUNCATED LOGNORMAL-N	-9.72 .9 .001 .999
36	BBIO(63,1)	LOGNORMAL-N	3.9 1.1
37	BRTF(64,1)	TRUNCATED LOGNORMAL-N	-6.21 1.1 .001 .999
38	BRTF(64,2)	TRUNCATED LOGNORMAL-N	-6.21 1 .001 .999
39	BRTF(64,3)	TRUNCATED LOGNORMAL-N	-9.72 .9 .001 .999
40	BBIO(64,1)	LOGNORMAL-N	3.2 1.1

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1RESRAD, Version 6.5      Tc Limit = 30 days      11/27/2011 09:29 Page 20
Probabilistic results summary : HB soil DCGL_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152 DCGL\HB SOIL DCGL_EU152.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	2.475E+00

RESRAD, Version 6.5 T« Limit = 30 days 11/27/2011 09:50 Page 1
Summary : HB soil DCGL_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

Part I: Mixture Sums and Single Radionuclide Guidelines

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Time = 1.000E+01	12
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Summary : HB soil DCGL_EU-154
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

```

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Eu-154 (Source: FGR 12)	7.678E+00	7.678E+00	DCF1(1)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(1)
D-34	Food transfer factors:			
D-34	Eu-154 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Eu-154 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(1,2)
D-34	Eu-154 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(1,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)

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

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1RESRAD, Version 6.5      To Limit = 30 days      11/27/2011 09:50 Page 3
Summary : HB soil DCGL_EU-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

```

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.830E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (10)
R012	Initial principal radionuclide (pCi/g): Eu-154	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Eu-154	not used	0.000E+00	---	WL(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	---	DENSVCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCZC
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	TI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ

R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HGWT
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 --- VMT
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWIBWT
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND --- MODEL
R014 Well pumping rate (m**3/yr) 1.573E+03 2.500E+02 --- UW

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Summary : HB soil DCGL_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default (If different from user input)	Used by RESRAD	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUC(1,1)
R016	Saturated zone (cm**3/g)	8.250E+02	-1.000E+00	---	DCNUC(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.612E-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	---	TNHALR
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radius 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)

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Summary : HB soil DCGL_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default (If different from user input)	Used by RESRAD	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFIS
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LWIS
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	2.150E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	VV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	VV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	VV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)

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Summary : HB soil DCGL_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---
C14	C-12 concentration in water (g/cm ³)	not used	2.000E-05	---
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---
C14	Fraction of vegetation carbon from air	not used	3.000E-01	---
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---
STOR	Storage times of contaminated foodstuffs (days):			
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---
STOR	Leafy vegetables	1.000E+00	1.000E+00	---
STOR	Milk	1.000E+00	1.000E+00	---
STOR	Meat and poultry	2.000E+01	2.000E+01	---
STOR	Fish	7.000E+00	7.000E+00	---
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---
STOR	Well water	1.000E+00	1.000E+00	---
STOR	Surface water	1.000E+00	1.000E+00	---
STOR	Livestock fodder	4.500E+01	4.500E+01	---
R021	Thickness of building foundation (m)	not used	1.500E-01	---
R021	Bulk density of building foundation (g/cm ³)	not used	2.400E+00	---
R021	Total porosity of the cover material	not used	4.000E-01	---
R021	Total porosity of the building foundation	not used	1.000E-01	---
R021	Volumetric water content of the cover material	not used	5.000E-02	---
R021	Volumetric water content of the foundation	not used	3.000E-02	---
R021	Diffusion coefficient for radon gas (m/sec):			
R021	in cover material	not used	2.000E-06	---
R021	in foundation material	not used	3.000E-07	---
R021	in contaminated zone soil	not used	2.000E-06	---
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---
R021	Height of the building (room) (m)	not used	2.500E+00	---
R021	Building interior area factor	not used	0.000E+00	---
R021	Building depth below ground surface (m)	not used	-1.000E+00	---
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---
TITL	Number of graphical time points	32	---	---

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Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)
TITL	Maximum number of integration points for dose	17	---	---
TITL	Maximum number of integration points for risk	1	---	---

Summary of Pathway Selections

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

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Summary : HB soil DCGL_Eu-154
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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	Eu-154 1.000E+00
Thickness: 1.83 meters	
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154 DCGL\HB SOIL DCGL_EU154.RAD

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Part VI: Uncertainty Analysis	
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Total Dose	3
Total Risk	4


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Summary : HB soil DCGL_H-3
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3 DCGL\HB SOIL DCGL_H3.RAD
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[illegible]

```
Soil Concentration Per Nuclide ..... 18
1RESRAD, Version 6.5      T« Limit = 30 days      11/27/2011 10:07 Page 2
Summary : HB soil DCGL_H-3
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3 DCGL\HB SOIL DCGL H3.RAD
```

Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCLGs Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	H-3 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(1)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	H-3	6.400E-08	6.400E-08	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	H-3	6.400E-08	6.400E-08	DCF3(1)
D-34	Food transfer factors:			
D-34	H-3, plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(1,1)
D-34	H-3, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(1,2)
D-34	H-3, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	H-3, fish	1.000E+00	1.000E+00	BIOFAC(1,1)
D-5	H-3, crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(1,2)
=====				
#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.				
*Base Case means Default.Lib w/o Associate Nuclide contributions.				
1RESRAD, Version 6.5 Lib < Limit = 30 days 11/27/2011 10:07 Page 3				
Summary : HB soil DCLG-H-3				
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3 DCLG\HB SOIL DCLG H3.RAD				

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (if different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): H-3	1.000E+00	0.000E+00	---	SI(1)
R012	Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	WI(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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FC CZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	8.200E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FC SZ

R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	WMT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DW1BWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Summary : HB soil DCGL_H-3
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	3.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	4.300E-02	0.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	6.000E-02	0.000E+00	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	6.000E-02	0.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.433E-01	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	---	MLTNH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	RadII of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Summary : HB soil DCGL_H-3
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LST
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)

R19B Growing Season for Fodder (years) 8.200E-02 8.000E-02 --- TE(3)
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Summary : HB soil DCGL_H-3
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRI(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRI(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRI(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSIN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSIN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	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	---	PH20CV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH20FL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIT
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS

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Summary : HB soil DCGL_H-3
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

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

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Summary : HB soil DCGL_H-3
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Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters H-3 1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters

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Probabilistic results summary : HB soil DCGL_H-3
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3 DCGL\HB SOIL DCGL_H3.RAD
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```

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
2	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
3	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
4	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
5	EVAPTR	UNIFORM	.5 .75
6	RI	UNIFORM	.36 .76
7	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
8	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
9	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
10	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
11	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
12	DWIBWT	TRIANGULAR	6 10 30
13	UW	UNIFORM	1173 1973
14	H(1)	UNIFORM	0 8.08
15	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
16	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
17	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
20	MLINH	CONTINUOUS LINEAR	8 0 .000076 .9983 0 .0001 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 0 .0001 1
21	SHF3	UNIFORM	.15 .95
22	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
23	DM	TRIANGULAR	0 .15 .6
24	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
25	WLAM	TRIANGULAR	5.1 18 84
26	RWET(2)	TRIANGULAR	.06 .67 .95
27	DCACTU1(1)	TRUNCATED LOGNORMAL-N	-2.81 .5 .001 .999
28	DCACT5(1)	TRUNCATED LOGNORMAL-N	-2.81 .5 .001 .999
29	BRTF(1,1)	TRUNCATED LOGNORMAL-N	1.57 1.1 .001 .999
30	BRTF(1,2)	TRUNCATED LOGNORMAL-N	-4.42 1 .001 .999
31	BRTF(1,3)	TRUNCATED LOGNORMAL-N	-4.6 .9 .001 .999
32	BBIO(1,1)	LOGNORMAL-N	0 .1

```

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Probabilistic results summary : HB soil DCGL_H-3
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3 DCGL\HB SOIL DCGL_H3.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition Time of peak mean dose Peak mean dose
Years mrem/yr
1 0.000E+00 3.646E-02

```

```
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Summary : HB soil DCGL_I129
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129 DCGL\HB SOIL DCGL_I129.RAD
```

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```

Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCGLs Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	I-129 (Source: FGR 12)	1.295E-02	1.295E-02	DCF1(1)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	I-129	1.740E-04	1.740E-04	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	I-129	2.760E-04	2.760E-04	DCF3(1)
D-34	Food transfer factors:			
D-34	I-129, plant/soil concentration ratio, dimensionless	3.670E-02	2.000E-02	RTF(1,1)
D-34	I-129, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.230E-02	7.000E-03	RTF(1,2)
D-34	I-129, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.390E-02	1.000E-02	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	I-129, fish	4.000E+01	4.000E+01	BIOFAC(1,1)
D-5	I-129, crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(1,2)

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

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Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (if different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRAC
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): I-129	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): I-129	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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone parameter	5.600E+00	5.300E+00	---	PCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HVIND
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCZS

R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HGWT
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 --- VWT
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWIBWT
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND --- MODEL
R014 Well pumping rate (m**3/yr) 1.573E+03 2.500E+02 --- UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for I-129				
R016	Contaminated zone (cm**3/g)	4.600E+00	1.000E-01	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	4.600E+00	1.000E-01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	4.600E+00	1.000E-01	---	DCNUSC(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.891E-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	---	MLTNH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	RadII of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FTRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFT5
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LFT6
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LWT5
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LWT6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R198	wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R198	wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R198	wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R198	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R198	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R198	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HIMIX
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

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Summary : HB soil DCGL_I129
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

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

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Summary : HB soil DCGL_I129
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129 DCGL\HB SOIL DCGL_I129.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	I-129 1.000E+00
Thickness: 2.67 meters	
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL_I129
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Probabilistic results summary : HB soil DCGL_I129
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      Probabilistic Input
Number of Sample Runs: 2000

Number Name Distribution Parameters
AAAAAA AAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAAAAAAAAA AAAAAAAAAAAAAAAAAAAAAA
1 DENSZCZ BOUNDED NORMAL 1.5635 .2385 .827 2.3
2 TPCZ BOUNDED NORMAL .41 .09 .1319 .6881
3 HCCZ BOUNDED LOGNORMAL-N 1.36 2.17 .00478 3190
4 BCZ BOUNDED LOGNORMAL-N 1.73 .323 2.08 15.3
5 EVAPTR UNIFORM .5 .75
6 RI UNIFORM .36 .76
7 DENSAQ BOUNDED NORMAL 1.5105 .1855 .937 2.084
8 TPSZ BOUNDED NORMAL .43 .0699 .214 .646
9 EPSZ BOUNDED NORMAL .342 .0705 .124 .56
10 HCSZ BOUNDED LOGNORMAL-N .362 1.59 .0106 195
11 BSZ BOUNDED LOGNORMAL-N 1.96 .265 3.02 15.5
12 DWIBWT TRIANGULAR 6 10 30
13 UW UNIFORM 1173 1973
14 H(1) UNIFORM 0 8.08
15 DENSUZ(1) BOUNDED NORMAL 1.5635 .2385 .827 2.3
16 TPUZ(1) BOUNDED NORMAL .41 .09 .1319 .6881
17 EPUZ(1) BOUNDED NORMAL .315 .0905 .0349 .594
18 HCUZ(1) BOUNDED LOGNORMAL-N 1.36 2.17 .00478 3190
19 BUZ(1) BOUNDED LOGNORMAL-N 1.73 .323 2.08 15.3
20 MLINH CONTINUOUS LINEAR 8 0 0 .000008 .0151 .000016 .1365
.00003 .8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1
21 SHF3 UNIFORM .15 .95
22 SHF1 BOUNDED LOGNORMAL-N -1.3 .59 .044 1
23 DM TRIANGULAR 0 .15 .6
24 YV(1) TRUNCATED LOGNORMAL-N .56 .48 .001 .999
25 WLAM TRIANGULAR 5.1 18 84
26 RWET(2) TRIANGULAR .06 .67 .95
27 DCACTC(1) TRUNCATED LOGNORMAL-N 1.52 2.19 .001 .999
28 DCACTU1(1) TRUNCATED LOGNORMAL-N 1.52 2.19 .001 .999
29 DCACTS(1) TRUNCATED LOGNORMAL-N 1.52 2.19 .001 .999
30 BBIO(53,1) LOGNORMAL-N 3.7 1.1
iiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii

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Probabilistic results summary : HB soil DCGL_I129
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129 DCGL\HB SOIL DCGL_I129.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition Time of peak mean dose Peak mean dose
Year's mrem/yr
1 0.000E+00 5.174E+00

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1RESRAD, Version 6.5      T« Limit = 30 days      11/28/2011 09:27 Page 1
Summary : HB soil DCGL_Nb-94
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD
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Dose Conversion Factor (and Related) Parameter Summary				
Dose Library: HB DCGLS Plus FGR 12 & FGR 11				
Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Nb-94 (Source: FGR 12)	9.677E+00	9.677E+00	DCF1(1)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Nb-94	4.140E-04	4.140E-04	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Nb-94	7.140E-06	7.140E-06	DCF3(1)
D-34	Food transfer factors:			
D-34	Nb-94 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(1,1)
D-34	Nb-94 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-07	3.000E-07	RTF(1,2)
D-34	Nb-94 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Nb-94 , fish	3.000E+02	3.000E+02	BIOFAC(1,1)
D-5	Nb-94 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)
#For DCF1(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.				
*Base Case Means Default.Lib w/o Associate Nuclide contributions.				
1RESRAD, Version 6.5 T< Limit = 30 days 11/28/2011 09:27 Page 3				
Summary : HB soil DCG_LNb-94				
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCG_L\HB SOIL DCG_LNB94.RAD				

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.830E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRAC
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pci/g): Nb-94	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pci/L): Nb-94	not used	0.000E+00	---	WL(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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	PCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMD
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	IR
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/vr)	2.880E+01	1.000E+02	---	HCSZ

R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HWY
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 --- WVT
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWIBWT
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND --- MODEL
R014 Well pumping rate (m**3/yr) 1.573E+03 2.500E+02 --- UW

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	3.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Nb-94				
R016	Contaminated zone (cm**3/g)	3.560E+03	0.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	3.800E+02	0.000E+00	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	3.800E+02	0.000E+00	---	DCNucs(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.737E-05	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	---	MLTNH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	3.980E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radial 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)

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Summary : HB soil DCGL_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	2.150E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)

1RESRAD, Version 6.5 T< Limit = 30 days 11/28/2011 09:27 Page 6
Summary : HB soil DCGL_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD

Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---
STOR	Storage times of contaminated foodstuffs (days):			
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---
STOR	Leafy vegetables	1.000E+00	1.000E+00	---
STOR	Milk	1.000E+00	1.000E+00	---
STOR	Meat and poultry	2.000E+01	2.000E+01	---
STOR	Fish	7.000E+00	7.000E+00	---
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---
STOR	Well water	1.000E+00	1.000E+00	---
STOR	Surface water	1.000E+00	1.000E+00	---
STOR	Livestock fodder	4.500E+01	4.500E+01	---
R021	Thickness of building foundation (m)	not used	1.500E-01	---
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---
R021	Total porosity of the cover material	not used	4.000E-01	---
R021	Total porosity of the building foundation	not used	1.000E-01	---
R021	Volumetric water content of the cover material	not used	5.000E-02	---
R021	Volumetric water content of the foundation	not used	3.000E-02	---
R021	Diffusion coefficient for radon gas (m/sec):			
R021	in cover material	not used	2.000E-06	---
R021	in foundation material	not used	3.000E-07	---
R021	in contaminated zone soil	not used	2.000E-06	---
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---
R021	Height of the building (room) (m)	not used	2.500E+00	---
R021	Building interior area factor	not used	0.000E+00	---
R021	Building depth below ground surface (m)	not used	-1.000E+00	---
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---
TITL	Number of graphical time points	32	---	---

1RESRAD, Version 6.5 T< Limit = 30 days 11/28/2011 09:27 Page 7
Summary : HB soil DCGL_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD

Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)
TITL	Maximum number of integration points for dose	17	---	---
TITL	Maximum number of integration points for risk	1	---	---

Summary of Pathway Selections

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

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1RESRAD, Version 6.5 T< Limit = 30 days
Summary : HB soil DCGL_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	Nb-94 1.000E+00
Thickness: 1.83 meters	
Cover Depth: 0.00 meters	

1RESRAD, Version 6.5 T< Limit = 30 days 11/28/2011 09:27 Page 1
Probabilistic results summary : HB soil DCGL_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD

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Part VI: Uncertainty Analysis

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Probabilistic Input 2

Total Dose 3

Total Risk		4	
Dose vs Pathway:	Ground External	5	
Dose vs Pathway:	Inhalation (w/o Radon)	6	
Dose vs Pathway:	Radon (Water Ind.)	7	
Dose vs Pathway:	Plant (Water Ind.)	8	
Dose vs Pathway:	Meat (Water Ind.)	9	
Dose vs Pathway:	Milk (Water Ind.)	10	
Dose vs Pathway:	Soil Ingestion	11	
Dose vs Pathway:	Water Ingestion	12	
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Correlation and Regression coefficients (if any)		21	
1RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 09:27 Page 2			
Probabilistic results summary : HB soil DCGL_Nb-94			
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD			
Probabilistic Input			
0Number of Sample Runs: 2000			
Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLTNH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	DM	TRIANGULAR	0 .15 .6
24	DROOT	UNIFORM	.3 4
25	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
26	WLAM	TRIANGULAR	5.1 18 84
27	RWET(2)	TRIANGULAR	.06 .67 .95
28	DCACTU1(1)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
30	BRTF(41,1)	TRUNCATED LOGNORMAL-N	-4.61 1.1 .001 .999
31	BRTF(41,2)	TRUNCATED LOGNORMAL-N	-13.82 .9 .001 .999
32	BRTF(41,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
33	BBIO(41,1)	LOGNORMAL-N	5.7 1.1
#####	#####	#####	#####
1RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 09:27 Page 20			
Probabilistic results summary : HB soil DCGL_Nb-94			
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94 DCGL\HB SOIL DCGL_NB94.RAD			
Peak of the mean dose (averaged over observations) at graphical times			
Repetition	Time of peak mean dose	Peak mean dose	
	Years	mrem/yr	
1	0.000E+00	3.505E+00	

RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 10:28 Page 1
Summary : HB soil DCGL_Ni-59
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL_NI59.RAD

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 AAAAAAAAAAAAAAAAAAAAAA

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File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCLG\HB SOIL DCLG_NI59.RAD	

Dose Conversion Factor (and Related) Parameter Summary
Dose Library: HB DCGIs Plus EGR 12 & EGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)	0.000E+00	0.000E+00	DCF1(1)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ni-59	2.700E-06	2.700E-06	DCF2(1)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ni-59	2.100E-07	2.100E-07	DCF3(1)
D-34	Food transfer factors:			
D-34	Ni-59, plant/soil concentration ratio, dimensionless	9.120E-02	5.000E-02	RTF(1,1)
D-34	Ni-59, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(1,2)
D-34	Ni-59, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.210E-02	2.000E-02	RTF(1,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ni-59, fish	1.000E+02	1.000E+02	BIOFAC(1,1)
D-5	Ni-59, crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(1,2)

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

*Base Case means Default.Lib w/o Associate Nuclide contributions.
1RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 10:28 Page 3
Summary : HB soil DCGL NI-59
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL NI59.RAD

Site-Specific Parameter Summary

Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
		Input		(If different from user input)	
R011	Area of contaminated zone (m**2)	3.000E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.670E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.950E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T (5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T (6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T (7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T (8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ni-59	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Ni-59	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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCZC
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ

```
R014 3 Saturated zone hydraulic gradient      2.000E-03 2.000E-02 3
R014 3 Saturated zone b parameter           7.100E+00 5.300E+00 3
R014 3 Water table drop rate (m/yr)         1.000E-03 1.000E-03 3
R014 3 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 3
R014 3 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND 3
R014 3 Well pumping rate (m**3/yr)           1.573E+03 2.500E+02 3
```

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Summary : HB soil DCGL_Ni-59
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL_NI59.RAD

```
Site-Specific Parameter Summary (continued)
0 3
Menu 3 Parameter 3 User 3 Input 3 Default 3 (If different from user input) 3 Parameter
AAAAA 3 3 3 3 3 3 3
R015 3 Number of unsaturated zone strata 3 1 3 1 3 --- 3 NS
R015 3 Unsat. zone 1, thickness (m) 3 4.040E+00 3 4.000E+00 3 --- 3 H(1)
R015 3 Unsat. zone 1, soil density (g/cm**3) 3 1.564E+00 3 1.500E+00 3 --- 3 DENSUZ(1)
R015 3 Unsat. zone 1, total porosity 3 4.100E-01 3 4.000E-01 3 --- 3 TPUZ(1)
R015 3 Unsat. zone 1, effective porosity 3 3.150E-01 3 2.000E-01 3 --- 3 EPUZ(1)
R015 3 Unsat. zone 1, field capacity 3 5.500E-02 3 2.000E-01 3 --- 3 FCUZ(1)
R015 3 Unsat. zone 1, soil-specific b parameter 3 5.600E+00 3 5.300E+00 3 --- 3 BUZ(1)
R015 3 Unsat. zone 1, hydraulic conductivity (m/yr) 3 3.900E+00 3 1.000E+01 3 --- 3 HCUZ(1)
R016 3 Distribution coefficients for Ni-59 3 3 3 3 3 3
R016 3 Contaminated zone (cm**3/g) 3 4.240E+02 3 1.000E+03 3 --- 3 DCNUCC( 1)
R016 3 Unsaturated zone 1 (cm**3/g) 3 4.240E+02 3 1.000E+03 3 --- 3 DCNUCU( 1,1)
R016 3 Saturated zone (cm**3/g) 3 4.240E+02 3 1.000E+03 3 --- 3 DCNUCS( 1)
R016 3 Leach rate (/yr) 3 0.000E+00 3 0.000E+00 3 2.149E-04 3 ALEACH( 1)
R016 3 Solubility constant 3 0.000E+00 3 0.000E+00 3 not used 3 SOLUBK( 1)
R017 3 Inhalation rate (m**3/yr) 3 8.400E+03 3 8.400E+03 3 --- 3 INHALR
R017 3 Mass loading for inhalation (g/m**3) 3 1.000E-04 3 1.000E-04 3 --- 3 MLINH
R017 3 Exposure duration 3 3.000E+01 3 3.000E+01 3 --- 3 ED
R017 3 Shielding factor, inhalation 3 5.500E-01 3 4.000E-01 3 --- 3 SHF3
R017 3 Shielding factor, external gamma 3 2.725E-01 3 7.000E-01 3 --- 3 SHF1
R017 3 Fraction of time spent indoors 3 6.571E-01 3 5.000E-01 3 --- 3 FIND
R017 3 Fraction of time spent outdoors (on site) 3 1.181E-01 3 2.500E-01 3 --- 3 FOTD
R017 3 Shape factor flag, external gamma 3 1.000E+00 3 1.000E+00 3 >0 shows circular AREA. 3 FS
R017 3 Radii of shape factor array (used if FS = -1): 3 3 3
R017 3 Outer annular radius (m), ring 1: 3 not used 3 5.000E+01 3 --- 3 RAD_SHAPE( 1)
R017 3 Outer annular radius (m), ring 2: 3 not used 3 7.071E+01 3 --- 3 RAD_SHAPE( 2)
R017 3 Outer annular radius (m), ring 3: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 3)
R017 3 Outer annular radius (m), ring 4: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 4)
R017 3 Outer annular radius (m), ring 5: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 5)
R017 3 Outer annular radius (m), ring 6: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 6)
R017 3 Outer annular radius (m), ring 7: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 7)
R017 3 Outer annular radius (m), ring 8: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 8)
R017 3 Outer annular radius (m), ring 9: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE( 9)
R017 3 Outer annular radius (m), ring 10: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE(10)
R017 3 Outer annular radius (m), ring 11: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE(11)
R017 3 Outer annular radius (m), ring 12: 3 not used 3 0.000E+00 3 --- 3 RAD_SHAPE(12)
```

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Summary : HB soil DCGL_Ni-59
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL_NI59.RAD

```
Site-Specific Parameter Summary (continued)
0 3
Menu 3 Parameter 3 User 3 Input 3 Default 3 (If different from user input) 3 Parameter
AAAAA 3 3 3 3 3 3 3
R017 3 Fractions of annular areas within AREA: 3 3 3
R017 3 Ring 1 3 not used 3 1.000E+00 3 --- 3 FRACA( 1)
R017 3 Ring 2 3 not used 3 2.732E-01 3 --- 3 FRACA( 2)
R017 3 Ring 3 3 not used 3 0.000E+00 3 --- 3 FRACA( 3)
R017 3 Ring 4 3 not used 3 0.000E+00 3 --- 3 FRACA( 4)
R017 3 Ring 5 3 not used 3 0.000E+00 3 --- 3 FRACA( 5)
R017 3 Ring 6 3 not used 3 0.000E+00 3 --- 3 FRACA( 6)
R017 3 Ring 7 3 not used 3 0.000E+00 3 --- 3 FRACA( 7)
R017 3 Ring 8 3 not used 3 0.000E+00 3 --- 3 FRACA( 8)
R017 3 Ring 9 3 not used 3 0.000E+00 3 --- 3 FRACA( 9)
R017 3 Ring 10 3 not used 3 0.000E+00 3 --- 3 FRACA(10)
R017 3 Ring 11 3 not used 3 0.000E+00 3 --- 3 FRACA(11)
R017 3 Ring 12 3 not used 3 0.000E+00 3 --- 3 FRACA(12)
R018 3 Fruits, vegetables and grain consumption (kg/yr) 3 1.120E+02 3 1.600E+02 3 --- 3 DIET(1)
R018 3 Leafy vegetable consumption (kg/yr) 3 2.140E+01 3 1.400E+01 3 --- 3 DIET(2)
R018 3 Milk consumption (L/yr) 3 2.330E+02 3 9.200E+01 3 --- 3 DIET(3)
R018 3 Meat and poultry consumption (kg/yr) 3 6.510E+01 3 6.300E+01 3 --- 3 DIET(4)
R018 3 Fish consumption (kg/yr) 3 2.060E+01 3 5.400E+00 3 --- 3 DIET(5)
R018 3 Other seafood consumption (kg/yr) 3 9.000E-01 3 9.000E-01 3 --- 3 DIET(6)
R018 3 Soil ingestion rate (g/yr) 3 4.826E+01 3 3.650E+01 3 --- 3 SOIL
R018 3 Drinking water intake (L/yr) 3 4.785E+02 3 5.100E+02 3 --- 3 DWI
R018 3 Contamination fraction of drinking water 3 1.000E+00 3 1.000E+00 3 --- 3 FDW
R018 3 Contamination fraction of household water 3 not used 3 1.000E+00 3 --- 3 FHHW
R018 3 Contamination fraction of livestock water 3 1.000E+00 3 1.000E+00 3 --- 3 FLW
R018 3 Contamination fraction of irrigation water 3 1.000E+00 3 1.000E+00 3 --- 3 FIRW
R018 3 Contamination fraction of aquatic food 3 1.000E+00 3 5.000E-01 3 --- 3 FR9
R018 3 Contamination fraction of plant food 3 1.000E+00 3 -1 3 --- 3 FPLANT
R018 3 Contamination fraction of meat 3 1.000E+00 3 -1 3 --- 3 FMEAT
R018 3 Contamination fraction of milk 3 1.000E+00 3 -1 3 --- 3 FMILK
R019 3 Livestock fodder intake for meat (kg/day) 3 2.710E+01 3 6.800E+01 3 --- 3 LFIS
R019 3 Livestock fodder intake for milk (kg/day) 3 6.320E+01 3 5.500E+01 3 --- 3 LFI6
R019 3 Livestock water intake for meat (L/day) 3 5.060E+01 3 5.000E+01 3 --- 3 LWIS
R019 3 Livestock water intake for milk (L/day) 3 6.000E+01 3 1.600E+02 3 --- 3 LWI6
R019 3 Livestock soil intake (kg/day) 3 5.000E-01 3 5.000E-01 3 --- 3 LSI
R019 3 Mass loading for foliar deposition (g/m**3) 3 4.000E-04 3 1.000E-04 3 --- 3 MLFD
R019 3 Depth of soil mixing layer (m) 3 2.300E-01 3 1.500E-01 3 --- 3 DM
R019 3 Depth of roots (m) 3 1.220E+00 3 9.000E-01 3 --- 3 DROOT
R019 3 Drinking water fraction from ground water 3 1.000E+00 3 1.000E+00 3 --- 3 FGWDW
R019 3 Household water fraction from ground water 3 not used 3 1.000E+00 3 --- 3 FGWHH
R019 3 Livestock water fraction from ground water 3 1.000E+00 3 1.000E+00 3 --- 3 FGWLW
R019 3 Irrigation fraction from ground water 3 1.000E+00 3 1.000E+00 3 --- 3 FGWIR
R19B 3 Wet weight crop yield for Non-Leafy (kg/m**2) 3 1.750E+00 3 7.000E-01 3 --- 3 YV(1)
R19B 3 Wet weight crop yield for Leafy (kg/m**2) 3 2.889E+00 3 1.500E+00 3 --- 3 YV(2)
R19B 3 Wet weight crop yield for Fodder (kg/m**2) 3 1.887E+00 3 1.100E+00 3 --- 3 YV(3)
R19B 3 Growing Season for Non-Leafy (years) 3 2.460E-01 3 1.700E-01 3 --- 3 TE(1)
R19B 3 Growing Season for Leafy (years) 3 1.230E-01 3 2.500E-01 3 --- 3 TE(2)
R19B 3 Growing Season for Fodder (years) 3 8.200E-02 3 8.000E-02 3 --- 3 TE(3)
```


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Summary : HB soil DCGL-NI-59
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRI(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRI(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRI(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	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	---	PH20CV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH20FL
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	---	HMX
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

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Summary : HB soil DCGL-NI-59
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Summary of Pathway Selections

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

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Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters	NI-59 1.000E+00
Thickness: 2.67 meters	
Cover Depth: 0.00 meters	

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Probabilistic results summary : HB soil DCGL-NI-59
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL_NI59.RAD

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Probabilistic Input											
Number of Sample Runs: 2000											
Number	Name	Distribution	Parameters								
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
1	DENSCZ	BOUNDED NORMAL	1.5635	.2385	.827	2.3					
2	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881					
3	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	.3190					
4	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3					
5	EVAPTR	UNIFORM	.5	.75							
6	RI	UNIFORM	.36	.76							
7	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084					
8	TPSZ	BOUNDED NORMAL	.43	.0699	.214	.646					
9	EPSZ	BOUNDED NORMAL	.342	.0705	.124	.56					
10	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	.195					
11	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5					
12	DWIBWT	TRIANGULAR	6	10	30						
13	UW	UNIFORM	1173	1973							
14	H(1)	UNIFORM	0	8.08							
15	DENSUZ(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3					
16	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881					
17	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594					
18	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	.3190					
19	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3					
20	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365		
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1		
21	SHF3	UNIFORM	.15	.95							
22	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1					
23	DM	TRIANGULAR	0	.15	.6						
24	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999					
25	WLAM	TRIANGULAR	5.1	18	84						
26	RWET(2)	TRIANGULAR	.06	.67	.95						
27	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
28	DCACTUI(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
29	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.05	1.46	.001	.999					
30	BRTF(28,2)	TRUNCATED LOGNORMAL-N	-5.3	.9	.001	.999					
31	BBIO(28,1)	LOGNORMAL-N	4.6	1.1							
#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
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Probabilistic results summary: HB soil DCGL_Ni-59											
File = C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59 DCGL\HB SOIL DCGL_NI59.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		1.269E-02								

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R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 ---
R014 Saturated zone b parameter 7.100E+00 5.300E+00 ---
R014 Water table drop rate (m/yr) 1.000E-03 1.000E-03 ---
R014 Well pump intake depth (m below water table) 1.000E+01 1.000E+01 ---
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND ---
R014 Well pumping rate (m³/yr) 1.573E+03 2.500E+02 ---

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Summary : HB soil DCGL_Ni-63
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm ³)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Ni-63				
R016	Contaminated zone (cm ³ /g)	4.240E+02	1.000E+03	---	DCNUCC(1)
R016	Uncontaminated zone 1 (cm ³ /g)	4.240E+02	1.000E+03	---	DCNUCU(1,1)
R016	Saturated zone (cm ³ /g)	4.240E+02	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.149E-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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radius 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)

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Summary : HB soil DCGL_Ni-63
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWT
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LFT5
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m ³)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGMHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGMLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m ²)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m ²)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m ²)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	1	---	---	KYMAX

Probabilistic Input		2
Total Dose		3
Total Risk		4

```

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Dose vs Pathway: Radon (Water Ind.) ..... 7
Dose vs Pathway: Plant (Water Ind.) ..... 8
Dose vs Pathway: Meat (Water Ind.) ..... 9
Dose vs Pathway: Milk (Water Ind.) ..... 10
Dose vs Pathway: Soil Ingestion ..... 11
Dose vs Pathway: Water Ingestion ..... 12
Dose vs Pathway: Fish Ingestion ..... 13
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Dose vs Pathway: Milk (Water Dep.) ..... 17
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      Probabilistic Input
Number of Sample Runs: 2000

Number  Name          Distribution          Parameters
AAAAAA  AAAAAAAAAAAAAAAAAAAAA  AAAAAAAAAAAAAAAAAAAAA  AAAAAAAAAAAAAAAAAAAAA
1  DENSZ          BOUNDED NORMAL          1.5635 .2385 .827 2.3
2  TPCZ          BOUNDED NORMAL          .41 .09 .1319 .6881
3  HCCZ          BOUNDED LOGNORMAL-N     1.36 2.17 .00478 3190
4  BCZ           BOUNDED LOGNORMAL-N     1.73 .323 2.08 15.3
5  EVAPTR        UNIFORM                  .5 .75
6  RI            UNIFORM                  .36 .76
7  DENSAQ        BOUNDED NORMAL          1.5105 .1855 .937 2.084
8  TPSZ          BOUNDED NORMAL          .43 .0699 .214 .646
9  EPSZ          BOUNDED NORMAL          .342 .0705 .124 .56
10 HCSZ          BOUNDED LOGNORMAL-N     .362 1.59 .0106 195
11 BSZ           BOUNDED LOGNORMAL-N     1.96 .265 3.02 15.5
12 DWIBWT        TRIANGULAR              6 10 30
13 UW            UNIFORM                  1173 1973
14 H(1)          UNIFORM                  0 8.08
15 DENSUZ(1)     BOUNDED NORMAL          1.5635 .2385 .827 2.3
16 TPUZ(1)       BOUNDED NORMAL          .41 .09 .1319 .6881
17 EPUZ(1)       BOUNDED NORMAL          .315 .0905 .0349 .594
18 HCUZ(1)       BOUNDED LOGNORMAL-N     1.36 2.17 .00478 3190
19 BUZ(1)        BOUNDED LOGNORMAL-N     1.73 .323 2.08 15.3
20 MLINH         CONTINUOUS LINEAR       8 0 .000008 .0151 .000016 .1365
.00003 .8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1
21 SHF3          UNIFORM                  .15 .95
22 SHF1          BOUNDED LOGNORMAL-N     -1.3 .59 .044 1
23 DM            TRIANGULAR              0 .15 .6
24 YV(1)         TRUNCATED LOGNORMAL-N   .56 .48 .001 .999
25 WLAM          TRIANGULAR              5.1 18 84
26 RWET(2)       TRIANGULAR              .06 .67 .95
27 DCACTC(1)     TRUNCATED LOGNORMAL     6.05 1.46 .001 .999
28 DCACTU(1)     TRUNCATED LOGNORMAL-N   6.05 1.46 .001 .999
29 DCACTS(1)     TRUNCATED LOGNORMAL-N   6.05 1.46 .001 .999
30 BRTF(28,2)    TRUNCATED LOGNORMAL-N   -5.3 .9 .001 .999
31 BBIO(28,1)    LOGNORMAL-N             4.6 1.1
iiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii iiiiiii

IRESRAD, Version 6.5      T« Limit = 30 days      11/28/2011 10:32 Page 20
Probabilistic results summary : HB soil DCGL_Ni-63
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI63 DCGL\HB SOIL DCGL_NI63.RAD
Peak of the mean dose (averaged over observations) at graphical times
Repetition    Time of peak mean dose    Peak mean dose
              Years              mrem/yr
1              0.000E+00              3.454E-02

```

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Summary : HB soil DCGL_Np237
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NP237 DCGL\HB SOIL DCGL_NP237.RAD
```

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Part I: Mixture Sums and Single Radionuclide Guidelines

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  Time = 3.000E+00 ..... 10
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Dose Conversion Factor (and Related) Parameter Summary
Dose Library: HB DCGLs Plus FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-225 (Source: FGR 12)	6.371E-02	6.371E-02	DCF1(1)
A-1	At-217 (Source: FGR 12)	1.773E-03	1.773E-03	DCF1(2)
A-1	Bi-213 (Source: FGR 12)	7.660E-01	7.660E-01	DCF1(3)
A-1	Fr-221 (Source: FGR 12)	1.536E-01	1.536E-01	DCF1(4)
A-1	Np-237 (Source: FGR 12)	7.790E-02	7.790E-02	DCF1(5)
A-1	Pa-233 (Source: FGR 12)	1.020E+00	1.020E+00	DCF1(6)
A-1	Pb-209 (Source: FGR 12)	7.734E-04	7.734E-04	DCF1(7)
A-1	Po-213 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(8)
A-1	Ra-225 (Source: FGR 12)	1.102E-02	1.102E-02	DCF1(9)
A-1	Th-229 (Source: FGR 12)	3.213E-01	3.213E-01	DCF1(10)
A-1	Tl-209 (Source: FGR 12)	1.293E+01	1.293E+01	DCF1(11)
A-1	U-233 (Source: FGR 12)	1.397E-03	1.397E-03	DCF1(12)
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(1)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(2)
B-1	U-233	1.350E-01	1.350E-01	DCF2(3)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(1)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(2)
D-1	U-233	2.890E-04	2.890E-04	DCF3(3)
D-34	Food transfer factors:			
D-34	Np-237+D, plant/soil concentration ratio, dimensionless	3.670E-02	2.000E-02	RTF(1,1)
D-34	Np-237+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(1,2)
D-34	Np-237+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(1,3)
D-34	Th-229+D, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Th-229+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(2,2)
D-34	Th-229+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34	U-233, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(3,1)
D-34	U-233, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(3,2)
D-34	U-233, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(3,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Np-237+D, fish	3.000E+01	3.000E+01	BIOFAC(1,1)
D-5	Np-237+D, crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(1,2)
D-5	Th-229+D, fish	1.000E+02	1.000E+02	BIOFAC(2,1)
D-5	Th-229+D, crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(2,2)
D-5	U-233, fish	1.000E+01	1.000E+01	BIOFAC(3,1)
D-5	U-233, crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(3,2)

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

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Site-Specific Parameter Summary

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
AA					

R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Np-237	1.000E+00	0.000E+00	---	S1(1)
R012	Concentration in groundwater (pCi/L): Np-237	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)	1.564E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	2.200E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.100E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	9.500E-02	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.600E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.040E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	6.250E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	9.100E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	5.600E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	---	---	IDITCH
R013	Runoff coefficient	5.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	2.520E+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)	1.510E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.300E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.420E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	8.800E-02	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	2.880E+01	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	7.100E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	1.573E+03	2.500E+02	---	UW

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Summary : HB soil DCGL_Np237
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	4.040E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.564E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.100E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.150E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	9.500E-02	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.600E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	3.900E+00	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUC(1,1)
R016	Saturated zone (cm**3/g)	1.700E+01	-1.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.294E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	5.884E+03	6.000E+04	---	DCNUC(2,1)
R016	Saturated zone (cm**3/g)	5.884E+03	6.000E+04	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.550E-05	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	1.260E+02	5.000E+01	---	DCNUC(3,1)
R016	Saturated zone (cm**3/g)	1.260E+02	5.000E+01	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.224E-04	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
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	5.500E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	2.725E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Summary : HB soil DCGL_Np237
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NP237 DCGL\HB SOIL DCGL_NP237.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)

R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.120E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.140E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	2.330E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	2.060E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.826E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	4.785E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	1.000E+00	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E+00	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E+00	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	2.710E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	6.320E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.060E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	6.000E+01	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
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Summary : HB soil DCGL_Np237					
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
R019	Mass loading for foliar deposition (g/m**3)	4.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	2.300E-01	1.500E-01	---	DM
R019	Depth of roots (m)	1.220E+00	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	1.750E+00	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	2.889E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.887E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	2.460E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	1.230E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.200E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	3.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	3.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	5.800E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	3.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	3.300E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CATR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	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
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Summary : HB soil DCGL_Np237					
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
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	---	HMX
R021	Average building air exchange rate (1/hr)	not used	3.000E-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

TITLE Maximum number of integration points for risk 1 --- KYMAX
 ~~~~~

Summary of Pathway Selections

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

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 Summary : HB soil DCGL\_Np237  
 File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\NP237 DCGL\HB SOIL DCGL\_NP237.RAD

|                              |                                    |
|------------------------------|------------------------------------|
| Contaminated Zone Dimensions | Initial Soil Concentrations, pCi/g |
| Area: 30000.00 square meters | Np-237 1.00E+00                    |
| Thickness: 2.67 meters       |                                    |
| Cover Depth: 0.00 meters     |                                    |

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 Probabilistic results summary : HB soil DCGL\_Np237  
 File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\NP237 DCGL\HB SOIL DCGL\_NP237.RAD

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 Part VI: Uncertainty Analysis
 ~~~~~

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 Probabilistic results summary : HB soil DCGL\_Np237  
 File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\NP237 DCGL\HB SOIL DCGL\_NP237.RAD

Probabilistic Input  
 Number of Sample Runs: 2000

| Number | Name               | Distribution          | Parameters                      |
|--------|--------------------|-----------------------|---------------------------------|
| 1      | DENSCZ             | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3           |
| 2      | TPCZ               | BOUNDED NORMAL        | .41 .09 .1319 .6881             |
| 3      | HCCZ               | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190           |
| 4      | BCZ                | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3             |
| 5      | EVAPTR             | UNIFORM               | .5 .75                          |
| 6      | RI                 | UNIFORM               | .36 .76                         |
| 7      | DENSAQ             | BOUNDED NORMAL        | 1.5105 .1855 .937 2.084         |
| 8      | TPSZ               | BOUNDED NORMAL        | .43 .0699 .214 .646             |
| 9      | EPSZ               | BOUNDED NORMAL        | .342 .0705 .124 .56             |
| 10     | HCSZ               | BOUNDED LOGNORMAL-N   | .362 1.59 .0106 195             |
| 11     | BSZ                | BOUNDED LOGNORMAL-N   | 1.96 .265 3.02 15.5             |
| 12     | DWIBWT             | TRIANGULAR            | 6 10 30                         |
| 13     | UW                 | UNIFORM               | 1173 1973                       |
| 14     | H(1)               | UNIFORM               | 0 8.08                          |
| 15     | DENSUZ(1)          | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3           |
| 16     | TPUZ(1)            | BOUNDED NORMAL        | .41 .09 .1319 .6881             |
| 17     | EPUZ(1)            | BOUNDED NORMAL        | .315 .0905 .0349 .594           |
| 18     | HCUZ(1)            | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190           |
| 19     | BUZ(1)             | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3             |
| 20     | MLINH              | CONTINUOUS LINEAR     | 8 0 .000008 .0151 .000016 .1365 |
| .00003 | .8119 .00004 .9495 | .00006 .9937          | .000076 .9983 .0001 1           |
| 21     | SHF3               | UNIFORM               | .15 .95                         |
| 22     | SHF1               | BOUNDED LOGNORMAL-N   | -1.3 .59 .044 1                 |
| 23     | DM                 | TRIANGULAR            | 0 .15 .6                        |
| 24     | YV(1)              | TRUNCATED LOGNORMAL-N | .56 .48 .001 .999               |
| 25     | WLAM               | TRIANGULAR            | 5.1 18 84                       |
| 26     | RWET(2)            | TRIANGULAR            | .06 .67 .95                     |
| 27     | DCACTC(1)          | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999             |
| 28     | DCACTU1(1)         | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999             |
| 29     | DCACTS(1)          | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999             |
| 30     | DCACTC(2)          | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999             |
| 31     | DCACTU1(2)         | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999             |
| 32     | DCACTS(2)          | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999             |
| 33     | DCACTC(3)          | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999             |
| 34     | DCACTU1(3)         | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999             |
| 35     | DCACTS(3)          | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999             |
| 36     | BRTF(93,2)         | TRUNCATED LOGNORMAL-N | -6.91 .7 .001 .999              |
| 37     | BRTF(93,3)         | TRUNCATED LOGNORMAL-N | -11.51 .7 .001 .999             |
| 38     | BBIO(93,1)         | LOGNORMAL-N           | 3.4 1.1 .001 .999               |
| 39     | BRTF(90,1)         | TRUNCATED LOGNORMAL-N | -6.91 .9 .001 .999              |
| 40     | BRTF(90,2)         | TRUNCATED LOGNORMAL-N | -9.21 1 .001 .999               |

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Probabilistic results summary : HB soil DCGL_Np237
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\Np237 DCGL\HB SOIL DCGL_NP237.RAD
      Peak of the mean dose (averaged over observations) at graphical times
Repetition      Time of peak mean dose      Peak mean dose
                Years                        mrem/yr
1              0.000E+00                    2.248E+01

```

```
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Summary : HB soil DCGL_Pu-238
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL_PU238.RAD
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Summary : HB soil DCGL\_Pu-238  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL\_PU238.RA

| Dose Conversion Factor (and Related) Parameter Summary |                                                          |                |            |                |
|--------------------------------------------------------|----------------------------------------------------------|----------------|------------|----------------|
| Dose Library: HB DCGIs Plus FGR 12 & FGR 11            |                                                          |                |            |                |
| Menu                                                   | Parameter                                                | Current Value# | Base Case* | Parameter Name |
| A-1                                                    | DCF's for external ground radiation, (mrem/yr)/(pCi/g)   |                |            |                |
| A-1                                                    | At-218 (Source: FGR 12)                                  | 5.847E-03      | 5.847E-03  | DCF1( 1)       |
| A-1                                                    | Bi-210 (Source: FGR 12)                                  | 3.606E-03      | 3.606E-03  | DCF1( 2)       |
| A-1                                                    | Bi-214 (Source: FGR 12)                                  | 9.808E+00      | 9.808E+00  | DCF1( 3)       |
| A-1                                                    | Pb-210 (Source: FGR 12)                                  | 2.447E-03      | 2.447E-03  | DCF1( 4)       |
| A-1                                                    | Pb-214 (Source: FGR 12)                                  | 1.341E+00      | 1.341E+00  | DCF1( 5)       |
| A-1                                                    | Po-210 (Source: FGR 12)                                  | 5.231E-05      | 5.231E-05  | DCF1( 6)       |
| A-1                                                    | Po-214 (Source: FGR 12)                                  | 5.138E-04      | 5.138E-04  | DCF1( 7)       |
| A-1                                                    | Po-218 (Source: FGR 12)                                  | 5.642E-05      | 5.642E-05  | DCF1( 8)       |
| A-1                                                    | Pu-238 (Source: FGR 12)                                  | 1.513E-04      | 1.513E-04  | DCF1( 9)       |
| A-1                                                    | Ra-226 (Source: FGR 12)                                  | 3.176E-02      | 3.176E-02  | DCF1( 10)      |
| A-1                                                    | Rn-222 (Source: FGR 12)                                  | 2.354E-03      | 2.354E-03  | DCF1( 11)      |
| A-1                                                    | Th-230 (Source: FGR 12)                                  | 1.209E-03      | 1.209E-03  | DCF1( 12)      |
| A-1                                                    | Tl-210 (Source: no data)                                 | 0.000E+00      | -2.000E+00 | DCF1( 13)      |
| A-1                                                    | U-234 (Source: FGR 12)                                   | 4.017E-04      | 4.017E-04  | DCF1( 14)      |
| B-1                                                    | Dose conversion factors for inhalation, mrem/pCi:        |                |            |                |
| B-1                                                    | Pb-210+D                                                 | 1.380E-02      | 1.360E-02  | DCF2( 1)       |
| B-1                                                    | Po-210                                                   | 9.400E-03      | 9.400E-03  | DCF2( 2)       |
| B-1                                                    | Pu-238                                                   | 3.920E-01      | 3.920E-01  | DCF2( 3)       |
| B-1                                                    | Ra-226+D                                                 | 8.594E-03      | 8.580E-03  | DCF2( 5)       |
| B-1                                                    | Th-230                                                   | 3.260E-01      | 3.260E-01  | DCF2( 6)       |
| B-1                                                    | U-234                                                    | 1.320E-01      | 1.320E-01  | DCF2( 7)       |
| D-1                                                    | Dose conversion factors for ingestion, mrem/pCi:         |                |            |                |
| D-1                                                    | Pb-210+D                                                 | 5.376E-03      | 5.370E-03  | DCF3( 1)       |
| D-1                                                    | Po-210                                                   | 1.900E-03      | 1.900E-03  | DCF3( 2)       |
| D-1                                                    | Pu-238                                                   | 3.200E-03      | 3.200E-03  | DCF3( 3)       |
| D-1                                                    | Ra-226+D                                                 | 1.321E-03      | 1.320E-03  | DCF3( 5)       |
| D-1                                                    | Th-230                                                   | 5.480E-04      | 5.480E-04  | DCF3( 6)       |
| D-1                                                    | U-234                                                    | 2.830E-04      | 2.830E-04  | DCF3( 7)       |
| D-34                                                   | Food transfer factors:                                   |                |            |                |
| D-34                                                   | Pb-210+D , plant/soil concentration ratio, dimensionless | 1.000E-02      | 1.000E-02  | RTF( 1,1)      |
| D-34                                                   | Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 8.000E-04      | 8.000E-04  | RTF( 1,2)      |
| D-34                                                   | Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)  | 3.000E-04      | 3.000E-04  | RTF( 1,3)      |
| D-34                                                   | Po-210 , plant/soil concentration ratio, dimensionless   | 1.000E-03      | 1.000E-03  | RTF( 2,1)      |
| D-34                                                   | Po-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)   | 5.000E-03      | 5.000E-03  | RTF( 2,2)      |
| D-34                                                   | Po-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)    | 3.400E-04      | 3.400E-04  | RTF( 2,3)      |
| D-34                                                   | Pu-238 , plant/soil concentration ratio, dimensionless   | 1.830E-03      | 1.000E-03  | RTF( 3,1)      |
| D-34                                                   | Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)   | 1.000E-04      | 1.000E-04  | RTF( 3,2)      |
| D-34                                                   | Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)    | 1.000E-06      | 1.000E-06  | RTF( 3,3)      |
| D-34                                                   | Ra-226+D , plant/soil concentration ratio, dimensionless | 4.000E-02      | 4.000E-02  | RTF( 5,1)      |
| D-34                                                   | Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-03      | 1.000E-03  | RTF( 5,2)      |
| D-34                                                   | Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)  | 1.000E-03      | 1.000E-03  | RTF( 5,3)      |

```

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Summary : HB soil DCLG_PU-238
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238 DCLG\HB SOIL DCLG_PU238.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: HB DCLGs Plus FGR 12 & FGR 11

0
Menu      ,      Parameter      ,      Current      ,      Base      ,      Parameter
          ,      Value#      ,      Case#      ,      Name
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
D-34      , plant/soil concentration ratio, dimensionless      , 1.000E-04      , 1.000E-03      , RTF( 6.1)
D-34      , Th-230 , milk/livestock-intake ratio, (pCi/kg)/(pCi/d)      , 1.000E-04      , 1.000E-04      , RTF( 6.2)
D-34      , Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)      , 5.000E-06      , 5.000E-06      , RTF( 6.3)
D-34      , U-234 , plant/soil concentration ratio, dimensionless      , 2.500E-03      , 2.500E-03      , RTF( 7.1)
D-34      , U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)      , 3.400E-04      , 3.400E-04      , RTF( 7.2)
D-34      , U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)      , 6.000E-04      , 6.000E-04      , RTF( 7.3)

D-5      , Bioaccumulation factors, fresh water, L/kg:
D-5      , Pb-210+D , fish      , 3.000E+02      , 3.000E+02      , BIOFAC( 1,1)
D-5      , Pb-210+D , crustacea and mollusks      , 1.000E+02      , 1.000E+02      , BIOFAC( 1,2)
D-5      , Po-210 , fish      , 1.000E+02      , 1.000E+02      , BIOFAC( 2,1)

```

D-5 Po-210 crustacea and mollusks 2.000E+04 2.000E+04 BIOFAC( 2,2)  
D-5 Pu-238 fish 3.000E+01 3.000E+01 BIOFAC( 3,1)  
D-5 Pu-238 crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC( 3,2)  
D-5 Ra-226+D fish 5.000E+01 5.000E+01 BIOFAC( 5,1)  
D-5 Ra-226+D crustacea and mollusks 2.500E+02 2.500E+02 BIOFAC( 5,2)  
D-5 Th-230 fish 1.000E+02 1.000E+02 BIOFAC( 6,1)  
D-5 Th-230 crustacea and mollusks 5.000E+02 5.000E+02 BIOFAC( 6,2)  
D-5 U-234 fish 1.000E+01 1.000E+01 BIOFAC( 7,1)  
D-5 U-234 crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC( 7,2)  
\*\*\*\*\*  
#For DCFI(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.  
\*Base Case means Default.Lib w/o Associate Nuclide contributions.  
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Summary : HB soil DCGL\_Pu-238  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL\_PU238.RAD

| Site-Specific Parameter Summary |                                                 |            |           |                |                |           |
|---------------------------------|-------------------------------------------------|------------|-----------|----------------|----------------|-----------|
| Menu                            | Parameter                                       | User Input | Default   | Used by RESRAD | Parameter Name |           |
| AAAAA                           | Area of contaminated zone (m**2)                | 3.000E+04  | 1.000E+04 | ---            | ---            | AREA      |
| R011                            | Thickness of contaminated zone (m)              | 2.670E+00  | 2.000E+00 | ---            | ---            | THICK0    |
| R011                            | Fraction of contamination that is submerged     | 0.000E+00  | 0.000E+00 | ---            | ---            | SUBMFRACT |
| R011                            | Length parallel to aquifer flow (m)             | 1.950E+02  | 1.000E+02 | ---            | ---            | LCZPAQ    |
| R011                            | Basic radiation dose limit (mrem/yr)            | 2.500E+01  | 3.000E+01 | ---            | ---            | BRDL      |
| R011                            | Time since placement of material (yr)           | 0.000E+00  | 0.000E+00 | ---            | ---            | TI        |
| R011                            | Times for calculations (yr)                     | 1.000E+00  | 1.000E+00 | ---            | ---            | T( 2)     |
| R011                            | Times for calculations (yr)                     | 3.000E+00  | 3.000E+00 | ---            | ---            | T( 3)     |
| R011                            | Times for calculations (yr)                     | 1.000E+01  | 1.000E+01 | ---            | ---            | T( 4)     |
| R011                            | Times for calculations (yr)                     | 3.000E+01  | 3.000E+01 | ---            | ---            | T( 5)     |
| R011                            | Times for calculations (yr)                     | 1.000E+02  | 1.000E+02 | ---            | ---            | T( 6)     |
| R011                            | Times for calculations (yr)                     | 3.000E+02  | 3.000E+02 | ---            | ---            | T( 7)     |
| R011                            | Times for calculations (yr)                     | 1.000E+03  | 1.000E+03 | ---            | ---            | T( 8)     |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---            | ---            | T( 9)     |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---            | ---            | T(10)     |
| R012                            | Initial principal radionuclide (pCi/g): Pu-238  | 1.000E+00  | 0.000E+00 | ---            | ---            | S1(3)     |
| R012                            | Concentration in groundwater (pCi/L): Pu-238    | not used   | 0.000E+00 | ---            | ---            | W1( 3)    |
| 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)          | 1.564E+00  | 1.500E+00 | ---            | ---            | DENSCZ    |
| R013                            | Contaminated zone erosion rate (m/yr)           | 2.200E-03  | 1.000E-03 | ---            | ---            | VCZ       |
| R013                            | Contaminated zone total porosity                | 4.100E-01  | 4.000E-01 | ---            | ---            | TPCZ      |
| R013                            | Contaminated zone field capacity                | 9.500E-02  | 2.000E-01 | ---            | ---            | FCZC      |
| R013                            | Contaminated zone hydraulic conductivity (m/yr) | 3.900E+00  | 1.000E+01 | ---            | ---            | HCCZ      |
| R013                            | Contaminated zone b parameter                   | 5.600E+00  | 5.300E+00 | ---            | ---            | BCZ       |
| R013                            | Average annual wind speed (m/sec)               | 3.040E+00  | 2.000E+00 | ---            | ---            | WIND      |
| R013                            | Humidity in air (g/m**3)                        | not used   | 8.000E+00 | ---            | ---            | HUMID     |
| R013                            | Evapotranspiration coefficient                  | 6.250E-01  | 5.000E-01 | ---            | ---            | EVAPTR    |
| R013                            | Precipitation (m/yr)                            | 9.100E-01  | 1.000E+00 | ---            | ---            | PRECIP    |
| R013                            | Irrigation (m/yr)                               | 5.600E-01  | 2.000E-01 | ---            | ---            | RI        |
| R013                            | Irrigation mode                                 | overhead   | 2.000E-01 | ---            | ---            | IDITCH    |
| R013                            | Runoff coefficient                              | 5.000E-01  | 2.000E-01 | ---            | ---            | RUNOFF    |
| R013                            | Watershed area for nearby stream or pond (m**2) | 2.520E+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)             | 1.510E+00  | 1.500E+00 | ---            | ---            | DENSAQ    |
| R014                            | Saturated zone total porosity                   | 4.300E-01  | 4.000E-01 | ---            | ---            | TPSZ      |
| R014                            | Saturated zone effective porosity               | 3.420E-01  | 2.000E-01 | ---            | ---            | EPSZ      |
| R014                            | Saturated zone field capacity                   | 8.800E-02  | 2.000E-01 | ---            | ---            | FCSZ      |
| R014                            | Saturated zone hydraulic conductivity (m/yr)    | 2.880E+01  | 1.000E+02 | ---            | ---            | HCSZ      |
| R014                            | Saturated zone hydraulic gradient               | 2.000E-03  | 2.000E-02 | ---            | ---            | HGWT      |
| R014                            | Saturated zone b parameter                      | 7.100E+00  | 5.300E+00 | ---            | ---            | BSZ       |
| R014                            | Water table drop rate (m/yr)                    | 1.000E-03  | 1.000E-03 | ---            | ---            | VWT       |
| R014                            | Well pump intake depth (m below water table)    | 1.000E+01  | 1.000E+01 | ---            | ---            | DWIBWT    |
| R014                            | Model: Nondispersion (ND) or Mass-Balance (MB)  | ND         | ND        | ---            | ---            | MODEL     |
| R014                            | Well pumping rate (m**3/yr)                     | 1.573E+03  | 2.500E+02 | ---            | ---            | UW        |

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Summary : HB soil DCGL\_Pu-238  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL\_PU238.RAD

| Site-Specific Parameter Summary (continued) |                                               |            |           |                |                |              |
|---------------------------------------------|-----------------------------------------------|------------|-----------|----------------|----------------|--------------|
| Menu                                        | Parameter                                     | User Input | Default   | Used by RESRAD | Parameter Name |              |
| AAAAA                                       | Number of unsaturated zone strata             | 1          | 1         | ---            | ---            | NS           |
| R015                                        | Unsat. zone 1, thickness (m)                  | 4.040E+00  | 4.000E+00 | ---            | ---            | H(1)         |
| R015                                        | Unsat. zone 1, soil density (g/cm**3)         | 1.564E+00  | 1.500E+00 | ---            | ---            | DENSUZ(1)    |
| R015                                        | Unsat. zone 1, total porosity                 | 4.100E-01  | 4.000E-01 | ---            | ---            | TPUZ(1)      |
| R015                                        | Unsat. zone 1, effective porosity             | 3.150E-01  | 2.000E-01 | ---            | ---            | EPUZ(1)      |
| R015                                        | Unsat. zone 1, field capacity                 | 9.500E-02  | 2.000E-01 | ---            | ---            | FCUZ(1)      |
| R015                                        | Unsat. zone 1, b parameter                    | 5.600E+00  | 5.300E+00 | ---            | ---            | BUZ(1)       |
| R015                                        | Unsat. zone 1, hydraulic conductivity (m/yr)  | 3.900E+00  | 1.000E+01 | ---            | ---            | HCUZ(1)      |
| R016                                        | Distribution coefficients for Pu-238          |            |           |                |                |              |
| R016                                        | Contaminated zone (cm**3/g)                   | 9.530E+02  | 2.000E+03 | ---            | ---            | DCNUCC( 3)   |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 9.530E+02  | 2.000E+03 | ---            | ---            | DCNUCU( 3,1) |
| R016                                        | Saturated zone (cm**3/g)                      | 9.530E+02  | 2.000E+03 | ---            | ---            | DCNUCS( 3)   |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 9.565E-05      | ---            | ALEACH( 3)   |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used       | ---            | SOLUBK( 3)   |
| R016                                        | Distribution coefficients for daughter Pb-210 |            |           |                |                |              |
| R016                                        | Contaminated zone (cm**3/g)                   | 2.392E+03  | 1.000E+02 | ---            | ---            | DCNUCC( 1)   |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 2.392E+03  | 1.000E+02 | ---            | ---            | DCNUCU( 1,1) |
| R016                                        | Saturated zone (cm**3/g)                      | 2.392E+03  | 1.000E+02 | ---            | ---            | DCNUCS( 1)   |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 3.811E-05      | ---            | ALEACH( 1)   |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used       | ---            | SOLUBK( 1)   |
| R016                                        | Distribution coefficients for daughter Po-210 |            |           |                |                |              |
| R016                                        | Contaminated zone (cm**3/g)                   | 1.810E+02  | 1.000E+01 | ---            | ---            | DCNUCC( 2)   |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 1.810E+02  | 1.000E+01 | ---            | ---            | DCNUCU( 2,1) |
| R016                                        | Saturated zone (cm**3/g)                      | 1.810E+02  | 1.000E+01 | ---            | ---            | DCNUCS( 2)   |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 5.031E-04      | ---            | ALEACH( 2)   |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used       | ---            | SOLUBK( 2)   |

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Site-Specific Parameter Summary (continued)

0
Menu      Parameter      User      Default      Used by RESRAD      Parameter
-----
R018 Contamination fraction of meat      1.000E+00      -1      ---      FMEAT
R018 Contamination fraction of milk      1.000E+00      -1      ---      FMILK

R019 Livestock fodder intake for meat (kg/day)      2.710E+01      6.800E+01      ---      LF15
R019 Livestock fodder intake for milk (kg/day)      6.320E+01      5.500E+01      ---      LF16
R019 Livestock water intake for meat (L/day)      5.060E+01      5.000E+01      ---      LW15
R019 Livestock water intake for milk (L/day)      6.000E+01      1.600E+02      ---      LW16
R019 Livestock soil intake (kg/day)      5.000E-01      5.000E-01      ---      LSI
R019 Mass loading for foliar deposition (g/m**3)      4.000E-04      1.000E-04      ---      MLFD
R019 Depth of soil mixing layer (m)      2.300E-01      1.500E-01      ---      DM
R019 Depth of roots (m)      1.220E+00      9.000E-01      ---      DROOT
R019 Drinking water fraction from ground water      1.000E+00      1.000E+00      ---      FGWDW
R019 Household water fraction from ground water      not used      1.000E+00      ---      FGWHH
R019 Livestock water fraction from ground water      1.000E+00      1.000E+00      ---      FGWLW
R019 Irrigation fraction from ground water      1.000E+00      1.000E+00      ---      FGWIR

R19B Wet weight crop yield for Non-Leafy (kg/m**2)      1.750E+00      7.000E-01      ---      YV(1)
R19B Wet weight crop yield for Leafy (kg/m**2)      2.889E+00      1.500E+00      ---      YV(2)
R19B Wet weight crop yield for Fodder (kg/m**2)      1.887E+00      1.100E+00      ---      YV(3)
R19B Growing Season for Non-Leafy (years)      2.460E-01      1.700E-01      ---      TE(1)
R19B Growing Season for Leafy (years)      1.230E-01      2.500E-01      ---      TE(2)
R19B Growing Season for Fodder (years)      8.200E-02      8.000E-02      ---      TE(3)
R19B Translocation Factor for Non-Leafy      1.000E-01      1.000E-01      ---      TIV(1)
R19B Translocation Factor for Leafy      1.000E+00      1.000E+00      ---      TIV(2)

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R19B  Translocation Factor for Fodder          1.000E+00  1.000E+00  ---  TIV(3)
R19B  Dry Foliar Interception Fraction for Non-Leafy 3.500E-01  2.500E-01  ---  RDRY(1)
R19B  Dry Foliar Interception Fraction for Leafy    3.500E-01  2.500E-01  ---  RDRY(2)
R19B  Dry Foliar Interception Fraction for Fodder    3.500E-01  2.500E-01  ---  RDRY(3)
R19B  Wet Foliar Interception Fraction for Non-Leafy 3.500E-01  2.500E-01  ---  RWET(1)
R19B  Wet Foliar Interception Fraction for Leafy    5.800E-01  2.500E-01  ---  RWET(2)
R19B  Wet Foliar Interception Fraction for Fodder    3.500E-01  2.500E-01  ---  RWET(3)
R19B  Weathering Removal Constant for Vegetation 3.300E+01  2.000E+01  ---  WLAM
C14   C-12 concentration in water (g/cm**3)      not used  2.000E-05  ---  C12WTR
C14   C-12 concentration in contaminated soil (g/g) not used  3.000E-02  ---  C12CZ
C14   Fraction of vegetation carbon from soil      not used  2.000E-02  ---  CSOIL
C14   Fraction of vegetation carbon from air       not used  9.800E-01  ---  CAIR
C14   C-14 evasion layer thickness in soil (m)     not used  3.000E-01  ---  DMC
C14   C-14 evasion flux rate from soil (1/sec)     not used  7.000E-07  ---  EVSN
C14   C-12 evasion flux rate from soil (1/sec)     not used  1.000E-10  ---  REVSN
C14   Fraction of grain in beef cattle feed       not used  8.000E-01  ---  AVFG4
C14   Fraction of grain in milk cow feed          not used  2.000E-01  ---  AVFG5
STOR  Storage times of contaminated foodstuffs (days):
STOR  Fruits, non-leafy vegetables, and grain      1.400E+01  1.400E+01  ---  STOR_T(1)
STOR  Leafy vegetables                          1.000E+00  1.000E+00  ---  STOR_T(2)
STOR  Milk                                       1.000E+00  1.000E+00  ---  STOR_T(3)
STOR  Meat and poultry                          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)
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Summary : HB soil DCGL_Pu-238
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL_PU238.RAD

```

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Site-Specific Parameter Summary (continued)
0
Menu  Parameter  User  Input  Default  Used by RESRAD  Parameter
-----
STOR  Well water          1.000E+00  1.000E+00  ---  STOR_T(7)
STOR  Surface water       1.000E+00  1.000E+00  ---  STOR_T(8)
STOR  Livestock fodder    4.500E+01  4.500E+01  ---  STOR_T(9)
R021  Thickness of building foundation (m)      not used  1.500E-01  ---  FLOOR1
R021  Bulk density of building foundation (g/cm**3) not used  2.400E+00  ---  DENSFL
R021  Total porosity of the cover material      not used  4.000E-01  ---  TPCV
R021  Total porosity of the building foundation not used  1.000E-01  ---  TPFL
R021  Volumetric water content of the cover material not used  5.000E-02  ---  PH2OCV
R021  Volumetric water content of the foundation not used  3.000E-02  ---  PH2OFL
R021  Diffusion coefficient for radon gas (m/sec):
R021  in cover material      not used  2.000E-06  ---  DIFCV
R021  in foundation material not used  3.000E-07  ---  DIFFL
R021  in contaminated zone soil not used  2.000E-06  ---  DIFCZ
R021  Radon vertical dimension of mixing (m)     not used  2.000E+00  ---  HMIX
R021  Average building air exchange rate (1/hr) not used  5.000E-01  ---  REXG
R021  Height of the building (room) (m)         not used  2.500E+00  ---  HRM
R021  Building interior area factor             not used  0.000E+00  ---  FAI
R021  Building depth below ground surface (m)   not used  -1.000E+00  ---  DMFL
R021  Emanating power of Rn-222 gas             not used  2.500E-01  ---  EMANA(1)
R021  Emanating power of Rn-220 gas             not used  1.500E-01  ---  EMANA(2)
TITL  Number of graphical time points           32  ---  NPTS
TITL  Maximum number of integration points for dose 17  ---  LYMAX
TITL  Maximum number of integration points for risk 1  ---  KYMAX

```

```

Summary of Pathway Selections
Pathway  User Selection
-----
1 -- external gamma  active
2 -- inhalation (w/o radon) active
3 -- plant ingestion active
4 -- meat ingestion  active
5 -- milk ingestion  active
6 -- aquatic foods   active
7 -- drinking water  active
8 -- soil ingestion  active
9 -- radon           suppressed
Find peak pathway doses active
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Summary : HB soil DCGL_Pu-238
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL_PU238.RAD
Contaminated Zone Dimensions      Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters      Pu-238 1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters

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Probabilistic results summary : HB soil DCGL_Pu-238
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Probabilistic Input  
Number of Sample Runs: 2000

| Number | Name                 | Distribution          | Parameters                        |
|--------|----------------------|-----------------------|-----------------------------------|
| AAAAAA | AAAAAAAAAAAAAAAAAAAA | AAAAAAAAAAAAAAAAAAAA  | AAAAAAAAAAAAAAAAAAAA              |
| 1      | DENSCZ               | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3             |
| 2      | TPCZ                 | BOUNDED NORMAL        | .41 .09 .1319 .6881               |
| 3      | HCCZ                 | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190             |
| 4      | BCZ                  | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3               |
| 5      | EVAPTR               | UNIFORM               | .5 .75                            |
| 6      | RI                   | UNIFORM               | .36 .76                           |
| 7      | DENSAQ               | BOUNDED NORMAL        | 1.5105 .1855 .937 2.084           |
| 8      | TPSZ                 | BOUNDED NORMAL        | .43 .0699 .124 .646               |
| 9      | EPSZ                 | BOUNDED NORMAL        | .342 .0705 .124 .56               |
| 10     | HCSZ                 | BOUNDED LOGNORMAL-N   | .362 1.59 .0106 195               |
| 11     | BSZ                  | BOUNDED LOGNORMAL-N   | 1.96 2.65 3.02 15.5               |
| 12     | DWIBWT               | TRIANGULAR            | 6 10 30                           |
| 13     | UW                   | UNIFORM               | 1173 1973                         |
| 14     | H(1)                 | UNIFORM               | 0 8.08                            |
| 15     | DENSUZ(1)            | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3             |
| 16     | TPUZ(1)              | BOUNDED NORMAL        | .41 .09 .1319 .6881               |
| 17     | EPUZ(1)              | BOUNDED NORMAL        | .315 .0905 .0349 .594             |
| 18     | HCUZ(1)              | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190             |
| 19     | BUZ(1)               | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3               |
| 20     | MLINH                | CONTINUOUS LINEAR     | 8 0 0 .000008 .0151 .000016 .1365 |
| .00003 | .8119 .00004 .9495   | .00006 .9937          | .000076 .9983 .0001 1             |
| 21     | SHF3                 | UNIFORM               | .15 .95                           |
| 22     | SHF1                 | BOUNDED LOGNORMAL-N   | -1.3 .59 .044 1                   |
| 23     | DM                   | TRIANGULAR            | 0 .15 .6                          |
| 24     | YV(1)                | TRUNCATED LOGNORMAL-N | .56 .48 .001 .999                 |
| 25     | WLAM                 | TRIANGULAR            | 5.1 18 84                         |
| 26     | RWET(2)              | TRIANGULAR            | .06 .67 .95                       |
| 27     | DCACTC(3)            | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999               |
| 28     | DCACTU(3)            | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999               |
| 29     | DCACTS(3)            | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999               |
| 30     | DCACTC(1)            | TRUNCATED LOGNORMAL-N | 7.78 2.76 .001 .999               |
| 31     | DCACTU(1)            | TRUNCATED LOGNORMAL-N | 7.78 2.76 .001 .999               |
| 32     | DCACTS(1)            | TRUNCATED LOGNORMAL-N | 7.78 2.76 .001 .999               |
| 33     | DCACTC(2)            | TRUNCATED LOGNORMAL-N | 5.2 1.68 .001 .999                |
| 34     | DCACTU(2)            | TRUNCATED LOGNORMAL-N | 5.2 1.68 .001 .999                |
| 35     | DCACTS(2)            | TRUNCATED LOGNORMAL-N | 5.2 1.68 .001 .999                |
| 36     | DCACTC(5)            | TRUNCATED LOGNORMAL-N | 8.17 1.7 .001 .999                |
| 37     | DCACTU(5)            | TRUNCATED LOGNORMAL-N | 8.17 1.7 .001 .999                |
| 38     | DCACTS(5)            | TRUNCATED LOGNORMAL-N | 8.17 1.7 .001 .999                |
| 39     | DCACTC(6)            | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999               |
| 40     | DCACTU(6)            | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999               |
| 41     | DCACTS(6)            | TRUNCATED LOGNORMAL-N | 8.68 3.62 .001 .999               |
| 42     | DCACTC(7)            | TRUNCATED LOGNORMAL-N | 4.48 3.13 .001 .999               |
| 43     | DCACTU(7)            | TRUNCATED LOGNORMAL-N | 4.48 3.13 .001 .999               |
| 44     | DCACTS(7)            | TRUNCATED LOGNORMAL-N | 4.48 3.13 .001 .999               |
| 45     | BRTF(94,2)           | TRUNCATED LOGNORMAL-N | -9.21 .2 .001 .999                |
| 46     | BRTF(94,3)           | TRUNCATED LOGNORMAL-N | -13.82 .5 .001 .999               |
| 47     | BBIO(94,1)           | LOGNORMAL-N           | 3.4 1.1 .001 .999                 |
| 48     | BRTF(82,1)           | TRUNCATED LOGNORMAL-N | -5.52 .9 .001 .999                |

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Probabilistic results summary : HB soil DCGL\_Pu-238  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL\_PU238.RAD

Probabilistic Input (cont.)

| Number | Name                 | Distribution          | Parameters           |
|--------|----------------------|-----------------------|----------------------|
| AAAAAA | AAAAAAAAAAAAAAAAAAAA | AAAAAAAAAAAAAAAAAAAA  | AAAAAAAAAAAAAAAAAAAA |
| 49     | BRTF(82,2)           | TRUNCATED LOGNORMAL-N | -7.13 .7 .001 .999   |
| 50     | BRTF(82,3)           | TRUNCATED LOGNORMAL-N | -8.11 .9 .001 .999   |
| 51     | BBIO(82,1)           | LOGNORMAL-N           | 5.7 1.1 .001 .999    |
| 52     | BRTF(84,1)           | TRUNCATED LOGNORMAL-N | -6.9 .9 .001 .999    |
| 53     | BRTF(84,2)           | TRUNCATED LOGNORMAL-N | -5.3 .7 .001 .999    |
| 54     | BRTF(84,3)           | TRUNCATED LOGNORMAL-N | -7.82 .7 .001 .999   |
| 55     | BBIO(84,1)           | LOGNORMAL-N           | 4.6 1.1 .001 .999    |
| 56     | BRTF(88,1)           | TRUNCATED LOGNORMAL-N | -3.22 .9 .001 .999   |
| 57     | BRTF(88,2)           | TRUNCATED LOGNORMAL-N | -6.91 .7 .001 .999   |
| 58     | BRTF(88,3)           | TRUNCATED LOGNORMAL-N | -6.91 .5 .001 .999   |
| 59     | BBIO(88,1)           | LOGNORMAL-N           | 3.9 1.1 .001 .999    |
| 60     | BRTF(90,1)           | TRUNCATED LOGNORMAL-N | -6.91 .9 .001 .999   |
| 61     | BRTF(90,2)           | TRUNCATED LOGNORMAL-N | -9.21 1 .001 .999    |
| 62     | BRTF(90,3)           | TRUNCATED LOGNORMAL-N | -12.21 .9 .001 .999  |
| 63     | BBIO(90,1)           | LOGNORMAL-N           | 4.6 1.1 .001 .999    |
| 64     | BRTF(92,1)           | TRUNCATED LOGNORMAL-N | -6.21 .9 .001 .999   |
| 65     | BRTF(92,2)           | TRUNCATED LOGNORMAL-N | -7.13 .7 .001 .999   |
| 66     | BRTF(92,3)           | TRUNCATED LOGNORMAL-N | -7.82 .6 .001 .999   |
| 67     | BBIO(92,1)           | LOGNORMAL-N           | 2.3 1.1 .001 .999    |

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Probabilistic results summary : HB soil DCGL\_Pu-238  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU238 DCGL\HB SOIL DCGL\_PU238.RAD  
Peak of the mean dose (averaged over observations) at graphical times  
Repetition Time of peak mean dose Peak mean dose  
1 0.000E+00 8.427E-01



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Summary : HB soil DCGL\_Pu239  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU239 DCGL\HB SOIL DCGL\_PU239.RAD

|                                                                                  |                  |        |
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| Dose Conversion Factor (and Related) Parameter Summary |                                                         |                |            |                |
|--------------------------------------------------------|---------------------------------------------------------|----------------|------------|----------------|
| Dose Library: HB DCGLs Plus FGR 12 & FGR 11            |                                                         |                |            |                |
| Menu                                                   | Parameter                                               | Current Value# | Base Case* | Parameter Name |
| A-1                                                    | DCF's for external ground radiation, (mrem/yr)/(pCi/g)  |                |            |                |
| A-1                                                    | Ac-227 (Source: FGR 12)                                 | 4.951E-04      | 4.951E-04  | DCF1( 1)       |
| A-1                                                    | Bi-211 (Source: FGR 12)                                 | 2.559E-01      | 2.559E-01  | DCF1( 2)       |
| A-1                                                    | Fr-223 (Source: FGR 12)                                 | 1.980E-01      | 1.980E-01  | DCF1( 3)       |
| A-1                                                    | Pa-231 (Source: FGR 12)                                 | 1.906E-01      | 1.906E-01  | DCF1( 4)       |
| A-1                                                    | Pb-211 (Source: FGR 12)                                 | 3.064E-01      | 3.064E-01  | DCF1( 5)       |
| A-1                                                    | Po-211 (Source: FGR 12)                                 | 4.764E-02      | 4.764E-02  | DCF1( 6)       |
| A-1                                                    | Po-215 (Source: FGR 12)                                 | 1.016E-03      | 1.016E-03  | DCF1( 7)       |
| A-1                                                    | Pu-239 (Source: FGR 12)                                 | 2.952E-04      | 2.952E-04  | DCF1( 8)       |
| A-1                                                    | Ra-223 (Source: FGR 12)                                 | 6.034E-01      | 6.034E-01  | DCF1( 9)       |
| A-1                                                    | Rn-219 (Source: FGR 12)                                 | 3.083E-01      | 3.083E-01  | DCF1( 10)      |
| A-1                                                    | Th-227 (Source: FGR 12)                                 | 5.212E-01      | 5.212E-01  | DCF1( 11)      |
| A-1                                                    | Th-231 (Source: FGR 12)                                 | 3.643E-02      | 3.643E-02  | DCF1( 12)      |
| A-1                                                    | Tl-207 (Source: FGR 12)                                 | 1.980E-02      | 1.980E-02  | DCF1( 13)      |
| A-1                                                    | U-235 (Source: FGR 12)                                  | 7.211E-01      | 7.211E-01  | DCF1( 14)      |
| B-1                                                    | Dose conversion factors for inhalation, mrem/pCi:       |                |            |                |
| B-1                                                    | Ac-227+D                                                | 6.724E+00      | 6.700E+00  | DCF2( 1)       |
| B-1                                                    | Pa-231                                                  | 1.280E+00      | 1.280E+00  | DCF2( 2)       |
| B-1                                                    | Pu-239                                                  | 4.290E-01      | 4.290E-01  | DCF2( 3)       |
| B-1                                                    | U-235+D                                                 | 1.230E-01      | 1.230E-01  | DCF2( 4)       |
| D-1                                                    | Dose conversion factors for ingestion, mrem/pCi:        |                |            |                |
| D-1                                                    | Ac-227+D                                                | 1.480E-02      | 1.410E-02  | DCF3( 1)       |
| D-1                                                    | Pa-231                                                  | 1.060E-02      | 1.060E-02  | DCF3( 2)       |
| D-1                                                    | Pu-239                                                  | 3.540E-03      | 3.540E-03  | DCF3( 3)       |
| D-1                                                    | U-235+D                                                 | 2.673E-04      | 2.660E-04  | DCF3( 4)       |
| D-34                                                   | Food transfer factors:                                  |                |            |                |
| D-34                                                   | Ac-227+D, plant/soil concentration ratio, dimensionless | 2.500E-03      | 2.500E-03  | RTF( 1,1)      |
| D-34                                                   | Ac-227+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 2.000E-05      | 2.000E-05  | RTF( 1,2)      |
| D-34                                                   | Ac-227+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)  | 2.000E-05      | 2.000E-05  | RTF( 1,3)      |
| D-34                                                   | Pa-231, plant/soil concentration ratio, dimensionless   | 1.000E-02      | 1.000E-02  | RTF( 2,1)      |
| D-34                                                   | Pa-231, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)   | 5.000E-03      | 5.000E-03  | RTF( 2,2)      |
| D-34                                                   | Pa-231, milk/livestock-intake ratio, (pCi/L)/(pCi/d)    | 5.000E-06      | 5.000E-06  | RTF( 2,3)      |
| D-34                                                   | Pu-239, plant/soil concentration ratio, dimensionless   | 1.830E-03      | 1.000E-03  | RTF( 3,1)      |
| D-34                                                   | Pu-239, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)   | 1.000E-04      | 1.000E-04  | RTF( 3,2)      |
| D-34                                                   | Pu-239, milk/livestock-intake ratio, (pCi/L)/(pCi/d)    | 1.000E-06      | 1.000E-06  | RTF( 3,3)      |
| D-34                                                   | U-235+D, plant/soil concentration ratio, dimensionless  | 2.500E-03      | 2.500E-03  | RTF( 4,1)      |
| D-34                                                   | U-235+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)  | 3.400E-04      | 3.400E-04  | RTF( 4,2)      |
| D-34                                                   | U-235+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)   | 6.000E-04      | 6.000E-04  | RTF( 4,3)      |
| D-5                                                    | Bioaccumulation factors, fresh water, L/kg:             |                |            |                |
| D-5                                                    | Ac-227+D, fish                                          | 1.500E+01      | 1.500E+01  | BIOFAC( 1,1)   |
| D-5                                                    | Ac-227+D, crustacea and mollusks                        | 1.000E+03      | 1.000E+03  | BIOFAC( 1,2)   |

D-5  
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| Dose Conversion Factor (and Related) Parameter Summary (continued) |                                 |                |            |                |
|--------------------------------------------------------------------|---------------------------------|----------------|------------|----------------|
| Dose Library: HB DCGLs Plus FGR 12 & FGR 11                        |                                 |                |            |                |
| Menu                                                               | Parameter                       | Current Value# | Base Case* | Parameter Name |
| D-5                                                                | Pa-231, fish                    | 1.000E+01      | 1.000E+01  | BIOFAC( 2,1)   |
| D-5                                                                | Pa-231, crustacea and mollusks  | 1.100E+02      | 1.100E+02  | BIOFAC( 2,2)   |
| D-5                                                                | Pu-239, fish                    | 3.000E+01      | 3.000E+01  | BIOFAC( 3,1)   |
| D-5                                                                | Pu-239, crustacea and mollusks  | 1.000E+02      | 1.000E+02  | BIOFAC( 3,2)   |
| D-5                                                                | U-235+D, fish                   | 1.000E+01      | 1.000E+01  | BIOFAC( 4,1)   |
| D-5                                                                | U-235+D, crustacea and mollusks | 6.000E+01      | 6.000E+01  | BIOFAC( 4,2)   |

\*Base Case means Default.Lib w/o Associate Nuclide contributions.  
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Summary : HB soil DCLG Pu239

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| Site-Specific Parameter Summary |                                                 |            |           |                |                |
|---------------------------------|-------------------------------------------------|------------|-----------|----------------|----------------|
| Menu                            | Parameter                                       | User Input | Default   | Used by RESRAD | Parameter Name |
| AAAA                            | Area of contaminated zone (m**2)                | 3.000E+04  | 1.000E+04 | ---            | AREA           |
| R011                            | Thickness of contaminated zone (m)              | 2.670E+00  | 2.000E+00 | ---            | THICK0         |
| R011                            | Fraction of contamination that is submerged     | 0.000E+00  | 0.000E+00 | ---            | SUBMFRAC       |
| R011                            | Length parallel to aquifer flow (m)             | 1.950E+02  | 1.000E+02 | ---            | LCZPAQ         |
| R011                            | Basic radiation dose limit (mrem/yr)            | 2.500E+01  | 3.000E+01 | ---            | BRDL           |
| R011                            | Time since placement of material (yr)           | 0.000E+00  | 0.000E+00 | ---            | TI             |
| R011                            | Times for calculations (yr)                     | 1.000E+00  | 1.000E+00 | ---            | T ( 2)         |
| R011                            | Times for calculations (yr)                     | 3.000E+00  | 3.000E+00 | ---            | T ( 3)         |
| R011                            | Times for calculations (yr)                     | 1.000E+01  | 1.000E+01 | ---            | T ( 4)         |
| R011                            | Times for calculations (yr)                     | 3.000E+01  | 3.000E+01 | ---            | T ( 5)         |
| R011                            | Times for calculations (yr)                     | 1.000E+02  | 1.000E+02 | ---            | T ( 6)         |
| R011                            | Times for calculations (yr)                     | 3.000E+02  | 3.000E+02 | ---            | T ( 7)         |
| R011                            | Times for calculations (yr)                     | 1.000E+03  | 1.000E+03 | ---            | T ( 8)         |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---            | T ( 9)         |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---            | T (10)         |
| R012                            | Initial principal radionuclide (pCi/g): Pu-239  | 1.000E+00  | 0.000E+00 | ---            | S1(3)          |
| R012                            | Concentration in groundwater (pCi/L): Pu-239    | not used   | 0.000E+00 | ---            | W1( 3)         |
| 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)          | 1.564E+00  | 1.500E+00 | ---            | DENSCZ         |
| R013                            | Contaminated zone erosion rate (m/yr)           | 2.200E-03  | 1.000E-03 | ---            | VCZ            |
| R013                            | Contaminated zone total porosity                | 4.100E-01  | 4.000E-01 | ---            | TPCZ           |
| R013                            | Contaminated zone field capacity                | 9.500E-02  | 2.000E-01 | ---            | FCCZ           |
| R013                            | Contaminated zone hydraulic conductivity (m/yr) | 3.900E+00  | 1.000E+01 | ---            | HCCZ           |
| R013                            | Contaminated zone b parameter                   | 5.600E+00  | 5.300E+00 | ---            | BCZ            |
| R013                            | Average annual wind speed (m/sec)               | 3.040E+00  | 2.000E+00 | ---            | WIND           |
| R013                            | Humidity in air (g/m**3)                        | not used   | 8.000E+00 | ---            | HUMID          |
| R013                            | Evapotranspiration coefficient                  | 6.250E-01  | 5.000E-01 | ---            | EVAPTR         |
| R013                            | Precipitation (m/yr)                            | 9.100E-01  | 1.000E+00 | ---            | PRECIP         |
| R013                            | Irrigation (m/yr)                               | 5.600E-01  | 2.000E-01 | ---            | RI             |
| R013                            | Irrigation mode                                 | overhead   | overhead  | ---            | IDITCH         |
| R013                            | Runoff coefficient                              | 5.000E-01  | 2.000E-01 | ---            | RUNOFF         |
| R013                            | Watershed area for nearby stream or pond (m**2) | 2.520E+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)             | 1.510E+00  | 1.500E+00 | ---            | DENSAQ         |
| R014                            | Saturated zone total porosity                   | 4.300E-01  | 4.000E-01 | ---            | TPSZ           |
| R014                            | Saturated zone effective porosity               | 3.420E-01  | 2.000E-01 | ---            | EPSZ           |
| R014                            | Saturated zone field capacity                   | 8.800E-02  | 2.000E-01 | ---            | FCSZ           |
| R014                            | Saturated zone hydraulic conductivity (m/yr)    | 2.880E+01  | 1.000E+02 | ---            | HCSZ           |
| R014                            | Saturated zone hydraulic gradient               | 2.000E-03  | 2.000E-02 | ---            | HGWT           |
| R014                            | Saturated zone b parameter                      | 7.100E+00  | 5.300E+00 | ---            | BSZ            |
| R014                            | Water table drop rate (m/yr)                    | 1.000E-03  | 1.000E-03 | ---            | VWT            |
| R014                            | Well pump intake depth (m below water table)    | 1.000E+01  | 1.000E+01 | ---            | DWIBWT         |
| R014                            | Model: Nondispersion (ND) or Mass-Balance (MB)  | ND         | ND        | ---            | MODEL          |
| R014                            | Well pumping rate (m**3/yr)                     | 1.573E+03  | 2.500E+02 | ---            | UW             |

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| Site-Specific Parameter Summary (continued) |                                               |            |           |                         |                |
|---------------------------------------------|-----------------------------------------------|------------|-----------|-------------------------|----------------|
| Menu                                        | Parameter                                     | User Input | Default   | Used by RESRAD          | Parameter Name |
| AAAA                                        | Number of unsaturated zone strata             | 1          | 1         | ---                     | NS             |
| R015                                        | Unsat. zone 1, thickness (m)                  | 4.040E+00  | 4.000E+00 | ---                     | H(1)           |
| R015                                        | Unsat. zone 1, soil density (g/cm**3)         | 1.564E+00  | 1.500E+00 | ---                     | DENSUZ(1)      |
| R015                                        | Unsat. zone 1, total porosity                 | 4.100E-01  | 4.000E-01 | ---                     | TPUZ(1)        |
| R015                                        | Unsat. zone 1, effective porosity             | 3.150E-01  | 2.000E-01 | ---                     | EPUZ(1)        |
| R015                                        | Unsat. zone 1, field capacity                 | 9.500E-02  | 2.000E-01 | ---                     | FCUZ(1)        |
| R015                                        | Unsat. zone 1, soil-specific b parameter      | 5.600E+00  | 5.300E+00 | ---                     | BUZ(1)         |
| R015                                        | Unsat. zone 1, hydraulic conductivity (m/yr)  | 3.900E+00  | 1.000E+01 | ---                     | HCUZ(1)        |
| R016                                        | Distribution coefficients for Pu-239          |            |           |                         |                |
| R016                                        | Contaminated zone (cm**3/g)                   | 9.530E+02  | 2.000E+03 | ---                     | DCNUCC( 3)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 9.530E+02  | 2.000E+03 | ---                     | DCNUCU( 3,1)   |
| R016                                        | Saturated zone (cm**3/g)                      | 9.530E+02  | 2.000E+03 | ---                     | DCNUCS( 3)     |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 9.565E-05               | ALEACH( 3)     |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used                | SOLUBK( 3)     |
| R016                                        | Distribution coefficients for daughter Ac-227 |            |           |                         |                |
| R016                                        | Contaminated zone (cm**3/g)                   | 8.250E+02  | 2.000E+01 | ---                     | DCNUCC( 1)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 8.250E+02  | 2.000E+01 | ---                     | DCNUCU( 1,1)   |
| R016                                        | Saturated zone (cm**3/g)                      | 8.250E+02  | 2.000E+01 | ---                     | DCNUCS( 1)     |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 1.105E-04               | ALEACH( 1)     |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used                | SOLUBK( 1)     |
| R016                                        | Distribution coefficients for daughter Pa-231 |            |           |                         |                |
| R016                                        | Contaminated zone (cm**3/g)                   | 3.800E+02  | 5.000E+01 | ---                     | DCNUCC( 2)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 3.800E+02  | 5.000E+01 | ---                     | DCNUCU( 2,1)   |
| R016                                        | Saturated zone (cm**3/g)                      | 3.800E+02  | 5.000E+01 | ---                     | DCNUCS( 2)     |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 2.398E-04               | ALEACH( 2)     |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used                | SOLUBK( 2)     |
| R016                                        | Distribution coefficients for daughter U-235  |            |           |                         |                |
| R016                                        | Contaminated zone (cm**3/g)                   | 1.260E+02  | 5.000E+01 | ---                     | DCNUCC( 4)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 1.260E+02  | 5.000E+01 | ---                     | DCNUCU( 4,1)   |
| R016                                        | Saturated zone (cm**3/g)                      | 1.260E+02  | 5.000E+01 | ---                     | DCNUCS( 4)     |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | 7.224E-04               | ALEACH( 4)     |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | not used                | SOLUBK( 4)     |
| R017                                        | Inhalation rate (m**3/yr)                     | 8.400E+03  | 8.400E+03 | ---                     | INHALR         |
| R017                                        | Mass loading for inhalation (g/m**3)          | 3.000E-04  | 1.000E-04 | ---                     | MLINH          |
| R017                                        | Exposure duration                             | 3.000E+01  | 3.000E+01 | ---                     | ED             |
| R017                                        | Shielding factor, inhalation                  | 5.500E-01  | 4.000E-01 | ---                     | SHF3           |
| R017                                        | Shielding factor, external gamma              | 2.725E-01  | 7.000E-01 | ---                     | SHF1           |
| R017                                        | Fraction of time spent indoors                | 6.571E-01  | 5.000E-01 | ---                     | FTIND          |
| R017                                        | Fraction of time spent outdoors (on site)     | 1.181E-01  | 2.500E-01 | ---                     | FOTD           |
| R017                                        | Shape factor flag, external gamma             | 1.000E+00  | 1.000E+00 | >0 shows circular AREA. | FS             |

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Summary : HB soil DCGL\_PU239

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| Site-Specific Parameter Summary (continued)                                    |                                                  |            |           |                                               |                |
|--------------------------------------------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                                                           | Parameter                                        | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R017                                                                           | Radius of shape factor array (used if FS = -1):  |            |           |                                               |                |
| R017                                                                           | Outer annular radius (m), ring 1:                | not used   | 5.000E+01 | ---                                           | RAD_SHAPE( 1)  |
| R017                                                                           | Outer annular radius (m), ring 2:                | not used   | 7.071E+01 | ---                                           | RAD_SHAPE( 2)  |
| R017                                                                           | Outer annular radius (m), ring 3:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 3)  |
| R017                                                                           | Outer annular radius (m), ring 4:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 4)  |
| R017                                                                           | Outer annular radius (m), ring 5:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 5)  |
| R017                                                                           | Outer annular radius (m), ring 6:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 6)  |
| R017                                                                           | Outer annular radius (m), ring 7:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 7)  |
| R017                                                                           | Outer annular radius (m), ring 8:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 8)  |
| R017                                                                           | Outer annular radius (m), ring 9:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 9)  |
| R017                                                                           | Outer annular radius (m), ring 10:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(10)  |
| R017                                                                           | Outer annular radius (m), ring 11:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(11)  |
| R017                                                                           | Outer annular radius (m), ring 12:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(12)  |
| R017                                                                           | Fractions of annular areas within AREA:          |            |           |                                               |                |
| R017                                                                           | Ring 1                                           | not used   | 1.000E+00 | ---                                           | FRACA( 1)      |
| R017                                                                           | Ring 2                                           | not used   | 2.732E-01 | ---                                           | FRACA( 2)      |
| R017                                                                           | Ring 3                                           | not used   | 0.000E+00 | ---                                           | FRACA( 3)      |
| R017                                                                           | Ring 4                                           | not used   | 0.000E+00 | ---                                           | FRACA( 4)      |
| R017                                                                           | Ring 5                                           | not used   | 0.000E+00 | ---                                           | FRACA( 5)      |
| R017                                                                           | Ring 6                                           | not used   | 0.000E+00 | ---                                           | FRACA( 6)      |
| R017                                                                           | Ring 7                                           | not used   | 0.000E+00 | ---                                           | FRACA( 7)      |
| R017                                                                           | Ring 8                                           | not used   | 0.000E+00 | ---                                           | FRACA( 8)      |
| R017                                                                           | Ring 9                                           | not used   | 0.000E+00 | ---                                           | FRACA( 9)      |
| R017                                                                           | Ring 10                                          | not used   | 0.000E+00 | ---                                           | FRACA(10)      |
| R017                                                                           | Ring 11                                          | not used   | 0.000E+00 | ---                                           | FRACA(11)      |
| R017                                                                           | Ring 12                                          | not used   | 0.000E+00 | ---                                           | FRACA(12)      |
| R018                                                                           | Fruits, vegetables and grain consumption (kg/yr) | 1.120E+02  | 1.600E+02 | ---                                           | DIET(1)        |
| R018                                                                           | Leafy vegetable consumption (kg/yr)              | 2.140E+01  | 1.400E+01 | ---                                           | DIET(2)        |
| R018                                                                           | Milk consumption (L/yr)                          | 2.330E+02  | 9.200E+01 | ---                                           | DIET(3)        |
| R018                                                                           | Meat and poultry consumption (kg/yr)             | 6.510E+01  | 6.300E+01 | ---                                           | DIET(4)        |
| R018                                                                           | Fish consumption (kg/yr)                         | 2.060E+01  | 5.400E+00 | ---                                           | DIET(5)        |
| R018                                                                           | Other seafood consumption (kg/yr)                | 9.000E-01  | 9.000E-01 | ---                                           | DIET(6)        |
| R018                                                                           | Soil ingestion rate (g/yr)                       | 1.826E+01  | 3.650E+01 | ---                                           | SOIL           |
| R018                                                                           | Drinking water intake (L/yr)                     | 4.785E+02  | 5.100E+02 | ---                                           | DWI            |
| R018                                                                           | Contamination fraction of drinking water         | 1.000E+00  | 1.000E+00 | ---                                           | FDW            |
| R018                                                                           | Contamination fraction of household water        | not used   | 1.000E+00 | ---                                           | FHHW           |
| R018                                                                           | Contamination fraction of livestock water        | 1.000E+00  | 1.000E+00 | ---                                           | FLW            |
| R018                                                                           | Contamination fraction of irrigation water       | 1.000E+00  | 1.000E+00 | ---                                           | FIW            |
| R018                                                                           | Contamination fraction of aquatic food           | 1.000E+00  | 5.000E-01 | ---                                           | FR9            |
| R018                                                                           | Contamination fraction of plant food             | 1.000E+00  | -1        | ---                                           | FPLANT         |
| R018                                                                           | Contamination fraction of meat                   | 1.000E+00  | -1        | ---                                           | FMEAT          |
| R018                                                                           | Contamination fraction of milk                   | 1.000E+00  | -1        | ---                                           | FMILK          |
| R019                                                                           | Livestock fodder intake for meat (kg/day)        | 2.710E+01  | 6.800E+01 | ---                                           | LFIS           |
| R019                                                                           | Livestock fodder intake for milk (kg/day)        | 6.320E+01  | 5.500E+01 | ---                                           | LFMI           |
| R019                                                                           | Livestock water intake for meat (L/day)          | 5.060E+01  | 5.000E+01 | ---                                           | LWIS           |
| R019                                                                           | Livestock water intake for milk (L/day)          | 6.000E+01  | 1.600E+02 | ---                                           | LWMI           |
| R019                                                                           | Livestock soil intake (kg/day)                   | 5.000E-01  | 5.000E-01 | ---                                           | LSI            |
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| Summary : HB soil DCGL_PU239                                                   |                                                  |            |           |                                               |                |
| File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU239 DCGL\HB SOIL DCGL_PU239.RAD |                                                  |            |           |                                               |                |

| Site-Specific Parameter Summary (continued) |                                                  |            |           |                                               |                |
|---------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                        | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R019                                        | Mass loading for foliar deposition (g/m**3)      | 4.000E-04  | 1.000E-04 | ---                                           | MLFD           |
| R019                                        | Depth of soil mixing layer (m)                   | 2.300E-01  | 1.500E-01 | ---                                           | DM             |
| R019                                        | Depth of roots (m)                               | 1.220E+00  | 9.000E-01 | ---                                           | DROOT          |
| R019                                        | Drinking water fraction from ground water        | 1.000E+00  | 1.000E+00 | ---                                           | FGWDW          |
| R019                                        | Household water fraction from ground water       | not used   | 1.000E+00 | ---                                           | FGWHH          |
| R019                                        | Livestock water fraction from ground water       | 1.000E+00  | 1.000E+00 | ---                                           | FGWLW          |
| R019                                        | Irrigation fraction from ground water            | 1.000E+00  | 1.000E+00 | ---                                           | FGWIR          |
| R198                                        | Wet weight crop yield for Non-Leafy (kg/m**2)    | 1.750E+00  | 7.000E-01 | ---                                           | YV(1)          |
| R198                                        | Wet weight crop yield for Leafy (kg/m**2)        | 2.889E+00  | 1.500E+00 | ---                                           | YV(2)          |
| R198                                        | Wet weight crop yield for Fodder (kg/m**2)       | 1.887E+00  | 1.100E+00 | ---                                           | YV(3)          |
| R198                                        | Growing Season for Non-Leafy (years)             | 2.460E-01  | 1.700E-01 | ---                                           | TE(1)          |
| R198                                        | Growing Season for Leafy (years)                 | 1.230E-01  | 2.500E-01 | ---                                           | TE(2)          |
| R198                                        | Growing Season for Fodder (years)                | 8.200E-02  | 8.000E-02 | ---                                           | TE(3)          |
| R198                                        | Translocation Factor for Non-Leafy               | 1.000E-01  | 1.000E-01 | ---                                           | TIV(1)         |
| R198                                        | Translocation Factor for Leafy                   | 1.000E+00  | 1.000E+00 | ---                                           | TIV(2)         |
| R198                                        | Translocation Factor for Fodder                  | 1.000E+00  | 1.000E+00 | ---                                           | TIV(3)         |
| R198                                        | Dry Foliar Interception Fraction for Non-Leafy   | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(1)        |
| R198                                        | Dry Foliar Interception Fraction for Leafy       | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(2)        |
| R198                                        | Dry Foliar Interception Fraction for Fodder      | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(3)        |
| R198                                        | Wet Foliar Interception Fraction for Non-Leafy   | 3.500E-01  | 2.500E-01 | ---                                           | RWET(1)        |
| R198                                        | Wet Foliar Interception Fraction for Leafy       | 5.800E-01  | 2.500E-01 | ---                                           | RWET(2)        |
| R198                                        | Wet Foliar Interception Fraction for Fodder      | 3.500E-01  | 2.500E-01 | ---                                           | RWET(3)        |
| R198                                        | Weathering Removal Constant for Vegetation       | 3.300E+01  | 2.000E+01 | ---                                           | WLAM           |
| C14                                         | C-12 concentration in water (g/cm**3)            | not used   | 2.000E-05 | ---                                           | C12WTR         |
| C14                                         | C-12 concentration in contaminated soil (g/g)    | not used   | 3.000E-02 | ---                                           | C12CZ          |
| C14                                         | Fraction of vegetation carbon from soil          | not used   | 2.000E-02 | ---                                           | CSOIL          |
| C14                                         | Fraction of vegetation carbon from air           | not used   | 9.800E-01 | ---                                           | CAIR           |
| C14                                         | C-14 evasion layer thickness in soil (m)         | not used   | 3.000E-01 | ---                                           | DMC            |
| C14                                         | C-14 evasion flux rate from soil (1/sec)         | not used   | 7.000E-07 | ---                                           | EVSN           |
| C14                                         | C-12 evasion flux rate from soil (1/sec)         | not used   | 1.000E-10 | ---                                           | REVSN          |
| C14                                         | Fraction of grain in beef cattle feed            | not used   | 8.000E-01 | ---                                           | AVFG4          |
| C14                                         | Fraction of grain in milk cow feed               | not used   | 2.000E-01 | ---                                           | AVFG5          |
| STOR                                        | Storage times of contaminated foodstuffs (days): |            |           |                                               |                |
| STOR                                        | Fruits, non-leafy vegetables, and grain          | 1.400E+01  | 1.400E+01 | ---                                           | STOR_T(1)      |
| STOR                                        | Leafy vegetables                                 | 1.000E+00  | 1.000E+00 | ---                                           | STOR_T(2)      |
| STOR                                        | Milk                                             | 1.000E+00  | 1.000E+00 | ---                                           | STOR_T(3)      |
| STOR                                        | Meat and poultry                                 | 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
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Summary : HB soil DCGL_Pu239
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Site-Specific Parameter Summary (continued)
Menu Parameter User Input Default (If different from user input) Parameter Name
-----
R021 Volumetric water content of the cover material not used 5.000E-02 --- PH20CV
R021 Volumetric water content of the foundation not used 3.000E-02 --- PH20FL
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 --- HMX
R021 Average building air exchange rate (1/hr) not used 5.000E-01 --- REXG
R021 Height of the building (room) (m) not used 2.500E+00 --- HRM
R021 Building interior area factor not used 0.000E+00 --- FAI
R021 Building depth below ground surface (m) not used -1.000E+00 --- DMFL
R021 Emanating power of Rn-222 gas not used 2.500E-01 --- EMANA(1)
R021 Emanating power of Rn-220 gas not used 1.500E-01 --- EMANA(2)

TITL Number of graphical time points 32 --- NPTS
TITL Maximum number of integration points for dose 17 --- LYMAX
TITL Maximum number of integration points for risk 1 --- KYMAX
=====
```

## Summary of Pathway Selections

```
Pathway User Selection
-----
1 -- external gamma active
2 -- inhalation (w/o radon) active
3 -- plant ingestion active
4 -- meat ingestion active
5 -- milk ingestion active
6 -- aquatic foods active
7 -- drinking water active
8 -- soil ingestion active
9 -- radon suppressed
Find peak pathway doses active
=====
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Summary : HB soil DCGL_Pu239
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU239 DCGL\HB SOIL DCGL_PU239.RAD

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g
-----
Area: 30000.00 square meters Pu-239 1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters
```

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Probabilistic results summary : HB soil DCGL\_Pu239  
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```

Probabilistic Input  
Number of Sample Runs: 2000

| Number | Name      | Distribution        | Parameters              |
|--------|-----------|---------------------|-------------------------|
| 1      | DENSCZ    | BOUNDED NORMAL      | 1.5635 .2385 .827 2.3   |
| 2      | TPCZ      | BOUNDED NORMAL      | .41 .09 .1319 .6881     |
| 3      | HCCZ      | BOUNDED LOGNORMAL-N | 1.36 2.17 .00478 3190   |
| 4      | BCZ       | BOUNDED LOGNORMAL-N | 1.73 .323 2.08 15.3     |
| 5      | EVAPTR    | UNIFORM             | .5 .75                  |
| 6      | RI        | UNIFORM             | .36 .76                 |
| 7      | DENSAQ    | BOUNDED NORMAL      | 1.5105 .1855 .937 2.084 |
| 8      | TPSZ      | BOUNDED NORMAL      | .43 .0699 .214 .646     |
| 9      | EPSZ      | BOUNDED NORMAL      | .342 .0705 .124 .56     |
| 10     | HCSZ      | BOUNDED LOGNORMAL-N | .362 1.59 .0106 195     |
| 11     | BSZ       | BOUNDED LOGNORMAL-N | 1.96 .265 3.02 15.5     |
| 12     | DWIBWT    | TRIANGULAR          | 6 10 30                 |
| 13     | UW        | UNIFORM             | 1173 1973               |
| 14     | H(1)      | UNIFORM             | 0 8.08                  |
| 15     | DENSUZ(1) | BOUNDED NORMAL      | 1.5635 .2385 .827 2.3   |

|        |            |                       |        |        |        |         |       |         |       |
|--------|------------|-----------------------|--------|--------|--------|---------|-------|---------|-------|
| 16     | TPUZ(1)    | BOUNDED NORMAL        | .41    | .09    | .1319  | .6881   |       |         |       |
| 17     | EPUZ(1)    | BOUNDED NORMAL        | .315   | .0905  | .0349  | .594    |       |         |       |
| 18     | HCUZ(1)    | BOUNDED LOGNORMAL-N   | 1.36   | 2.17   | .00478 | .3190   |       |         |       |
| 19     | BUZ(1)     | BOUNDED LOGNORMAL-N   | 1.73   | .323   | 2.08   | 15.3    |       |         |       |
| 20     | MLINH      | CONTINUOUS LINEAR     | 8      | 0      | 0      | .000008 | .0151 | .000016 | .1365 |
| .00003 | .8119      | .00004                | .9495  | .00006 | .9937  | .000076 | .9983 | .0001   | 1     |
| 21     | SHF3       | UNIFORM               | .15    | .95    |        |         |       |         |       |
| 22     | SHF1       | BOUNDED LOGNORMAL-N   | -1.3   | .59    | .044   | 1       |       |         |       |
| 23     | DM         | TRIANGULAR            | 0      | .15    | .6     |         |       |         |       |
| 24     | YV(1)      | TRUNCATED LOGNORMAL-N | .56    | .48    | .001   | .999    |       |         |       |
| 25     | WLAM       | TRIANGULAR            | 5.1    | .18    | .84    |         |       |         |       |
| 26     | RWET(2)    | TRIANGULAR            | .06    | .67    | .95    |         |       |         |       |
| 27     | DCACTC(3)  | TRUNCATED LOGNORMAL-N | 6.86   | 1.89   | .001   | .999    |       |         |       |
| 28     | DCACTU1(3) | TRUNCATED LOGNORMAL-N | 6.86   | 1.89   | .001   | .999    |       |         |       |
| 29     | DCACTS(3)  | TRUNCATED LOGNORMAL-N | 6.86   | 1.89   | .001   | .999    |       |         |       |
| 30     | DCACTC(1)  | TRUNCATED LOGNORMAL-N | 6.72   | 3.22   | .001   | .999    |       |         |       |
| 31     | DCACTU1(1) | TRUNCATED LOGNORMAL-N | 6.72   | 3.22   | .001   | .999    |       |         |       |
| 32     | DCACTS(1)  | TRUNCATED LOGNORMAL-N | 6.72   | 3.22   | .001   | .999    |       |         |       |
| 33     | DCACTC(2)  | TRUNCATED LOGNORMAL-N | 5.94   | 3.22   | .001   | .999    |       |         |       |
| 34     | DCACTU1(2) | TRUNCATED LOGNORMAL-N | 5.94   | 3.22   | .001   | .999    |       |         |       |
| 35     | DCACTS(2)  | TRUNCATED LOGNORMAL-N | 5.94   | 3.22   | .001   | .999    |       |         |       |
| 36     | DCACTC(4)  | TRUNCATED LOGNORMAL-N | 4.84   | 3.13   | .001   | .999    |       |         |       |
| 37     | DCACTU1(4) | TRUNCATED LOGNORMAL-N | 4.84   | 3.13   | .001   | .999    |       |         |       |
| 38     | DCACTS(4)  | TRUNCATED LOGNORMAL-N | 4.84   | 3.13   | .001   | .999    |       |         |       |
| 39     | BRTF(94,2) | TRUNCATED LOGNORMAL-N | -9.21  | .2     | .001   | .999    |       |         |       |
| 40     | BRTF(94,3) | TRUNCATED LOGNORMAL-N | -13.82 | .5     | .001   | .999    |       |         |       |
| 41     | BBIO(94,1) | LOGNORMAL-N           | 3.4    | 1.1    |        |         |       |         |       |
| 42     | BRTF(89,1) | TRUNCATED LOGNORMAL-N | -6.91  | 1.12   | .001   | .999    |       |         |       |
| 43     | BRTF(89,2) | TRUNCATED LOGNORMAL-N | -10.82 | 1      | .001   | .999    |       |         |       |
| 44     | BRTF(89,3) | TRUNCATED LOGNORMAL-N | -13.12 | .9     | .001   | .999    |       |         |       |
| 45     | BBIO(89,1) | LOGNORMAL-N           | 2.7    | 1.1    |        |         |       |         |       |
| 46     | BRTF(91,1) | TRUNCATED LOGNORMAL-N | -4.61  | 1.1    | .001   | .999    |       |         |       |
| 47     | BRTF(91,2) | TRUNCATED LOGNORMAL-N | -12.21 | 1      | .001   | .999    |       |         |       |
| 48     | BRTF(91,3) | TRUNCATED LOGNORMAL-N | -12.21 | .9     | .001   | .999    |       |         |       |

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 Probabilistic results summary : HB soil DCGL\_Pu239  
 File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU239 DCGL\HB SOIL DCGL\_PU239.RAD

Probabilistic Input (cont.)

| Number | Name                 | Distribution          | Parameters           |
|--------|----------------------|-----------------------|----------------------|
| AAAAA  | AAAAAAAAAAAAAAAAAAAA | AAAAAAAAAAAAAAAAAAAA  | AAAAAAAAAAAAAAAAAAAA |
| 49     | BBIO(91,1)           | LOGNORMAL-N           | 2.3 1.1              |
| 50     | BRTF(92,1)           | TRUNCATED LOGNORMAL-N | -6.21 .9 .001 .999   |
| 51     | BRTF(92,2)           | TRUNCATED LOGNORMAL-N | -7.13 .7 .001 .999   |
| 52     | BRTF(92,3)           | TRUNCATED LOGNORMAL-N | -7.82 .6 .001 .999   |
| 53     | BBIO(92,1)           | LOGNORMAL-N           | 2.3 1.1              |
| iiiiii | iiiiii               | iiiiii                | iiiiii               |

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 Probabilistic results summary : HB soil DCGL\_Pu239  
 File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU239 DCGL\HB SOIL DCGL\_PU239.RAD  
 Peak of the mean dose (averaged over observations) at graphical times  
 Repetition Time of peak mean dose Peak mean dose  
 Years mrem/yr  
 1 0.000E+00 9.358E-01



D-5 \*  
D-3 \* U-236 , fish 1.000E+01 1.000E+01 BIOFAC( 6,1)  
D-5 \* U-236 , crustacea and mollusks 1.000E+01 1.000E+01 BIOFAC( 6,2)  
#####  
#For DCGL(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.  
\*Base Case means Default.Lib w/o Associate Nuclide contributions.  
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Summary : HB soil DCGL\_PU240  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU240 DCGL\HB SOIL DCGL\_PU240.RAD

| Site-Specific Parameter Summary |                                                 |            |           |                                | Used by RESRAD |  | Parameter |  |
|---------------------------------|-------------------------------------------------|------------|-----------|--------------------------------|----------------|--|-----------|--|
| Menu                            | Parameter                                       | User Input | Default   | (If different from user input) |                |  | Name      |  |
| R011                            | Area of contaminated zone (m**2)                | 3.000E+04  | 1.000E+04 | ---                            |                |  | AREA      |  |
| R011                            | Thickness of contaminated zone (m)              | 2.670E+00  | 2.000E+00 | ---                            |                |  | THICK0    |  |
| R011                            | Fraction of contamination that is submerged     | 0.000E+00  | 0.000E+00 | ---                            |                |  | SUBMFRACT |  |
| R011                            | Length parallel to aquifer flow (m)             | 1.950E+02  | 1.000E+02 | ---                            |                |  | LCZPAQ    |  |
| R011                            | Basic radiation dose limit (mrem/yr)            | 2.500E+01  | 3.000E+01 | ---                            |                |  | BRDL      |  |
| R011                            | Time since placement of material (yr)           | 0.000E+00  | 0.000E+00 | ---                            |                |  | TI        |  |
| R011                            | Times for calculations (yr)                     | 1.000E+00  | 1.000E+00 | ---                            |                |  | T( 2)     |  |
| R011                            | Times for calculations (yr)                     | 3.000E+00  | 3.000E+00 | ---                            |                |  | T( 3)     |  |
| R011                            | Times for calculations (yr)                     | 1.000E+01  | 1.000E+01 | ---                            |                |  | T( 4)     |  |
| R011                            | Times for calculations (yr)                     | 3.000E+01  | 3.000E+01 | ---                            |                |  | T( 5)     |  |
| R011                            | Times for calculations (yr)                     | 1.000E+02  | 1.000E+02 | ---                            |                |  | T( 6)     |  |
| R011                            | Times for calculations (yr)                     | 3.000E+02  | 3.000E+02 | ---                            |                |  | T( 7)     |  |
| R011                            | Times for calculations (yr)                     | 1.000E+03  | 1.000E+03 | ---                            |                |  | T( 8)     |  |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---                            |                |  | T( 9)     |  |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---                            |                |  | T(10)     |  |
| R012                            | Initial principal radionuclide (pci/g): Pu-240  | 1.000E+00  | 0.000E+00 | ---                            |                |  | SI(1)     |  |
| R012                            | Concentration in groundwater (pci/L): Pu-240    | not used   | 0.000E+00 | ---                            |                |  | WI( 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 | ---                            |                |  | DENS0V    |  |
| R013                            | Cover depth erosion rate (m/yr)                 | not used   | 1.000E-03 | ---                            |                |  | VCV       |  |
| R013                            | Density of contaminated zone (g/cm**3)          | 1.564E+00  | 1.500E+00 | ---                            |                |  | DENS0Z    |  |
| R013                            | Contaminated zone erosion rate (m/yr)           | 2.200E-03  | 1.000E-03 | ---                            |                |  | VCZ       |  |
| R013                            | Contaminated zone total porosity                | 4.100E-01  | 4.000E-01 | ---                            |                |  | TPCZ      |  |
| R013                            | Contaminated zone field capacity                | 9.500E-02  | 2.000E-01 | ---                            |                |  | FCCZ      |  |
| R013                            | Contaminated zone hydraulic conductivity (m/yr) | 3.900E+00  | 1.000E+01 | ---                            |                |  | HCCZ      |  |
| R013                            | Contaminated zone b parameter                   | 5.600E+00  | 5.300E+00 | ---                            |                |  | BCZ       |  |
| R013                            | Average annual wind speed (m/sec)               | 3.040E+00  | 2.000E+00 | ---                            |                |  | WIND      |  |
| R013                            | Humidity in air (g/m**3)                        | not used   | 8.000E+00 | ---                            |                |  | HUMID     |  |
| R013                            | Evapotranspiration coefficient                  | 6.250E-01  | 5.000E-01 | ---                            |                |  | EVAPTR    |  |
| R013                            | Precipitation (m/yr)                            | 9.100E-01  | 1.000E+00 | ---                            |                |  | PRECIP    |  |
| R013                            | Irrigation (m/yr)                               | 5.600E-01  | 2.000E-01 | ---                            |                |  | RI        |  |
| R013                            | Irrigation mode                                 | overhead   | overhead  | ---                            |                |  | IDITCH    |  |
| R013                            | Runoff coefficient                              | 5.000E-01  | 2.000E-01 | ---                            |                |  | RUNOFF    |  |
| R013                            | Watershed area for nearby stream or pond (m**2) | 2.520E+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)             | 1.510E+00  | 1.500E+00 | ---                            |                |  | DENSAQ    |  |
| R014                            | Saturated zone total porosity                   | 4.300E-01  | 4.000E-01 | ---                            |                |  | TPSZ      |  |
| R014                            | Saturated zone effective porosity               | 3.420E-01  | 2.000E-01 | ---                            |                |  | EPSZ      |  |
| R014                            | Saturated zone field capacity                   | 8.800E-02  | 2.000E-01 | ---                            |                |  | FCSZ      |  |
| R014                            | Saturated zone hydraulic conductivity (m/yr)    | 2.880E+01  | 1.000E+02 | ---                            |                |  | HCSZ      |  |
| R014                            | Saturated zone hydraulic gradient               | 2.000E-03  | 2.000E-02 | ---                            |                |  | HGWT      |  |
| R014                            | Saturated zone b parameter                      | 7.100E+00  | 5.300E+00 | ---                            |                |  | BSZ       |  |
| R014                            | water table drop rate (m/yr)                    | 1.000E-03  | 1.000E-03 | ---                            |                |  | VWT       |  |
| R014                            | well pump intake depth (m below water table)    | 1.000E+01  | 1.000E+01 | ---                            |                |  | DWIBWT    |  |
| R014                            | Model: Nondispersion (ND) or Mass-Balance (MB)  | ND         | ND        | ---                            |                |  | MODEL     |  |
| R014                            | well pumping rate (m**3/yr)                     | 1.573E+03  | 2.500E+02 | ---                            |                |  | UW        |  |

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Summary : HB soil DCGL\_PU240  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU240 DCGL\HB SOIL DCGL\_PU240.RAD

| Site-Specific Parameter Summary (continued) |                                               |            |           |                                | Used by RESRAD |  | Parameter    |  |
|---------------------------------------------|-----------------------------------------------|------------|-----------|--------------------------------|----------------|--|--------------|--|
| Menu                                        | Parameter                                     | User Input | Default   | (If different from user input) |                |  | Name         |  |
| R015                                        | Number of unsaturated zone strata             | 1          | 1         | ---                            |                |  | NS           |  |
| R015                                        | Unsat. zone 1, thickness (m)                  | 4.040E+00  | 4.000E+00 | ---                            |                |  | H(1)         |  |
| R015                                        | Unsat. zone 1, soil density (g/cm**3)         | 1.564E+00  | 1.500E+00 | ---                            |                |  | DENS0Z(1)    |  |
| R015                                        | Unsat. zone 1, total porosity                 | 4.100E-01  | 4.000E-01 | ---                            |                |  | TPUZ(1)      |  |
| R015                                        | Unsat. zone 1, effective porosity             | 3.150E-01  | 2.000E-01 | ---                            |                |  | EPUZ(1)      |  |
| R015                                        | Unsat. zone 1, field capacity                 | 9.500E-02  | 2.000E-01 | ---                            |                |  | FCUZ(1)      |  |
| R015                                        | Unsat. zone 1, soil-specific b parameter      | 5.600E+00  | 5.300E+00 | ---                            |                |  | BUZ(1)       |  |
| R015                                        | Unsat. zone 1, hydraulic conductivity (m/yr)  | 3.900E+00  | 1.000E+01 | ---                            |                |  | HCUZ(1)      |  |
| R016                                        | Distribution coefficients for Pu-240          |            |           |                                |                |  |              |  |
| R016                                        | Contaminated zone (cm**3/g)                   | 9.530E+02  | 2.000E+03 | ---                            |                |  | DCNUCC( 1)   |  |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 9.530E+02  | 2.000E+03 | ---                            |                |  | DCNUCU( 1,1) |  |
| R016                                        | Saturated zone (cm**3/g)                      | 9.530E+02  | 2.000E+03 | ---                            |                |  | DCNUCS( 1)   |  |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | ---                            | 9.565E-05      |  | ALEACH( 1)   |  |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | ---                            | not used       |  | SOLUBK( 1)   |  |
| R016                                        | Distribution coefficients for daughter Ra-228 |            |           |                                |                |  |              |  |
| R016                                        | Contaminated zone (cm**3/g)                   | 3.533E+03  | 7.000E+01 | ---                            |                |  | DCNUCC( 3)   |  |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 3.533E+03  | 7.000E+01 | ---                            |                |  | DCNUCU( 3,1) |  |
| R016                                        | Saturated zone (cm**3/g)                      | 3.533E+03  | 7.000E+01 | ---                            |                |  | DCNUCS( 3)   |  |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | ---                            | 2.581E-05      |  | ALEACH( 3)   |  |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | ---                            | not used       |  | SOLUBK( 3)   |  |
| R016                                        | Distribution coefficients for daughter Th-228 |            |           |                                |                |  |              |  |
| R016                                        | Contaminated zone (cm**3/g)                   | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCC( 4)   |  |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCU( 4,1) |  |
| R016                                        | Saturated zone (cm**3/g)                      | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCS( 4)   |  |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | ---                            | 1.550E-05      |  | ALEACH( 4)   |  |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | ---                            | not used       |  | SOLUBK( 4)   |  |
| R016                                        | Distribution coefficients for daughter Th-232 |            |           |                                |                |  |              |  |
| R016                                        | Contaminated zone (cm**3/g)                   | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCC( 5)   |  |
| R016                                        | Unsat. zone 1 (cm**3/g)                       | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCU( 5,1) |  |
| R016                                        | Saturated zone (cm**3/g)                      | 5.884E+03  | 6.000E+04 | ---                            |                |  | DCNUCS( 5)   |  |
| R016                                        | Leach rate (/yr)                              | 0.000E+00  | 0.000E+00 | ---                            | 1.550E-05      |  | ALEACH( 5)   |  |
| R016                                        | Solubility constant                           | 0.000E+00  | 0.000E+00 | ---                            | not used       |  | SOLUBK( 5)   |  |
| R016                                        | Distribution coefficients for daughter U-236  |            |           |                                |                |  |              |  |
| R016                                        | Contaminated zone (cm**3/g)                   | 1.260E+02  | 5.000E+01 | ---                            |                |  | DCNUCC( 6)   |  |

|                                                                              |                                      |           |           |           |              |
|------------------------------------------------------------------------------|--------------------------------------|-----------|-----------|-----------|--------------|
| R016                                                                         | Unsaturated zone 1 (cm**3/g)         | 1.260E+02 | 5.000E+01 | ---       | DCNUCU( 6,1) |
| R016                                                                         | Saturated zone (cm**3/g)             | 1.260E+02 | 5.000E+01 | ---       | DCNCUS( 6)   |
| R016                                                                         | Leach rate (/yr)                     | 0.000E+00 | 0.000E+00 | 7.224E-04 | ALEACH( 6)   |
| R016                                                                         | Solubility constant                  | 0.000E+00 | 0.000E+00 | not used  | SOLUBK( 6)   |
| R017                                                                         | Inhalation rate (m**3/yr)            | 8.400E+03 | 8.400E+03 | ---       | INHALR       |
| R017                                                                         | Mass loading for inhalation (g/m**3) | 1.000E-04 | 1.000E-04 | ---       | MLINH        |
| R017                                                                         | Exposure duration                    | 3.000E+01 | 3.000E+01 | ---       | ED           |
| R017                                                                         | Shielding factor, inhalation         | 5.500E-01 | 4.000E-01 | ---       | SHF3         |
| R017                                                                         | Shielding factor, external gamma     | 2.725E-01 | 7.000E-01 | ---       | SHF1         |
| R017                                                                         | Fraction of time spent indoors       | 6.571E-01 | 5.000E-01 | ---       | FIND         |
| RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 11:51 Page 6               |                                      |           |           |           |              |
| Summary : HB soil DGL_Pu240                                                  |                                      |           |           |           |              |
| File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU240 DGL\HB SOIL DGL_Pu240.RAD |                                      |           |           |           |              |

| Site-Specific Parameter Summary (continued) |                                                  |            |           |                                               |                |
|---------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                        | User Input | Default   | Used by RESRAD (if different from user input) | Parameter Name |
| R017                                        | Fraction of time spent outdoors (on site)        | 1.181E-01  | 2.500E-01 | ---                                           | FOTD           |
| R017                                        | Shape factor flag, external gamma                | 1.000E+00  | 1.000E+00 | >0 shows circular AREA.                       | FS             |
| R017                                        | Radius of shape factor array (used if FS = -1):  |            |           |                                               |                |
| R017                                        | Outer annular radius (m), ring 1:                | not used   | 5.000E+01 | ---                                           | RAD_SHAPE( 1)  |
| R017                                        | Outer annular radius (m), ring 2:                | not used   | 7.071E+01 | ---                                           | RAD_SHAPE( 2)  |
| R017                                        | Outer annular radius (m), ring 3:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 3)  |
| R017                                        | Outer annular radius (m), ring 4:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 4)  |
| R017                                        | Outer annular radius (m), ring 5:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 5)  |
| R017                                        | Outer annular radius (m), ring 6:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 6)  |
| R017                                        | Outer annular radius (m), ring 7:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 7)  |
| R017                                        | Outer annular radius (m), ring 8:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 8)  |
| R017                                        | Outer annular radius (m), ring 9:                | not used   | 0.000E+00 | ---                                           | RAD_SHAPE( 9)  |
| R017                                        | Outer annular radius (m), ring 10:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(10)  |
| R017                                        | Outer annular radius (m), ring 11:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(11)  |
| R017                                        | Outer annular radius (m), ring 12:               | not used   | 0.000E+00 | ---                                           | RAD_SHAPE(12)  |
| R017                                        | Fractions of annular areas within AREA:          |            |           |                                               |                |
| R017                                        | Ring 1                                           | not used   | 1.000E+00 | ---                                           | FRACA( 1)      |
| R017                                        | Ring 2                                           | not used   | 2.732E-01 | ---                                           | FRACA( 2)      |
| R017                                        | Ring 3                                           | not used   | 0.000E+00 | ---                                           | FRACA( 3)      |
| R017                                        | Ring 4                                           | not used   | 0.000E+00 | ---                                           | FRACA( 4)      |
| R017                                        | Ring 5                                           | not used   | 0.000E+00 | ---                                           | FRACA( 5)      |
| R017                                        | Ring 6                                           | not used   | 0.000E+00 | ---                                           | FRACA( 6)      |
| R017                                        | Ring 7                                           | not used   | 0.000E+00 | ---                                           | FRACA( 7)      |
| R017                                        | Ring 8                                           | not used   | 0.000E+00 | ---                                           | FRACA( 8)      |
| R017                                        | Ring 9                                           | not used   | 0.000E+00 | ---                                           | FRACA( 9)      |
| R017                                        | Ring 10                                          | not used   | 0.000E+00 | ---                                           | FRACA(10)      |
| R017                                        | Ring 11                                          | not used   | 0.000E+00 | ---                                           | FRACA(11)      |
| R017                                        | Ring 12                                          | not used   | 0.000E+00 | ---                                           | FRACA(12)      |
| R018                                        | Fruits, vegetables and grain consumption (kg/yr) | 1.120E+02  | 1.600E+02 | ---                                           | DIET(1)        |
| R018                                        | Leafy vegetable consumption (kg/yr)              | 2.140E+01  | 1.400E+01 | ---                                           | DIET(2)        |
| R018                                        | Milk consumption (L/yr)                          | 2.330E+02  | 9.200E+01 | ---                                           | DIET(3)        |
| R018                                        | Meat and poultry consumption (kg/yr)             | 6.510E+01  | 6.300E+01 | ---                                           | DIET(4)        |
| R018                                        | Fish consumption (kg/yr)                         | 2.060E+01  | 5.400E+00 | ---                                           | DIET(5)        |
| R018                                        | Other seafood consumption (kg/yr)                | 9.000E-01  | 9.000E-01 | ---                                           | DIET(6)        |
| R018                                        | Soil ingestion rate (g/yr)                       | 1.826E+01  | 3.650E+01 | ---                                           | SOIL           |
| R018                                        | Drinking water intake (L/yr)                     | 4.785E+02  | 5.100E+02 | ---                                           | DWI            |
| R018                                        | Contamination fraction of drinking water         | 1.000E+00  | 1.000E+00 | ---                                           | FDW            |
| R018                                        | Contamination fraction of household water        | not used   | 1.000E+00 | ---                                           | FHHW           |
| R018                                        | Contamination fraction of livestock water        | 1.000E+00  | 1.000E+00 | ---                                           | FLW            |
| R018                                        | Contamination fraction of irrigation water       | 1.000E+00  | 1.000E+00 | ---                                           | FTRW           |
| R018                                        | Contamination fraction of aquatic food           | 1.000E+00  | 5.000E-01 | ---                                           | FR9            |
| R018                                        | Contamination fraction of plant food             | 1.000E+00  | -1        | ---                                           | FPLANT         |
| R018                                        | Contamination fraction of meat                   | 1.000E+00  | -1        | ---                                           | FMEAT          |
| R018                                        | Contamination fraction of milk                   | 1.000E+00  | -1        | ---                                           | FMILK          |
| R019                                        | Livestock fodder intake for meat (kg/day)        | 2.710E+01  | 6.800E+01 | ---                                           | LFI5           |
| R019                                        | Livestock fodder intake for milk (kg/day)        | 6.320E+01  | 5.500E+01 | ---                                           | LFI6           |
| R019                                        | Livestock water intake for meat (L/day)          | 5.060E+01  | 5.000E+01 | ---                                           | LWI5           |

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| Site-Specific Parameter Summary (continued) |                                                |            |           |                |                |
|---------------------------------------------|------------------------------------------------|------------|-----------|----------------|----------------|
| Menu                                        | Parameter                                      | User Input | Default   | Used by RESRAD | Parameter Name |
| R019                                        | Livestock water intake for milk (L/day)        | 6.000E-01  | 1.600E-02 | ---            | LWI6           |
| R019                                        | Livestock soil intake (kg/day)                 | 5.000E-01  | 5.000E-01 | ---            | LSI            |
| R019                                        | Mass loading for foliar deposition (g/m**3)    | 4.000E-04  | 1.000E-04 | ---            | MLFD           |
| R019                                        | Depth of soil mixing layer (m)                 | 2.300E-01  | 1.500E-01 | ---            | DM             |
| R019                                        | Depth of roots (m)                             | 1.220E+00  | 9.000E-01 | ---            | DROOT          |
| R019                                        | Drinking water fraction from ground water      | 1.000E+00  | 1.000E+00 | ---            | FGWDW          |
| R019                                        | Household water fraction from ground water     | not used   | 1.000E+00 | ---            | FGWHH          |
| R019                                        | Livestock water fraction from ground water     | 1.000E+00  | 1.000E+00 | ---            | FGWLW          |
| R019                                        | Irrigation fraction from ground water          | 1.000E+00  | 1.000E+00 | ---            | FGWIR          |
| R19B                                        | Wet weight crop yield for Non-Leafy (kg/m**2)  | 1.750E+00  | 7.000E-01 | ---            | YV(1)          |
| R19B                                        | Wet weight crop yield for Leafy (kg/m**2)      | 2.889E+00  | 1.500E+00 | ---            | YV(2)          |
| R19B                                        | Wet weight crop yield for Fodder (kg/m**2)     | 1.887E+00  | 1.100E+00 | ---            | YV(3)          |
| R19B                                        | Growing Season for Non-Leafy (years)           | 2.460E-01  | 1.700E-01 | ---            | TE(1)          |
| R19B                                        | Growing Season for Leafy (years)               | 1.230E-01  | 2.500E-01 | ---            | TE(2)          |
| R19B                                        | Growing Season for Fodder (years)              | 8.200E-02  | 8.000E-02 | ---            | TE(3)          |
| R19B                                        | Translocation Factor for Non-Leafy             | 1.000E-01  | 1.000E-01 | ---            | TV(1)          |
| R19B                                        | Translocation Factor for Leafy                 | 1.000E+00  | 1.000E+00 | ---            | TV(2)          |
| R19B                                        | Translocation Factor for Fodder                | 1.000E+00  | 1.000E+00 | ---            | TV(3)          |
| R19B                                        | Dry Foliar Interception Fraction for Non-Leafy | 3.500E-01  | 2.500E-01 | ---            | RDRIY(1)       |
| R19B                                        | Dry Foliar Interception Fraction for Leafy     | 3.500E-01  | 2.500E-01 | ---            | RDRIY(2)       |
| R19B                                        | Dry Foliar Interception Fraction for Fodder    | 3.500E-01  | 2.500E-01 | ---            | RDRIY(3)       |
| R19B                                        | Wet Foliar Interception Fraction for Non-Leafy | 3.500E-01  | 2.500E-01 | ---            | RWET(1)        |
| R19B                                        | Wet Foliar Interception Fraction for Leafy     | 5.800E-01  | 2.500E-01 | ---            | RWET(2)        |
| R19B                                        | Wet Foliar Interception Fraction for Fodder    | 3.500E-01  | 2.500E-01 | ---            | RWET(3)        |
| R19B                                        | Weathering Removal Constant for Vegetation     | 3.300E+01  | 2.000E+01 | ---            | WLAM           |
| C14                                         | C-12 concentration in water (g/cm**3)          | not used   | 2.000E-05 | ---            | C12WTR         |
| C14                                         | C-12 concentration in contaminated soil (g/g)  | not used   | 3.000E-02 | ---            | C12CZ          |
| C14                                         | Fraction of vegetation carbon from soil        | not used   | 2.000E-02 | ---            | CSOIL          |
| C14                                         | Fraction of vegetation carbon from air         | not used   | 9.800E-01 | ---            | CAIR           |
| C14                                         | C-14 evasion layer thickness in soil (m)       | not used   | 3.000E-01 | ---            | DMC            |
| C14                                         | C-14 evasion flux rate from soil (1/sec)       | not used   | 7.000E-07 | ---            | EVSIN          |
| C14                                         | C-12 evasion flux rate from soil (1/sec)       | not used   | 1.000E-10 | ---            | REVSN          |



```

C14  Fraction of grain in beef cattle feed      not used  8.000E-01  ---  AVFG4
C14  Fraction of grain in milk cow feed        not used  2.000E-01  ---  AVFG5
STOR  Storage times of contaminated foodstuffs (days):
STOR  Fruits, non-leafy vegetables, and grain  1.400E+01  1.400E+01  ---  STOR_T(1)
STOR  Leafy vegetables                        1.000E+00  1.000E+00  ---  STOR_T(2)
STOR  Milk                                  1.000E+00  1.000E+00  ---  STOR_T(3)
STOR  Meat and poultry                       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
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```

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Site-Specific Parameter Summary (continued)
0  Menu  Parameter  User Input  Default  Used by RESRAD  Parameter
Menu  Parameter  Input  Default  (If different from user input)  Name
R021  Total porosity of the cover material  not used  4.000E-01  ---  TPCV
R021  Total porosity of the building foundation  not used  1.000E-01  ---  TPFL
R021  Volumetric water content of the cover material  not used  5.000E-02  ---  PH2OCV
R021  Volumetric water content of the foundation  not used  3.000E-02  ---  PH2OFL
R021  Diffusion coefficient for radon gas (m/sec):
R021  in cover material  not used  2.000E-06  ---  DIFCV
R021  in foundation material  not used  3.000E-07  ---  DIFFL
R021  in contaminated zone soil  not used  2.000E-06  ---  DIFCZ
R021  Radon vertical dimension of mixing (m)  not used  2.000E+00  ---  HMIX
R021  Average building air exchange rate (1/hr)  not used  5.000E-01  ---  REXG
R021  Height of the building (room) (m)  not used  2.500E+00  ---  HRM
R021  Building interior area factor  not used  0.000E+00  ---  FAI
R021  Building depth below ground surface (m)  not used  -1.000E+00  ---  DMFL
R021  Emanating power of Rn-222 gas  not used  2.500E-01  ---  EMANA(1)
R021  Emanating power of Rn-220 gas  not used  1.500E-01  ---  EMANA(2)
TITL  Number of graphical time points  32  ---  NPTS
TITL  Maximum number of integration points for dose  17  ---  LYMAX
TITL  Maximum number of integration points for risk  1  ---  KYMAX

```

#### Summary of Pathway Selections

```

Pathway  User Selection
1 -- external gamma  active
2 -- inhalation (w/o radon)  active
3 -- plant ingestion  active
4 -- meat ingestion  active
5 -- milk ingestion  active
6 -- aquatic foods  active
7 -- drinking water  active
8 -- soil ingestion  active
9 -- radon  suppressed
Find peak pathway doses  active
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Contaminated Zone Dimensions  Initial Soil Concentrations, pCi/g
Area: 30000.00 square meters  Pu-240  1.000E+00
Thickness: 2.67 meters
Cover Depth: 0.00 meters

```

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```

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```

Probabilistic Input  
 Number of Sample Runs: 2000

| Number | Name | Distribution | Parameters |
|--------|------|--------------|------------|
|--------|------|--------------|------------|

| Probabilistic Input (cont.) |            |                       |            |     |
|-----------------------------|------------|-----------------------|------------|-----|
| Number                      | Name       | Distribution          | Parameters |     |
| 49                          | BRTF(90,1) | TRUNCATED LOGNORMAL-N | -6.91      | .9  |
| 50                          | BRTF(90,2) | TRUNCATED LOGNORMAL-N | -9.21      | 1   |
| 51                          | BRTF(90,3) | TRUNCATED LOGNORMAL-N | -12.21     | .9  |
| 52                          | BBTO(90,1) | LOGNORMAL-N           | 4.6        | 1.1 |
| 53                          | BRTF(92,1) | TRUNCATED LOGNORMAL-N | -6.21      | .9  |
| 54                          | BRTF(92,2) | TRUNCATED LOGNORMAL-N | -7.1       | .7  |
| 55                          | BRTF(92,3) | TRUNCATED LOGNORMAL-N | -7.82      | .6  |
| 56                          | BBTO(92,1) | LOGNORMAL-N           | 2.3        | 1.1 |

```

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Probabilistic results summary : HB soil DCGL_Pu240
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\Pu240 DCGL\HB SOIL DCGL_PU240.RAD
      Peak of the mean dose (averaged over observations) at graphical times
Repetition      Time of peak mean dose      Peak mean dose
                  Years      mrem/yr
      1          0.000E+00      9.357E-01

```

| Dose Conversion Factor (and Related) Parameter Summary (continued) |                                                          |                |            |                |       |
|--------------------------------------------------------------------|----------------------------------------------------------|----------------|------------|----------------|-------|
| Dose Library: HB DCGLs Plus FGR 12 & FGR 11                        |                                                          |                |            |                |       |
| Menu                                                               | Parameter                                                | Current Value# | Base Case* | Parameter Name |       |
| D-34                                                               | Th-229+D , plant/soil concentration ratio, dimensionless | 1.000E-03      | 1.000E-03  | RTF(           | 5, 1) |
| D-34                                                               | Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) | 1.000E-04      | 1.000E-04  | RTF(           | 5, 2) |
| D-34                                                               | Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)  | 5.000E-06      | 5.000E-06  | RTF(           | 5, 3) |
| D-34                                                               | U-233 , plant/soil concentration ratio, dimensionless    | 2.500E-03      | 2.500E-03  | RTF(           | 6, 1) |
| D-34                                                               | U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)    | 3.400E-04      | 3.400E-04  | RTF(           | 6, 2) |
| D-34                                                               | U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)     | 6.000E-04      | 6.000E-04  | RTF(           | 6, 3) |
| D-5                                                                | Bioaccumulation factors, fresh water, L/kg:              |                |            |                |       |
| D-5                                                                | Am-241 , fish                                            | 3.000E+01      | 3.000E+01  | BIOFAC(        | 1, 1) |
| D-5                                                                | Am-241 , crustacea and mollusks                          | 1.000E+03      | 1.000E+03  | BIOFAC(        | 1, 2) |

D-5 Np-237+D, fish 3.000E+01 3.000E+01 BIOFAC( 2,1)  
D-5 Np-237+D, crustacea and mollusks 4.000E+02 4.000E+02 BIOFAC( 2,2)  
D-5 Pu-241, fish 3.000E+01 3.000E+01 BIOFAC( 3,1)  
D-5 Pu-241, crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC( 3,2)  
D-5 Pu-241+D, fish 3.000E+01 3.000E+01 BIOFAC( 4,1)  
D-5 Pu-241+D, crustacea and mollusks 1.000E+02 1.000E+02 BIOFAC( 4,2)  
D-5 Th-229+D, fish 1.000E+02 1.000E+02 BIOFAC( 5,1)  
D-5 Th-229+D, crustacea and mollusks 5.000E+02 5.000E+02 BIOFAC( 5,2)  
D-5 U-233, fish 1.000E+01 1.000E+01 BIOFAC( 6,1)  
D-5 U-233, crustacea and mollusks 6.000E+01 6.000E+01 BIOFAC( 6,2)  
#####  
#For DCF1(XXX) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.  
\*Base Case means Default.Lib w/o Associate Nuclide contributions.  
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Summary : HB soil DCGL\_Pu241  
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Site-Specific Parameter Summary  
0 Menu Parameter User Input Default (If different from user input) Parameter Name  
#####  
R011 Area of contaminated zone (m\*\*2) 3.000E+04 1.000E+04 --- AREA  
R011 Thickness of contaminated zone (m) 2.670E+00 2.000E+00 --- THICKO  
R011 Fraction of contamination that is submerged 0.000E+00 0.000E+00 --- SUBFRACT  
R011 Length parallel to aquifer flow (m) 1.950E+02 1.000E+02 --- LCZPAQ  
R011 Basic radiation dose limit (mrem/yr) 2.500E+01 3.000E+01 --- BRDL  
R011 Time since placement of material (yr) 0.000E+00 0.000E+00 --- TI  
R011 Times for calculations (yr) 1.000E+00 1.000E+00 --- T( 2)  
R011 Times for calculations (yr) 3.000E+00 3.000E+00 --- T( 3)  
R011 Times for calculations (yr) 1.000E+01 1.000E+01 --- T( 4)  
R011 Times for calculations (yr) 3.000E+01 3.000E+01 --- T( 5)  
R011 Times for calculations (yr) 1.000E+02 1.000E+02 --- T( 6)  
R011 Times for calculations (yr) 3.000E+02 3.000E+02 --- T( 7)  
R011 Times for calculations (yr) 1.000E+03 1.000E+03 --- T( 8)  
R011 Times for calculations (yr) not used 0.000E+00 --- T( 9)  
R011 Times for calculations (yr) not used 0.000E+00 --- T(10)  
R012 Initial principal radionuclide (pCi/g): Pu-241 1.000E+00 0.000E+00 --- SI(3)  
R012 Concentration in groundwater (pCi/L): Pu-241 not used 0.000E+00 --- WI( 3)  
R013 Cover depth (m) 0.000E+00 0.000E+00 --- COVER0  
R013 Density of cover material (g/cm\*\*3) not used 1.500E+00 --- DENSVCV  
R013 Cover depth erosion rate (m/yr) not used 1.000E-03 --- VCV  
R013 Density of contaminated zone (g/cm\*\*3) 1.564E+00 1.500E+00 --- DENSVCZ  
R013 Contaminated zone erosion rate (m/yr) 2.200E-03 1.000E-03 --- VCVZ  
R013 Contaminated zone total porosity 4.100E-01 4.000E-01 --- TPCZ  
R013 Contaminated zone field capacity 9.500E-02 2.000E-01 --- FCCZ  
R013 Contaminated zone hydraulic conductivity (m/yr) 3.900E+00 1.000E+01 --- HCCZ  
R013 Contaminated zone b parameter 5.600E+00 5.300E+00 --- BCZ  
R013 Average annual wind speed (m/sec) 3.040E+00 2.000E+00 --- WIND  
R013 Humidity in air (g/m\*\*3) not used 8.000E+00 --- HUMID  
R013 Evapotranspiration coefficient 6.250E-01 5.000E-01 --- EVAPTR  
R013 Precipitation (m/yr) 9.100E-01 1.000E+00 --- PRECIP  
R013 Irrigation (m/yr) 5.600E-01 2.000E-01 --- RI  
R013 Irrigation mode overhead overhead --- IDITCH  
R013 Runoff coefficient 5.000E-01 2.000E-01 --- RUNOFF  
R013 watershed area for nearby stream or pond (m\*\*2) 2.520E+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) 1.510E+00 1.500E+00 --- DENSASQ  
R014 Saturated zone total porosity 4.300E-01 4.000E-01 --- TPSZ  
R014 Saturated zone effective porosity 3.420E-01 2.000E-01 --- EPSZ  
R014 Saturated zone field capacity 8.800E-02 2.000E-01 --- FCUZ  
R014 Saturated zone hydraulic conductivity (m/yr) 2.880E+01 2.000E+02 --- HCSZ  
R014 Saturated zone hydraulic gradient 2.000E-03 2.000E-02 --- HGWT  
R014 Saturated zone b parameter 7.100E+00 5.300E+00 --- BSZ  
R014 water table drop rate (m/yr) 1.000E-03 1.000E-03 --- VWT  
R014 well pump intake depth (m below water table) 1.000E+01 1.000E+01 --- DWIBWT  
R014 Model: Nondispersion (ND) or Mass-Balance (MB) ND ND --- MODEL  
R014 well pumping rate (m\*\*3/yr) 1.573E+03 2.500E+02 --- UW  
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Summary : HB soil DCGL\_Pu241  
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Site-Specific Parameter Summary (continued)  
0 Menu Parameter User Input Default (If different from user input) Parameter Name  
#####  
R015 Number of unsaturated zone strata 1 1 --- NS  
R015 Unsat. zone 1, thickness (m) 4.040E+00 4.000E+00 --- H(1)  
R015 Unsat. zone 1, soil density (g/cm\*\*3) 1.564E+00 1.500E+00 --- DENSUZ(1)  
R015 Unsat. zone 1, total porosity 4.100E-01 4.000E-01 --- TPUZ(1)  
R015 Unsat. zone 1, effective porosity 3.150E-01 2.000E-01 --- EPUZ(1)  
R015 Unsat. zone 1, field capacity 9.500E-02 2.000E-01 --- FCUZ(1)  
R015 Unsat. zone 1, soil-specific b parameter 5.600E+00 5.300E+00 --- BUZ(1)  
R015 Unsat. zone 1, hydraulic conductivity (m/yr) 3.900E+00 1.000E+01 --- HCUZ(1)  
R016 Distribution coefficients for Pu-241  
R016 Contaminated zone (cm\*\*3/g) 9.530E+02 2.000E+03 --- DCNUCC( 3)  
R016 Unsaturated zone 1 (cm\*\*3/g) 9.530E+02 2.000E+03 --- DCNUCU( 3,1)  
R016 Saturated zone (cm\*\*3/g) 9.530E+02 2.000E+03 --- DCNUCS( 3)  
R016 Leach rate (/yr) 0.000E+00 0.000E+00 9.565E-05 --- ALEACH( 3)  
R016 Solubility constant 0.000E+00 0.000E+00 not used --- SOLUBK( 3)  
R016 Distribution coefficients for daughter Am-241  
R016 Contaminated zone (cm\*\*3/g) 1.200E+04 2.000E+01 --- DCNUCC( 1)  
R016 Unsaturated zone 1 (cm\*\*3/g) 1.445E+03 2.000E+01 --- DCNUCU( 1,1)  
R016 Saturated zone (cm\*\*3/g) 1.445E+03 2.000E+01 --- DCNUCS( 1)  
R016 Leach rate (/yr) 0.000E+00 0.000E+00 7.598E-06 --- ALEACH( 1)  
R016 Solubility constant 0.000E+00 0.000E+00 not used --- SOLUBK( 1)  
R016 Distribution coefficients for daughter Np-237  
R016 Contaminated zone (cm\*\*3/g) 1.700E+01 2.000E+00 --- DCNUCC( 2)  
R016 Unsaturated zone 1 (cm\*\*3/g) 1.700E+01 2.000E+00 --- DCNUCU( 2,1)  
R016 Saturated zone (cm\*\*3/g) 1.700E+01 2.000E+00 --- DCNUCS( 2)  
R016 Leach rate (/yr) 0.000E+00 0.000E+00 5.294E-03 --- ALEACH( 2)

|                     |                                                                         |                  |           |           |              |
|---------------------|-------------------------------------------------------------------------|------------------|-----------|-----------|--------------|
| R016                | Solubility constant                                                     | 0.000E+00        | 0.000E+00 | not used  | SOLUBK( 2)   |
| R016                | Distribution coefficients for daughter Th-229                           |                  |           |           |              |
| R016                | Contaminated zone (cm**3/g)                                             | 5.884E+03        | 6.000E+04 | ---       | DCNUCC( 5)   |
| R016                | Unsaturated zone 1 (cm**3/g)                                            | 5.884E+03        | 6.000E+04 | ---       | DCNUCU( 5,1) |
| R016                | Saturated zone (cm**3/g)                                                | 5.884E+03        | 6.000E+04 | ---       | DCNUCS( 5)   |
| R016                | Leach rate (/yr)                                                        | 0.000E+00        | 0.000E+00 | 1.550E-05 | ALEACH( 5)   |
| R016                | Solubility constant                                                     | 0.000E+00        | 0.000E+00 | not used  | SOLUBK( 5)   |
| R016                | Distribution coefficients for daughter U-233                            |                  |           |           |              |
| R016                | Contaminated zone (cm**3/g)                                             | 1.260E+02        | 5.000E+01 | ---       | DCNUCC( 6)   |
| R016                | Unsaturated zone 1 (cm**3/g)                                            | 1.260E+02        | 5.000E+01 | ---       | DCNUCU( 6,1) |
| R016                | Saturated zone (cm**3/g)                                                | 1.260E+02        | 5.000E+01 | ---       | DCNUCS( 6)   |
| R016                | Leach rate (/yr)                                                        | 0.000E+00        | 0.000E+00 | 7.224E-04 | ALEACH( 6)   |
| R016                | Solubility constant                                                     | 0.000E+00        | 0.000E+00 | not used  | SOLUBK( 6)   |
| R017                | Inhalation rate (m**3/yr)                                               | 8.400E+03        | 8.400E+03 | ---       | INHALR       |
| R017                | Mass loading for inhalation (g/m**3)                                    | 1.000E-04        | 1.000E-04 | ---       | MLINH        |
| R017                | Exposure duration                                                       | 3.000E+01        | 3.000E+01 | ---       | ED           |
| R017                | Shielding factor, inhalation                                            | 5.500E-01        | 4.000E-01 | ---       | SHF3         |
| R017                | Shielding factor, external gamma                                        | 2.725E-01        | 7.000E-01 | ---       | SHF1         |
| R017                | Fraction of time spent indoors                                          | 6.571E-01        | 5.000E-01 | ---       | FIND         |
| RESRAD, Version 6.5 | T <sub>o</sub> Limit = 30 days                                          | 11/28/2011 11:59 | Page 6    |           |              |
| Summary             | HB soil DCGL_Pu241                                                      |                  |           |           |              |
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| Site-Specific Parameter Summary (continued) |                                                                         |                  |           |                                               |                |
|---------------------------------------------|-------------------------------------------------------------------------|------------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                                               | User Input       | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R017                                        | Fraction of time spent outdoors (on site)                               | 1.181E-01        | 2.500E-01 | ---                                           | FOTD           |
| R017                                        | Shape factor flag, external gamma                                       | 1.000E+00        | 1.000E+00 | >0 shows circular AREA.                       | FS             |
| R017                                        | Radial of shape factor array (used if FS = -1):                         |                  |           |                                               |                |
| R017                                        | Outer annular radius (m), ring 1:                                       | not used         | 5.000E+01 | ---                                           | RAD_SHAPE( 1)  |
| R017                                        | Outer annular radius (m), ring 2:                                       | not used         | 7.071E+01 | ---                                           | RAD_SHAPE( 2)  |
| R017                                        | Outer annular radius (m), ring 3:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 3)  |
| R017                                        | Outer annular radius (m), ring 4:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 4)  |
| R017                                        | Outer annular radius (m), ring 5:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 5)  |
| R017                                        | Outer annular radius (m), ring 6:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 6)  |
| R017                                        | Outer annular radius (m), ring 7:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 7)  |
| R017                                        | Outer annular radius (m), ring 8:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 8)  |
| R017                                        | Outer annular radius (m), ring 9:                                       | not used         | 0.000E+00 | ---                                           | RAD_SHAPE( 9)  |
| R017                                        | Outer annular radius (m), ring 10:                                      | not used         | 0.000E+00 | ---                                           | RAD_SHAPE(10)  |
| R017                                        | Outer annular radius (m), ring 11:                                      | not used         | 0.000E+00 | ---                                           | RAD_SHAPE(11)  |
| R017                                        | Outer annular radius (m), ring 12:                                      | not used         | 0.000E+00 | ---                                           | RAD_SHAPE(12)  |
| R017                                        | Fractions of annular areas within AREA:                                 |                  |           |                                               |                |
| R017                                        | Ring 1                                                                  | not used         | 1.000E+00 | ---                                           | FRACA( 1)      |
| R017                                        | Ring 2                                                                  | not used         | 2.732E-01 | ---                                           | FRACA( 2)      |
| R017                                        | Ring 3                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 3)      |
| R017                                        | Ring 4                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 4)      |
| R017                                        | Ring 5                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 5)      |
| R017                                        | Ring 6                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 6)      |
| R017                                        | Ring 7                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 7)      |
| R017                                        | Ring 8                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 8)      |
| R017                                        | Ring 9                                                                  | not used         | 0.000E+00 | ---                                           | FRACA( 9)      |
| R017                                        | Ring 10                                                                 | not used         | 0.000E+00 | ---                                           | FRACA(10)      |
| R017                                        | Ring 11                                                                 | not used         | 0.000E+00 | ---                                           | FRACA(11)      |
| R017                                        | Ring 12                                                                 | not used         | 0.000E+00 | ---                                           | FRACA(12)      |
| R018                                        | Fruits, vegetables and grain consumption (kg/yr)                        | 1.120E+02        | 1.600E+02 | ---                                           | DIET(1)        |
| R018                                        | Leafy vegetable consumption (kg/yr)                                     | 2.140E+01        | 1.400E+01 | ---                                           | DIET(2)        |
| R018                                        | Milk consumption (L/yr)                                                 | 2.330E+02        | 9.200E+01 | ---                                           | DIET(3)        |
| R018                                        | Meat and poultry consumption (kg/yr)                                    | 6.510E+01        | 6.300E+01 | ---                                           | DIET(4)        |
| R018                                        | Fish consumption (kg/yr)                                                | 2.060E+01        | 5.400E+00 | ---                                           | DIET(5)        |
| R018                                        | Other seafood consumption (kg/yr)                                       | 9.000E-01        | 9.000E-01 | ---                                           | DIET(6)        |
| R018                                        | Soil ingestion rate (g/yr)                                              | 1.826E+01        | 3.650E+01 | ---                                           | SOIL           |
| R018                                        | Drinking water intake (L/yr)                                            | 4.785E+02        | 5.100E+02 | ---                                           | DWI            |
| R018                                        | Contamination fraction of drinking water                                | 1.000E+00        | 1.000E+00 | ---                                           | FDW            |
| R018                                        | Contamination fraction of household water                               | not used         | 1.000E+00 | ---                                           | FHHW           |
| R018                                        | Contamination fraction of livestock water                               | 1.000E+00        | 1.000E+00 | ---                                           | FLW            |
| R018                                        | Contamination fraction of irrigation water                              | 1.000E+00        | 1.000E+00 | ---                                           | FIW            |
| R018                                        | Contamination fraction of aquatic food                                  | 1.000E+00        | 5.000E-01 | ---                                           | FR9            |
| R018                                        | Contamination fraction of plant food                                    | 1.000E+00        | -1        | ---                                           | FPLANT         |
| R018                                        | Contamination fraction of meat                                          | 1.000E+00        | -1        | ---                                           | FMEAT          |
| R018                                        | Contamination fraction of milk                                          | 1.000E+00        | -1        | ---                                           | FMILK          |
| R019                                        | Livestock fodder intake for meat (kg/day)                               | 2.710E+01        | 6.800E+01 | ---                                           | LFIS           |
| R019                                        | Livestock fodder intake for milk (kg/day)                               | 6.320E+01        | 5.500E+01 | ---                                           | LF16           |
| R019                                        | Livestock water intake for meat (L/day)                                 | 5.060E+01        | 5.000E+01 | ---                                           | LWIS           |
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| Summary                                     | HB soil DCGL_Pu241                                                      |                  |           |                                               |                |
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| Site-Specific Parameter Summary (continued) |                                                |            |           |                                               |                |
|---------------------------------------------|------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                      | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R019                                        | Livestock water intake for milk (L/day)        | 6.000E+01  | 1.600E+02 | ---                                           | LWI6           |
| R019                                        | Livestock soil intake (kg/day)                 | 5.000E-01  | 5.000E-01 | ---                                           | LSI            |
| R019                                        | Mass loading for foliar deposition (g/m**3)    | 4.000E-04  | 1.000E-04 | ---                                           | MLFD           |
| R019                                        | Depth of soil mixing layer (m)                 | 2.300E-01  | 1.500E-01 | ---                                           | DM             |
| R019                                        | Depth of roots (m)                             | 1.220E+00  | 9.000E-01 | ---                                           | DROOT          |
| R019                                        | Drinking water fraction from ground water      | 1.000E+00  | 1.000E+00 | ---                                           | FGWDW          |
| R019                                        | Household water fraction from ground water     | not used   | 1.000E+00 | ---                                           | FGWHH          |
| R019                                        | Livestock water fraction from ground water     | 1.000E+00  | 1.000E+00 | ---                                           | FGWLW          |
| R019                                        | Irrigation fraction from ground water          | 1.000E+00  | 1.000E+00 | ---                                           | FGWIR          |
| R19B                                        | Wet weight crop yield for Non-Leafy (kg/m**2)  | 1.750E+00  | 7.000E-01 | ---                                           | YV(1)          |
| R19B                                        | Wet weight crop yield for Leafy (kg/m**2)      | 2.889E+00  | 1.500E+00 | ---                                           | YV(2)          |
| R19B                                        | Wet weight crop yield for Fodder (kg/m**2)     | 1.887E+00  | 1.100E+00 | ---                                           | YV(3)          |
| R19B                                        | Growing Season for Non-Leafy (years)           | 2.460E-01  | 1.700E-01 | ---                                           | TE(1)          |
| R19B                                        | Growing Season for Leafy (years)               | 1.230E-01  | 2.500E-01 | ---                                           | TE(2)          |
| R19B                                        | Growing Season for Fodder (years)              | 8.200E-02  | 8.000E-02 | ---                                           | TE(3)          |
| R19B                                        | Translocation factor for Non-Leafy             | 1.000E-01  | 1.000E-01 | ---                                           | TIV(1)         |
| R19B                                        | Translocation factor for Leafy                 | 1.000E+00  | 1.000E+00 | ---                                           | TIV(2)         |
| R19B                                        | Translocation factor for Fodder                | 1.000E+00  | 1.000E+00 | ---                                           | TIV(3)         |
| R19B                                        | Dry Foliar Interception Fraction for Non-Leafy | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(1)        |
| R19B                                        | Dry Foliar Interception Fraction for Leafy     | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(2)        |
| R19B                                        | Dry Foliar Interception Fraction for Fodder    | 3.500E-01  | 2.500E-01 | ---                                           | RDRY(3)        |
| R19B                                        | Wet Foliar Interception Fraction for Non-Leafy | 3.500E-01  | 2.500E-01 | ---                                           | RWET(1)        |

|                                                                                |                                                  |           |           |     |           |
|--------------------------------------------------------------------------------|--------------------------------------------------|-----------|-----------|-----|-----------|
| R19B                                                                           | Wet Foliar Interception Fraction for Leafy       | 5.800E-01 | 2.500E-01 | --- | RWET(2)   |
| R19B                                                                           | Wet Foliar Interception Fraction for Fodder      | 3.500E-01 | 2.500E-01 | --- | RWET(3)   |
| R19B                                                                           | Weathering Removal Constant for Vegetation       | 3.300E+01 | 2.000E+01 | --- | WLAM      |
| C14                                                                            | C-12 concentration in water (g/cm**3)            | not used  | 2.000E-05 | --- | C12WTR    |
| C14                                                                            | C-12 concentration in contaminated soil (g/g)    | not used  | 3.000E-02 | --- | C12CZ     |
| C14                                                                            | Fraction of vegetation carbon from soil          | not used  | 2.000E-02 | --- | CSOIL     |
| C14                                                                            | Fraction of vegetation carbon from air           | not used  | 9.800E-01 | --- | CAIR      |
| C14                                                                            | C-14 evasion layer thickness in soil (m)         | not used  | 3.000E-01 | --- | DMC       |
| C14                                                                            | C-14 evasion flux rate from soil (l/sec)         | not used  | 7.000E-07 | --- | EVSN      |
| C14                                                                            | C-12 evasion flux rate from soil (l/sec)         | not used  | 1.000E-10 | --- | REVSN     |
| C14                                                                            | Fraction of grain in beef cattle feed            | not used  | 8.000E-01 | --- | AVFG4     |
| C14                                                                            | Fraction of grain in milk cow feed               | not used  | 2.000E-01 | --- | AVFG5     |
| STOR                                                                           | Storage times of contaminated foodstuffs (days): |           |           |     |           |
| STOR                                                                           | Fruits, non-leafy vegetables, and grain          | 1.400E+01 | 1.400E+01 | --- | STOR_T(1) |
| STOR                                                                           | Leafy vegetables                                 | 1.000E+00 | 1.000E+00 | --- | STOR_T(2) |
| STOR                                                                           | Milk                                             | 1.000E+00 | 1.000E+00 | --- | STOR_T(3) |
| STOR                                                                           | Meat and poultry                                 | 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    |
| 1RESRAD, Version 6.5 T« Limit = 30 days 11/28/2011 11:59 Page 8                |                                                  |           |           |     |           |
| Summary : HB soil DCGL_Pu241                                                   |                                                  |           |           |     |           |
| File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL_PU241.RAD |                                                  |           |           |     |           |

| 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 cover material           | not used   | 4.000E-01  | ---                                           | TPCV           |
| R021                                        | Total porosity of the building foundation      | not used   | 1.000E-01  | ---                                           | TPFL           |
| R021                                        | Volumetric water content of the cover material | not used   | 5.000E-02  | ---                                           | PH2OCV         |
| R021                                        | Volumetric water content of the foundation     | not used   | 3.000E-02  | ---                                           | PH2OFL         |
| R021                                        | Diffusion coefficient for radon gas (m/sec):   |            |            |                                               |                |
| R021                                        | in cover material                              | not used   | 2.000E-06  | ---                                           | DIFCV          |
| R021                                        | in foundation material                         | not used   | 3.000E-07  | ---                                           | DIFFL          |
| R021                                        | in contaminated zone soil                      | not used   | 2.000E-06  | ---                                           | DIFCZ          |
| R021                                        | Radon vertical dimension of mixing (m)         | not used   | 2.000E-00  | ---                                           | HMLX           |
| R021                                        | Average building air exchange rate (l/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          | ---        | ---                                           | LYMAX          |

| Summary of Pathway Selections                                                  |                                    |
|--------------------------------------------------------------------------------|------------------------------------|
| Pathway                                                                        | User Selection                     |
| 1 -- external gamma                                                            | active                             |
| 2 -- inhalation (w/o radon)                                                    | active                             |
| 3 -- plant ingestion                                                           | active                             |
| 4 -- meat ingestion                                                            | active                             |
| 5 -- milk ingestion                                                            | active                             |
| 6 -- aquatic foods                                                             | active                             |
| 7 -- drinking water                                                            | active                             |
| 8 -- soil ingestion                                                            | active                             |
| 9 -- radon                                                                     | suppressed                         |
| Find peak pathway doses                                                        | active                             |
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| Summary : HB soil DCGL_Pu241                                                   |                                    |
| File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL_PU241.RAD |                                    |
| Contaminated Zone Dimensions                                                   | Initial Soil Concentrations, pCi/g |
| Area: 30000.00 square meters                                                   | Pu-241 1.000E+00                   |
| Thickness: 2.67 meters                                                         |                                    |
| Cover Depth: 0.00 meters                                                       |                                    |

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
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| Probabilistic results summary : HB soil DCGL_Pu241                             |    |
| File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL_PU241.RAD |    |
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Probabilistic results summary : HB soil DCGL\_Pu241  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL\_PU241.RAD

Probabilistic Input  
Number of Sample Runs: 2000

| Number | Name       | Distribution          | Parameters                         |
|--------|------------|-----------------------|------------------------------------|
| 1      | DENSCZ     | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3              |
| 2      | TPCZ       | BOUNDED NORMAL        | .41 .09 .1319 .6881                |
| 3      | HCCZ       | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190              |
| 4      | BCZ        | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3                |
| 5      | EVAPTR     | UNIFORM               | .36 .75                            |
| 6      | RI         | UNIFORM               | .36 .75                            |
| 7      | DENSAQ     | BOUNDED NORMAL        | 1.5105 .1855 .937 2.084            |
| 8      | TPSZ       | BOUNDED NORMAL        | .43 .0699 .214 .646                |
| 9      | EPSZ       | BOUNDED NORMAL        | .342 .0705 .124 .56                |
| 10     | HCSZ       | BOUNDED LOGNORMAL-N   | .362 1.59 .0106 195                |
| 11     | BSZ        | BOUNDED LOGNORMAL-N   | 1.96 .265 3.02 15.5                |
| 12     | DWIBWT     | TRIANGULAR            | 6 10 30                            |
| 13     | UW         | UNIFORM               | 1173 1973                          |
| 14     | H(1)       | UNIFORM               | 0 8.08                             |
| 15     | DENSUZ(1)  | BOUNDED NORMAL        | 1.5635 .2385 .827 2.3              |
| 16     | TPUZ(1)    | BOUNDED NORMAL        | .41 .09 .1319 .6881                |
| 17     | EPUZ(1)    | BOUNDED NORMAL        | .315 .0905 .0349 .594              |
| 18     | HCUZ(1)    | BOUNDED LOGNORMAL-N   | 1.36 2.17 .00478 3190              |
| 19     | BUZ(1)     | BOUNDED LOGNORMAL-N   | 1.73 .323 2.08 15.3                |
| 20     | MLINH      | CONTINUOUS LINEAR     | 8 0 0 .000008 .0151 .000016 .1365  |
| .00003 | .8119      | .00004 .9495          | .00006 .9937 .000076 .9983 .0001 1 |
| 21     | SHF3       | UNIFORM               | .15 .95                            |
| 22     | SHF1       | BOUNDED LOGNORMAL-N   | -1.3 .59 .044 1                    |
| 23     | DM         | TRIANGULAR            | 0 .15 .6                           |
| 24     | YV(1)      | TRUNCATED LOGNORMAL-N | .56 .48 .001 .999                  |
| 25     | WLAM       | TRIANGULAR            | 5.1 18 84                          |
| 26     | RWET(2)    | TRIANGULAR            | .06 .67 .95                        |
| 27     | DCACTC(3)  | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999                |
| 28     | DCACTU1(3) | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999                |
| 29     | DCACTS(3)  | TRUNCATED LOGNORMAL-N | 6.86 1.89 .001 .999                |
| 30     | DCACTU1(1) | TRUNCATED LOGNORMAL-N | 7.28 3.15 .001 .999                |
| 31     | DCACTS(1)  | TRUNCATED LOGNORMAL-N | 7.28 3.15 .001 .999                |
| 32     | DCACTC(2)  | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999                |
| 33     | DCACTU1(2) | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999                |
| 34     | DCACTS(2)  | TRUNCATED LOGNORMAL-N | 2.84 2.25 .001 .999                |
| 35     | DCACTC(6)  | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999                |
| 36     | DCACTU1(6) | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999                |
| 37     | DCACTS(6)  | TRUNCATED LOGNORMAL-N | 4.84 3.13 .001 .999                |
| 38     | BRTF(94,1) | TRUNCATED LOGNORMAL-N | -6.91 .9 .001 .999                 |
| 39     | BRTF(94,2) | TRUNCATED LOGNORMAL-N | -9.21 .2 .001 .999                 |
| 40     | BRTF(94,3) | TRUNCATED LOGNORMAL-N | -13.82 .5 .001 .999                |
| 41     | BBIO(94,1) | LOGNORMAL-N           | 3.4 1.1                            |
| 42     | BRTF(95,2) | TRUNCATED LOGNORMAL-N | -9.9 .2 .001 .999                  |
| 43     | BRTF(95,3) | TRUNCATED LOGNORMAL-N | -13.12 .7 .001 .999                |
| 44     | BBIO(95,1) | LOGNORMAL-N           | 3.4 1.1                            |
| 45     | BRTF(93,1) | TRUNCATED LOGNORMAL-N | -3.91 .9 .001 .999                 |
| 46     | BRTF(93,2) | TRUNCATED LOGNORMAL-N | -6.91 .7 .001 .999                 |
| 47     | BRTF(93,3) | TRUNCATED LOGNORMAL-N | -11.51 .7 .001 .999                |
| 48     | BBIO(93,1) | LOGNORMAL-N           | 3.4 1.1                            |

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Probabilistic results summary : HB soil DCGL\_Pu241  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL\_PU241.RAD

Probabilistic Input (cont.)

| Number | Name       | Distribution          | Parameters          |
|--------|------------|-----------------------|---------------------|
| 49     | BRTF(90,1) | TRUNCATED LOGNORMAL-N | -6.91 .9 .001 .999  |
| 50     | BRTF(90,2) | TRUNCATED LOGNORMAL-N | -9.21 1 .001 .999   |
| 51     | BRTF(90,3) | TRUNCATED LOGNORMAL-N | -12.21 .9 .001 .999 |
| 52     | BBIO(90,1) | LOGNORMAL-N           | 4.6 1.1             |
| 53     | BRTF(92,1) | TRUNCATED LOGNORMAL-N | -6.21 .9 .001 .999  |
| 54     | BRTF(92,2) | TRUNCATED LOGNORMAL-N | -7.13 .7 .001 .999  |
| 55     | BRTF(92,3) | TRUNCATED LOGNORMAL-N | -7.82 .6 .001 .999  |
| 56     | BBIO(92,1) | LOGNORMAL-N           | 2.3 1.1             |

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Probabilistic results summary : HB soil DCGL\_Pu241  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\PU241 DCGL\HB SOIL DCGL\_PU241.RAD  
Peak of the mean dose (averaged over observations) at graphical times  
Repetition Time of peak mean dose Peak mean dose  
Years mrem/yr  
1 5.380E+01 2.904E-02





|      |                                                |           |           |     |        |
|------|------------------------------------------------|-----------|-----------|-----|--------|
| R014 | Saturated zone hydraulic conductivity (m/yr)   | 2.880E+01 | 1.000E+02 | --- | HCSZ   |
| R014 | Saturated zone hydraulic gradient              | 2.000E-03 | 2.000E-02 | --- | HGWZ   |
| R014 | Saturated zone b parameter                     | 7.100E+00 | 5.300E+00 | --- | BSZ    |
| R014 | Water table drop rate (m/yr)                   | 1.000E-03 | 1.000E-03 | --- | VWT    |
| R014 | Well pump intake depth (m below water table)   | 1.000E+01 | 1.000E+01 | --- | DWBTBW |
| R014 | Model: Nondispersion (ND) or Mass-Balance (MB) | ND        | ND        | --- | MODEL  |
| R014 | Well pumping rate (m**3/yr)                    | 1.573E+03 | 2.500E+02 | --- | UW     |

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Summary : HB sensitivity analysis\_soil\_sr-90  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\SR90 DCGL\HB SOIL DCGL\_SR90.RAD

| Site-Specific Parameter Summary (continued) |                                              |            |           |                                               |                |
|---------------------------------------------|----------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                    | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R015                                        | Number of unsaturated zone strata            | 1          | 1         | ---                                           | NS             |
| R015                                        | Unsat. zone 1, thickness (m)                 | 4.040E+00  | 4.000E+00 | ---                                           | H(1)           |
| R015                                        | Unsat. zone 1, soil density (g/cm**3)        | 1.564E+00  | 1.500E+00 | ---                                           | DENSUZ(1)      |
| R015                                        | Unsat. zone 1, total porosity                | 4.100E-01  | 4.000E-01 | ---                                           | TPUZ(1)        |
| R015                                        | Unsat. zone 1, effective porosity            | 3.150E-01  | 2.000E-01 | ---                                           | EPUZ(1)        |
| R015                                        | Unsat. zone 1, field capacity                | 9.500E-02  | 2.000E-01 | ---                                           | FCUZ(1)        |
| R015                                        | Unsat. zone 1, soil-specific b parameter     | 5.600E+00  | 5.300E+00 | ---                                           | BUZ(1)         |
| R015                                        | Unsat. zone 1, hydraulic conductivity (m/yr) | 3.900E+00  | 1.000E+01 | ---                                           | HCUZ(1)        |
| R016                                        | Distribution coefficients for Sr-90          |            |           |                                               |                |
| R016                                        | Contaminated zone (cm**3/g)                  | 3.200E+01  | 3.000E+01 | ---                                           | DCNUCC( 1)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                      | 3.200E+01  | 3.000E+01 | ---                                           | DCNUCU( 1,1)   |
| R016                                        | Saturated zone (cm**3/g)                     | 3.200E+01  | 3.000E+01 | ---                                           | DCNUCS( 1)     |
| R016                                        | Leach rate (/yr)                             | 0.000E+00  | 0.000E+00 | 2.830E-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 | ---                                           | MLTNH          |
| R017                                        | Exposure duration                            | 3.000E+01  | 3.000E+01 | ---                                           | ED             |
| R017                                        | Shielding factor, inhalation                 | 5.500E-01  | 4.000E-01 | ---                                           | SHF3           |
| R017                                        | Shielding factor, external gamma             | 2.725E-01  | 7.000E-01 | ---                                           | SHF1           |
| R017                                        | Fraction of time spent indoors               | 6.571E-01  | 5.000E-01 | ---                                           | FIND           |
| R017                                        | Fraction of time spent outdoors (on site)    | 1.181E-01  | 2.500E-01 | ---                                           | FOTD           |
| R017                                        | Shape factor flag, external gamma            | 1.000E+00  | 1.000E+00 | >0 shows circular AREA.                       | FS             |
| R017                                        | Radial 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)  |

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Summary : HB sensitivity analysis\_soil\_sr-90  
File : C:\RESRAD\_FAMILY\RESRAD\6.5\USERFILES\SR90 DCGL\HB SOIL DCGL\_SR90.RAD

| Site-Specific Parameter Summary (continued) |                                                  |            |           |                                               |                |
|---------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                        | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R017                                        | Fractions of annular areas within AREA:          |            |           |                                               |                |
| R017                                        | Ring 1                                           | not used   | 1.000E+00 | ---                                           | FRACA( 1)      |
| R017                                        | Ring 2                                           | not used   | 2.732E-01 | ---                                           | FRACA( 2)      |
| R017                                        | Ring 3                                           | not used   | 0.000E+00 | ---                                           | FRACA( 3)      |
| R017                                        | Ring 4                                           | not used   | 0.000E+00 | ---                                           | FRACA( 4)      |
| R017                                        | Ring 5                                           | not used   | 0.000E+00 | ---                                           | FRACA( 5)      |
| R017                                        | Ring 6                                           | not used   | 0.000E+00 | ---                                           | FRACA( 6)      |
| R017                                        | Ring 7                                           | not used   | 0.000E+00 | ---                                           | FRACA( 7)      |
| R017                                        | Ring 8                                           | not used   | 0.000E+00 | ---                                           | FRACA( 8)      |
| R017                                        | Ring 9                                           | not used   | 0.000E+00 | ---                                           | FRACA( 9)      |
| R017                                        | Ring 10                                          | not used   | 0.000E+00 | ---                                           | FRACA(10)      |
| R017                                        | Ring 11                                          | not used   | 0.000E+00 | ---                                           | FRACA(11)      |
| R017                                        | Ring 12                                          | not used   | 0.000E+00 | ---                                           | FRACA(12)      |
| R018                                        | Fruits, vegetables and grain consumption (kg/yr) | 1.120E+02  | 1.600E+02 | ---                                           | DIET(1)        |
| R018                                        | Leafy vegetable consumption (kg/yr)              | 2.140E+01  | 1.400E+01 | ---                                           | DIET(2)        |
| R018                                        | Milk consumption (L/yr)                          | 2.330E+02  | 9.200E+01 | ---                                           | DIET(3)        |
| R018                                        | Meat and poultry consumption (kg/yr)             | 6.510E+01  | 6.300E+01 | ---                                           | DIET(4)        |
| R018                                        | Fish consumption (kg/yr)                         | 2.060E+01  | 5.400E+00 | ---                                           | DIET(5)        |
| R018                                        | Other seafood consumption (kg/yr)                | 9.000E-01  | 9.000E-01 | ---                                           | DIET(6)        |
| R018                                        | Soil ingestion rate (g/yr)                       | 1.826E+01  | 3.650E+01 | ---                                           | SOIL           |
| R018                                        | Drinking water intake (L/yr)                     | 4.785E+02  | 5.100E+02 | ---                                           | DWI            |
| R018                                        | Contamination fraction of drinking water         | 1.000E+00  | 1.000E+00 | ---                                           | FDW            |
| R018                                        | Contamination fraction of household water        | not used   | 1.000E+00 | ---                                           | FHHW           |
| R018                                        | Contamination fraction of livestock water        | 1.000E+00  | 1.000E+00 | ---                                           | FLW            |
| R018                                        | Contamination fraction of irrigation water       | 1.000E+00  | 1.000E+00 | ---                                           | FIRW           |
| R018                                        | Contamination fraction of aquatic food           | 1.000E+00  | 5.000E-01 | ---                                           | FR9            |
| R018                                        | Contamination fraction of plant food             | 1.000E+00  | -1        | ---                                           | FPLANT         |
| R018                                        | Contamination fraction of meat                   | 1.000E+00  | -1        | ---                                           | FMEAT          |
| R018                                        | Contamination fraction of milk                   | 1.000E+00  | -1        | ---                                           | FMILK          |
| R019                                        | Livestock fodder intake for meat (kg/day)        | 2.710E+01  | 6.800E+01 | ---                                           | LFIS           |
| R019                                        | Livestock fodder intake for milk (kg/day)        | 6.320E+01  | 5.500E+01 | ---                                           | LFIS           |
| R019                                        | Livestock water intake for meat (L/day)          | 5.060E+01  | 5.000E+01 | ---                                           | LWIS           |
| R019                                        | Livestock water intake for milk (L/day)          | 6.000E+01  | 1.600E+02 | ---                                           | LWIS           |
| R019                                        | Livestock soil intake (kg/day)                   | 5.000E-01  | 5.000E-01 | ---                                           | LSI            |
| R019                                        | Mass loading for foliar deposition (g/m**3)      | 4.000E-04  | 1.000E-04 | ---                                           | MLFD           |
| R019                                        | Depth of soil mixing layer (m)                   | 2.300E-01  | 1.500E-01 | ---                                           | DM             |
| R019                                        | Depth of roots (m)                               | 1.220E+00  | 9.000E-01 | ---                                           | DROOT          |
| R019                                        | Drinking water fraction from ground water        | 1.000E+00  | 1.000E+00 | ---                                           | FGWDW          |
| R019                                        | Household water fraction from ground water       | not used   | 1.000E+00 | ---                                           | FGHWW          |
| R019                                        | Livestock water fraction from ground water       | 1.000E+00  | 1.000E+00 | ---                                           | FGWLW          |
| R019                                        | Irrigation water fraction from ground water      | 1.000E+00  | 1.000E+00 | ---                                           | FGWIR          |
| R19B                                        | Wet weight crop yield for Non-Leafy (kg/m**2)    | 1.750E+00  | 7.000E-01 | ---                                           | YV(1)          |
| R19B                                        | Wet weight crop yield for Leafy (kg/m**2)        | 2.889E+00  | 1.500E+00 | ---                                           | YV(2)          |
| R19B                                        | Wet weight crop yield for Fodder (kg/m**2)       | 1.887E+00  | 1.100E+00 | ---                                           | YV(3)          |
| R19B                                        | Growing Season for Non-Leafy (years)             | 2.460E-01  | 1.700E-01 | ---                                           | TE(1)          |
| R19B                                        | Growing Season for Leafy (years)                 | 1.230E-01  | 2.500E-01 | ---                                           | TE(2)          |

| Site-Specific Parameter Summary (continued) |                                               |            |         |                                                  |                |
|---------------------------------------------|-----------------------------------------------|------------|---------|--------------------------------------------------|----------------|
| Menu                                        | Parameter                                     | User Input | Default | Used by RESRAD<br>(If different from user input) | Parameter Name |
| TITL                                        | Maximum number of integration points for dose | 17         | ---     | ---                                              | LYMAX          |
| TITL                                        | Maximum number of integration points for risk | 1          | ---     | ---                                              | KYMAX          |

```

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

```

| Contaminated Zone Dimensions |             | Initial Soil Concentrations, pCi/g |  |
|------------------------------|-------------|------------------------------------|--|
| Area: 30000.00 square meters |             | Sr-90 1.000E+00                    |  |
| Thickness:                   | 2.67 meters |                                    |  |
| Cover Depth:                 | 0.00 meters |                                    |  |

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Part VI: Uncertainty Analysis

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ORESRAD Uncertainty Analysis Results

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Probabilistic results summary : HB sensitivity analysis soil_Sr-90
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\SR90 DCLG\HB SOIL DCLG_SR90.RAD
      Peak of the mean dose (averaged over observations) at graphical times
Repetition      Time of peak mean dose      Peak mean dose
                  Years                      mrem/yr
                  1      0.000E+00          1.655E+01

```

```
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Summary : HB sensitivity analysis_soil_Tc-99
File    : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\TC99 DCGL\HB SOIL DCGL_TC99.RAD
```

|                                                            |                                                         |    |
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Soil Concentration Per Nuclide ..... 18
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Dose Conversion Factor (and Related) Parameter Summary  
Dose Library: HB DGLS Plus EGR 12 & EGR 11

| Dose Library: HB DGLs Plus FGR 12 & FGR 11                                                                       |                                                        |                |            |                |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------|------------|----------------|
| Menu                                                                                                             | Parameter                                              | Current Value# | Base Case* | Parameter Name |
| A-1                                                                                                              | DCF's for external ground radiation, (mrem/yr)/(pCi/g) |                |            |                |
| A-1                                                                                                              | Tc-99 (Source: FGR 12)                                 | 1.255E-04      | 1.255E-04  | DCF1( 1)       |
| B-1                                                                                                              | Dose conversion factors for inhalation, mrem/pCi:      |                |            |                |
| B-1                                                                                                              | Tc-99                                                  | 8.320E-06      | 8.320E-06  | DCF2( 1)       |
| D-1                                                                                                              | Dose conversion factors for ingestion, mrem/pCi:       |                |            |                |
| D-1                                                                                                              | Tc-99                                                  | 1.460E-06      | 1.460E-06  | DCF3( 1)       |
| D-34                                                                                                             | Food transfer factors:                                 |                |            |                |
| D-34                                                                                                             | Tc-99 , plant/soil concentration ratio, dimensionless  | 9.160E+00      | 5.000E+00  | RTF( 1,1)      |
| D-34                                                                                                             | Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)  | 1.000E-04      | 1.000E-04  | RTF( 1,2)      |
| D-34                                                                                                             | Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)   | 1.000E-03      | 1.000E-03  | RTF( 1,3)      |
| D-5                                                                                                              | Bioaccumulation factors, fresh water, L/kg:            |                |            |                |
| D-5                                                                                                              | Tc-99 , fish                                           | 2.000E+01      | 2.000E+01  | BIOFAC( 1,1)   |
| D-5                                                                                                              | Tc-99 , crustacea and mollusks                         | 5.000E+00      | 5.000E+00  | BIOFAC( 1,2)   |
| #For DCF1(xxx) only, factors are for infinite depth & area. See ETRG table in Ground Pathway of Detailed Report. |                                                        |                |            |                |

\* Base Case Means Default Lib w/o Associate Nuclide Contributions.  
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| Site-Specific Parameter Summary |                                                 |            |           |                                               |                |
|---------------------------------|-------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                            | Parameter                                       | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R011                            | Area of contaminated zone (m**2)                | 3.000E+04  | 1.000E+04 | ---                                           | AREA           |
| R011                            | Thickness of contaminated zone (m)              | 2.670E+00  | 2.000E+00 | ---                                           | THICK0         |
| R011                            | Fraction of contamination that is submerged     | 0.000E+00  | 0.000E+00 | ---                                           | SUBMFRAC       |
| R011                            | Length parallel to aquifer flow (m)             | 1.950E+02  | 1.000E+02 | ---                                           | LCZPAQ         |
| R011                            | Basic radiation dose limit (mrem/yr)            | 2.500E+01  | 3.000E+01 | ---                                           | BRDL           |
| R011                            | Time since placement of material (yr)           | 0.000E+00  | 0.000E+00 | ---                                           | TI             |
| R011                            | Times for calculations (yr)                     | 1.000E+00  | 1.000E+00 | ---                                           | TI (2)         |
| R011                            | Times for calculations (yr)                     | 3.000E+00  | 3.000E+00 | ---                                           | TI (3)         |
| R011                            | Times for calculations (yr)                     | 1.000E+01  | 1.000E+01 | ---                                           | TI (4)         |
| R011                            | Times for calculations (yr)                     | 3.000E+01  | 3.000E+01 | ---                                           | TI (5)         |
| R011                            | Times for calculations (yr)                     | 1.000E+02  | 1.000E+02 | ---                                           | TI (6)         |
| R011                            | Times for calculations (yr)                     | 3.000E+02  | 3.000E+02 | ---                                           | TI (7)         |
| R011                            | Times for calculations (yr)                     | 1.000E+03  | 1.000E+03 | ---                                           | TI (8)         |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---                                           | TI (9)         |
| R011                            | Times for calculations (yr)                     | not used   | 0.000E+00 | ---                                           | TI(10)         |
| R012                            | Initial principal radionuclide (pCi/g): Tc-99   | 1.000E+00  | 0.000E+00 | ---                                           | S1(1)          |
| R012                            | Concentration in groundwater (pCi/L): Tc-99     | not used   | 0.000E+00 | ---                                           | WL( 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)          | 1.564E+00  | 1.500E+00 | ---                                           | DENSCZ         |
| R013                            | Contaminated zone erosion rate (m/yr)           | 2.200E-03  | 1.000E-03 | ---                                           | VCZ            |
| R013                            | Contaminated zone total porosity                | 4.100E-01  | 4.000E-01 | ---                                           | TPCZ           |
| R013                            | Contaminated zone field capacity                | 9.500E-02  | 2.000E-01 | ---                                           | FCCZ           |
| R013                            | Contaminated zone hydraulic conductivity (m/yr) | 3.900E+00  | 1.000E+01 | ---                                           | HCCZ           |
| R013                            | Contaminated zone b parameter                   | 5.600E+00  | 5.300E+00 | ---                                           | BCZ            |
| R013                            | Average annual wind speed (m/sec)               | 3.040E+00  | 2.000E+00 | ---                                           | WIND           |
| R013                            | Humidity in air (g/m**3)                        | not used   | 8.000E+00 | ---                                           | HUMID          |
| R013                            | Evapotranspiration coefficient                  | 6.250E-01  | 5.000E-01 | ---                                           | EVAPTR         |
| R013                            | Precipitation (m/yr)                            | 9.100E-01  | 1.000E+00 | ---                                           | PRECIP         |
| R013                            | Irrigation (m/yr)                               | 5.600E-01  | 2.000E-01 | ---                                           | RI             |
| R013                            | Irrigation mode                                 | overhead   | overhead  | ---                                           | IDITCH         |
| R013                            | Runoff coefficient                              | 5.000E-01  | 2.000E-01 | ---                                           | RUNOFF         |
| R013                            | Watershed area for nearby stream or pond (m**2) | 2.520E+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)             | 1.510E+00  | 1.500E+00 | ---                                           | DENSAQ         |
| R014                            | Saturated zone total porosity                   | 4.300E-01  | 4.000E-01 | ---                                           | TPSZ           |
| R014                            | Saturated zone effective porosity               | 3.420E-01  | 2.000E-01 | ---                                           | EPSZ           |
| R014                            | Saturated zone field capacity                   | 8.800E-02  | 2.000E-01 | ---                                           | FCSZ           |
| R014                            | Saturated zone hydraulic conductivity (m/vr)    | 2.880E+01  | 1.000E+02 | ---                                           | HCSZ           |

|      |                                                |           |           |     |        |
|------|------------------------------------------------|-----------|-----------|-----|--------|
| R014 | Saturated zone hydraulic gradient              | 2.000E-03 | 2.000E-02 | --- | HGWT   |
| R014 | Saturated zone b parameter                     | 7.100E+00 | 5.300E+00 | --- | BSZ    |
| R014 | water table drop rate (m/yr)                   | 1.000E-03 | 1.000E-03 | --- | VWT    |
| R014 | well pump intake depth (m below water table)   | 1.000E+01 | 1.000E+01 | --- | DWIBWT |
| R014 | Model: Nondispersion (ND) or Mass-Balance (MB) | ND        | ND        | --- | MODEL  |
| R014 | well pumping rate (m**3/yr)                    | 1.573E+03 | 2.500E+02 | --- | UW     |

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| Site-Specific Parameter Summary (continued) |                                                 |            |           |                                               |                |
|---------------------------------------------|-------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                       | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R015                                        | Number of unsaturated zone strata               | 1          | 1         | ---                                           | NS             |
| R015                                        | Unsat. zone 1, thickness (m)                    | 4.040E+00  | 4.000E+00 | ---                                           | H(1)           |
| R015                                        | Unsat. zone 1, soil density (g/cm**3)           | 1.564E+00  | 1.500E+00 | ---                                           | DENSUC(1)      |
| R015                                        | Unsat. zone 1, total porosity                   | 4.100E-01  | 4.000E-01 | ---                                           | TPUZ(1)        |
| R015                                        | Unsat. zone 1, effective porosity               | 3.150E-01  | 2.000E-01 | ---                                           | EPUZ(1)        |
| R015                                        | Unsat. zone 1, field capacity                   | 9.500E-02  | 2.000E-01 | ---                                           | FCUZ(1)        |
| R015                                        | Unsat. zone 1, soil-specific b parameter        | 5.600E+00  | 5.300E+00 | ---                                           | BUZ(1)         |
| R015                                        | Unsat. zone 1, hydraulic conductivity (m/yr)    | 3.900E+00  | 1.000E+01 | ---                                           | HCUZ(1)        |
| R016                                        | Distribution coefficients for Tc-99             |            |           |                                               |                |
| R016                                        | Contaminated zone (cm**3/g)                     | 4.280E+00  | 0.000E+00 | ---                                           | DCNUCC( 1)     |
| R016                                        | Unsat. zone 1 (cm**3/g)                         | 5.100E-01  | 0.000E+00 | ---                                           | DCNUCU( 1,1)   |
| R016                                        | Saturated zone (cm**3/g)                        | 5.100E-01  | 0.000E+00 | ---                                           | DCNUCS( 1)     |
| R016                                        | Leach rate (/yr)                                | 0.000E+00  | 0.000E+00 | 2.025E-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)            | 5.100E-04  | 1.000E-04 | ---                                           | MLINH          |
| R017                                        | Exposure duration                               | 3.000E+01  | 3.000E+01 | ---                                           | ED             |
| R017                                        | Shielding factor, inhalation                    | 5.500E-01  | 4.000E-01 | ---                                           | SHF3           |
| R017                                        | Shielding factor, external gamma                | 2.725E-01  | 7.000E-01 | ---                                           | SHF1           |
| R017                                        | Fraction of time spent indoors                  | 6.571E-01  | 5.000E-01 | ---                                           | FIND           |
| R017                                        | Fraction of time spent outdoors (on site)       | 1.181E-01  | 2.500E-01 | ---                                           | FOTD           |
| R017                                        | Shape factor flag, external gamma               | 1.000E+00  | 1.000E+00 | >0 shows circular AREA.                       | FS             |
| R017                                        | Radial 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)  |

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| Site-Specific Parameter Summary (continued) |                                                  |            |           |                                               |                |
|---------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                        | User Input | Default   | Used by RESRAD (If different from user input) | Parameter Name |
| R017                                        | Fractions of annular areas within AREA:          |            |           |                                               |                |
| R017                                        | Ring 1                                           | not used   | 1.000E+00 | ---                                           | FRACA( 1)      |
| R017                                        | Ring 2                                           | not used   | 2.732E-01 | ---                                           | FRACA( 2)      |
| R017                                        | Ring 3                                           | not used   | 0.000E+00 | ---                                           | FRACA( 3)      |
| R017                                        | Ring 4                                           | not used   | 0.000E+00 | ---                                           | FRACA( 4)      |
| R017                                        | Ring 5                                           | not used   | 0.000E+00 | ---                                           | FRACA( 5)      |
| R017                                        | Ring 6                                           | not used   | 0.000E+00 | ---                                           | FRACA( 6)      |
| R017                                        | Ring 7                                           | not used   | 0.000E+00 | ---                                           | FRACA( 7)      |
| R017                                        | Ring 8                                           | not used   | 0.000E+00 | ---                                           | FRACA( 8)      |
| R017                                        | Ring 9                                           | not used   | 0.000E+00 | ---                                           | FRACA( 9)      |
| R017                                        | Ring 10                                          | not used   | 0.000E+00 | ---                                           | FRACA(10)      |
| R017                                        | Ring 11                                          | not used   | 0.000E+00 | ---                                           | FRACA(11)      |
| R017                                        | Ring 12                                          | not used   | 0.000E+00 | ---                                           | FRACA(12)      |
| R018                                        | Fruits, vegetables and grain consumption (kg/yr) | 1.120E+02  | 1.600E+02 | ---                                           | DIET(1)        |
| R018                                        | Leafy Vegetable consumption (kg/yr)              | 2.140E+01  | 1.400E+01 | ---                                           | DIET(2)        |
| R018                                        | Milk consumption (L/yr)                          | 2.330E+02  | 9.200E+01 | ---                                           | DIET(3)        |
| R018                                        | Meat and poultry consumption (kg/yr)             | 6.510E+01  | 6.300E+01 | ---                                           | DIET(4)        |
| R018                                        | Fish consumption (kg/yr)                         | 2.060E+01  | 5.400E+00 | ---                                           | DIET(5)        |
| R018                                        | Other seafood consumption (kg/yr)                | 9.000E-01  | 9.000E-01 | ---                                           | DIET(6)        |
| R018                                        | Soil ingestion rate (g/yr)                       | 1.826E+01  | 3.650E+01 | ---                                           | SOIL           |
| R018                                        | Drinking water intake (L/yr)                     | 4.785E+02  | 5.100E+02 | ---                                           | DWI            |
| R018                                        | Contamination fraction of drinking water         | 1.000E+00  | 1.000E+00 | ---                                           | FDW            |
| R018                                        | Contamination fraction of household water        | not used   | 1.000E+00 | ---                                           | FHHW           |
| R018                                        | Contamination fraction of livestock water        | 1.000E+00  | 1.000E+00 | ---                                           | FLW            |
| R018                                        | Contamination fraction of irrigation water       | 1.000E+00  | 1.000E+00 | ---                                           | FTRW           |
| R018                                        | Contamination fraction of aquatic food           | 1.000E+00  | 5.000E-01 | ---                                           | FR9            |
| R018                                        | Contamination fraction of plant food             | 1.000E+00  | -1        | ---                                           | FPLANT         |
| R018                                        | Contamination fraction of meat                   | 1.000E+00  | -1        | ---                                           | FMEAT          |
| R018                                        | Contamination fraction of milk                   | 1.000E+00  | -1        | ---                                           | FMILK          |
| R019                                        | Livestock fodder intake for meat (kg/day)        | 2.710E+01  | 6.800E+01 | ---                                           | LF15           |
| R019                                        | Livestock fodder intake for milk (kg/day)        | 6.320E+01  | 5.500E+01 | ---                                           | LF16           |
| R019                                        | Livestock water intake for meat (L/day)          | 5.060E+01  | 5.000E+01 | ---                                           | LWI5           |
| R019                                        | Livestock water intake for milk (L/day)          | 6.000E+01  | 1.600E+02 | ---                                           | LWI6           |
| R019                                        | Livestock soil intake (kg/day)                   | 5.000E-01  | 5.000E-01 | ---                                           | LSI            |
| R019                                        | Mass loading for foliar deposition (g/m**3)      | 4.000E-04  | 1.000E-04 | ---                                           | MLFD           |
| R019                                        | Depth of soil mixing layer (m)                   | 2.300E-01  | 1.500E-01 | ---                                           | DM             |
| R019                                        | Depth of roots (m)                               | 1.220E+00  | 9.000E-01 | ---                                           | DROOT          |
| R019                                        | Drinking water fraction from ground water        | 1.000E+00  | 1.000E+00 | ---                                           | FGWDW          |
| R019                                        | Household water fraction from ground water       | not used   | 1.000E+00 | ---                                           | FGWHH          |
| R019                                        | Livestock water fraction from ground water       | 1.000E+00  | 1.000E+00 | ---                                           | FGWLW          |
| R019                                        | Irrigation fraction from ground water            | 1.000E+00  | 1.000E+00 | ---                                           | FGWIR          |
| R19B                                        | Wet weight crop yield for Non-Leafy (kg/m**2)    | 1.750E+00  | 7.000E-01 | ---                                           | YV(1)          |
| R19B                                        | Wet weight crop yield for Leafy (kg/m**2)        | 2.889E+00  | 1.500E+00 | ---                                           | YV(2)          |
| R19B                                        | Wet weight crop yield for Fodder (kg/m**2)       | 1.887E+00  | 1.100E+00 | ---                                           | YV(3)          |
| R19B                                        | Growing Season for Non-Leafy (years)             | 2.460E-01  | 1.700E-01 | ---                                           | TE(1)          |
| R19B                                        | Growing Season for Leafy (years)                 | 1.230E-01  | 2.500E-01 | ---                                           | TE(2)          |
| R19B                                        | Growing Season for Fodder (years)                | 8.200E-02  | 8.000E-02 | ---                                           | TE(3)          |

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| Site-Specific Parameter Summary (continued) |                                                  |            |           |                                               |                |
|---------------------------------------------|--------------------------------------------------|------------|-----------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                        | User Input | Default   | Used by RESRAD (if different from user input) | Parameter Name |
| R19B                                        | Translocation Factor for Non-Leafy               | 1.000E-01  | 1.000E-01 | ---                                           | TIV(1)         |
| R19B                                        | Translocation Factor for Leafy                   | 1.000E+00  | 1.000E+00 | ---                                           | TIV(2)         |
| R19B                                        | Translocation Factor for Fodder                  | 1.000E+00  | 1.000E+00 | ---                                           | TIV(3)         |
| R19B                                        | Dry Foliar Interception Fraction for Non-Leafy   | 3.500E-01  | 2.500E-01 | ---                                           | RDRI(1)        |
| R19B                                        | Dry Foliar Interception Fraction for Leafy       | 3.500E-01  | 2.500E-01 | ---                                           | RDRI(2)        |
| R19B                                        | Dry Foliar Interception Fraction for Fodder      | 3.500E-01  | 2.500E-01 | ---                                           | RDRI(3)        |
| R19B                                        | Wet Foliar Interception Fraction for Non-Leafy   | 3.500E-01  | 2.500E-01 | ---                                           | RWET(1)        |
| R19B                                        | Wet Foliar Interception Fraction for Leafy       | 3.500E-01  | 2.500E-01 | ---                                           | RWET(2)        |
| R19B                                        | Wet Foliar Interception Fraction for Fodder      | 3.500E-01  | 2.500E-01 | ---                                           | RWET(3)        |
| R19B                                        | Weathering Removal Constant for Vegetation       | 3.300E+01  | 2.000E+01 | ---                                           | WLAM           |
| C14                                         | C-12 concentration in water (g/cm**3)            | not used   | 2.000E-05 | ---                                           | C12WTR         |
| C14                                         | C-12 concentration in contaminated soil (g/g)    | not used   | 3.000E-02 | ---                                           | C12CZ          |
| C14                                         | Fraction of vegetation carbon from soil          | not used   | 2.000E-02 | ---                                           | CSOIL          |
| C14                                         | Fraction of vegetation carbon from air           | not used   | 9.800E-01 | ---                                           | CAIR           |
| C14                                         | C-14 evasion layer thickness in soil (m)         | not used   | 3.000E-01 | ---                                           | DMC            |
| C14                                         | C-14 evasion flux rate from soil (1/sec)         | not used   | 7.000E-07 | ---                                           | EVSNI          |
| C14                                         | C-12 evasion flux rate from soil (1/sec)         | not used   | 1.000E-10 | ---                                           | REVSNI         |
| C14                                         | Fraction of grain in beef cattle feed            | not used   | 8.000E-01 | ---                                           | AVFG4          |
| C14                                         | Fraction of grain in milk cow feed               | not used   | 2.000E-01 | ---                                           | AVFG5          |
| STOR                                        | Storage times of contaminated foodstuffs (days): |            |           |                                               |                |
| STOR                                        | Fruits, non-leafy vegetables, and grain          | 1.400E+01  | 1.400E+01 | ---                                           | STOR_T(1)      |
| STOR                                        | Leafy vegetables                                 | 1.000E+00  | 1.000E+00 | ---                                           | STOR_T(2)      |
| STOR                                        | Milk                                             | 1.000E+00  | 1.000E+00 | ---                                           | STOR_T(3)      |
| STOR                                        | Meat and poultry                                 | 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   | 1.000E-02 | ---                                           | PH20CV         |
| R021                                        | Volumetric water content of the foundation       | not used   | 3.000E-02 | ---                                           | PH20FL         |
| 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 | ---                                           | HMXI           |
| 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           |

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| Site-Specific Parameter Summary (continued) |                                               |            |         |                                               |                |
|---------------------------------------------|-----------------------------------------------|------------|---------|-----------------------------------------------|----------------|
| Menu                                        | Parameter                                     | User Input | Default | Used by RESRAD (if different from user input) | Parameter Name |
| TITL                                        | Maximum number of integration points for dose | 17         | ---     | ---                                           | LYMAX          |
| TITL                                        | Maximum number of integration points for risk | 1          | ---     | ---                                           | KYMAX          |

#### Summary of Pathway Selections


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

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Summary : HB sensitivity analysis\_soil\_Tc-99  
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| Contaminated Zone Dimensions | Initial Soil Concentrations, pCi/g |
|------------------------------|------------------------------------|
| Area: 30000.00 square meters | Tc-99 1.000E+00                    |
| Thickness: 2.67 meters       |                                    |
| Cover Depth: 0.00 meters     |                                    |

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Probabilistic results summary : HB sensitivity analysis\_soil\_Tc-99  
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