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Our ref: LTR-RAC-23-67

November 15, 2023

Subject: Middle Ditch Soil/Sediment Sampling Report

Mrs. Kuhn:

In accordance with Consent Agreement 19-02-HW and your July 21, 2023 approval of the *Westinghouse Middle Ditch Soil/Sediment Sampling Work Plan* (LTR-RAC-23-48), attached is the sampling report.

Please contact me with any questions or comments at (803) 647-3609 or batesrl@westinghouse.com.

Respectfully,

Ray Bates
Environmental Recovery Manager
Westinghouse Electric Company, CFFF
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CC: Nancy Parr, Environmental Manager
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Jeremy Grant, AECOM Remediation Services Lead
ENOVIA Records

Westinghouse Columbia Fuel Fabrication Facility

Middle Ditch Sampling Report

Prepared for:

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November 15, 2023

Executive Summary

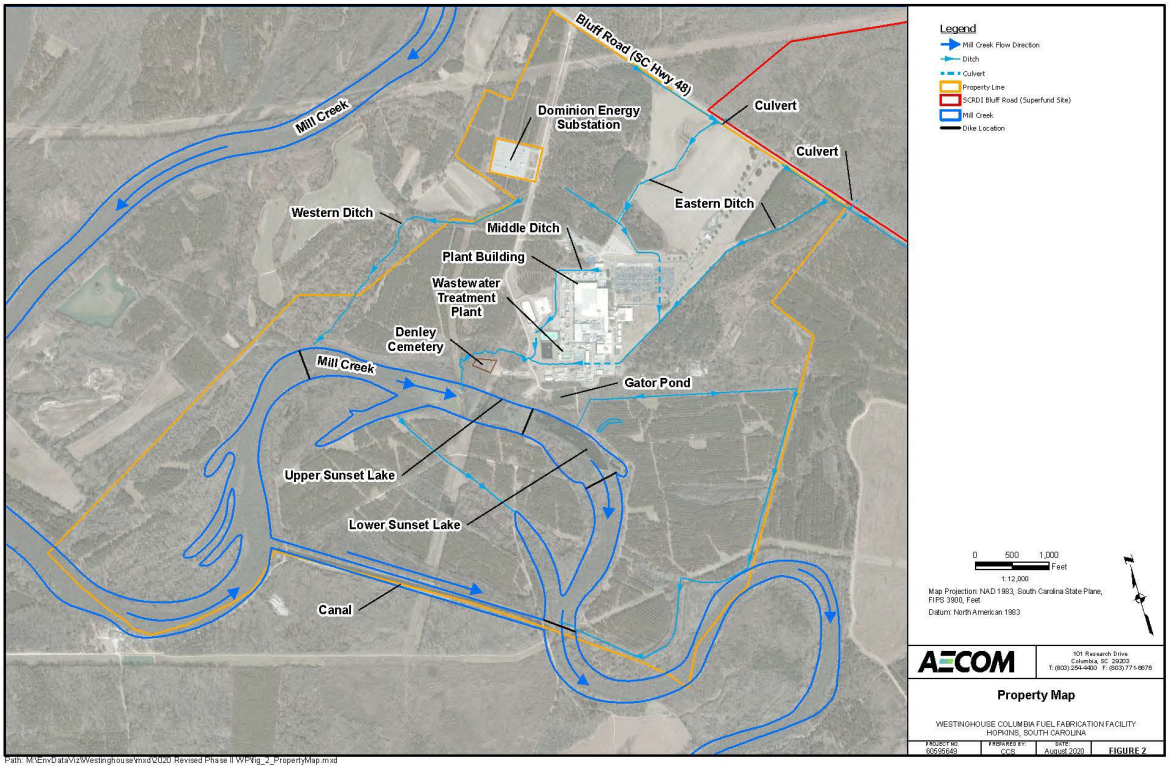
Historical impacts in the Middle Ditch at the Westinghouse Columbia Fuel Fabrication Facility (CFFF) are evaluated in the *Final Remedial Investigation (RI) Report* approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in March 2023. On August 3, 2023, Westinghouse completed a supplemental investigation of the legacy impacts within a section of the Middle Ditch. Fifteen soil samples were collected and evaluated for the site Contaminants of Potential Concern (COPCs): VOCs, uranium (isotopic analysis), Tc-99, nitrate, and fluoride, as well as ammonia and nickel based on historical plant activities. The reported chemical constituent results (non-radionuclide) were below Environmental Protection Agency (EPA) Regional Screening Levels for residential use and therefore required no further evaluation.

The supplemental data assisted in the Feasibility Study Work Plan (FSWP) objective to develop site-specific radiological clean-up goals for use in remedial decision making of impacted soils and sediments. Certain areas of the Middle Ditch exceed these goals and will likely require further evaluation prior to site closure, depending on the future use of the site at the time of decommissioning. There are no current or future concerns for these impacts to move offsite, and the limited impacts pose no threat to plant workers, the general public or the environment.

Assessment

The CFFF completed supplemental soil sampling of a stormwater drainage ditch known as the "Middle Ditch" (identified in **Figure 1**). This work was performed in accordance with the work plan described in Westinghouse letter LTR-RAC-23-48, "*Middle Ditch Soil/Sediment Sampling Work Plan*" and approved by the Department on July 21, 2023. This report provides an assessment of the sample results tabulated in **Attachment A**.

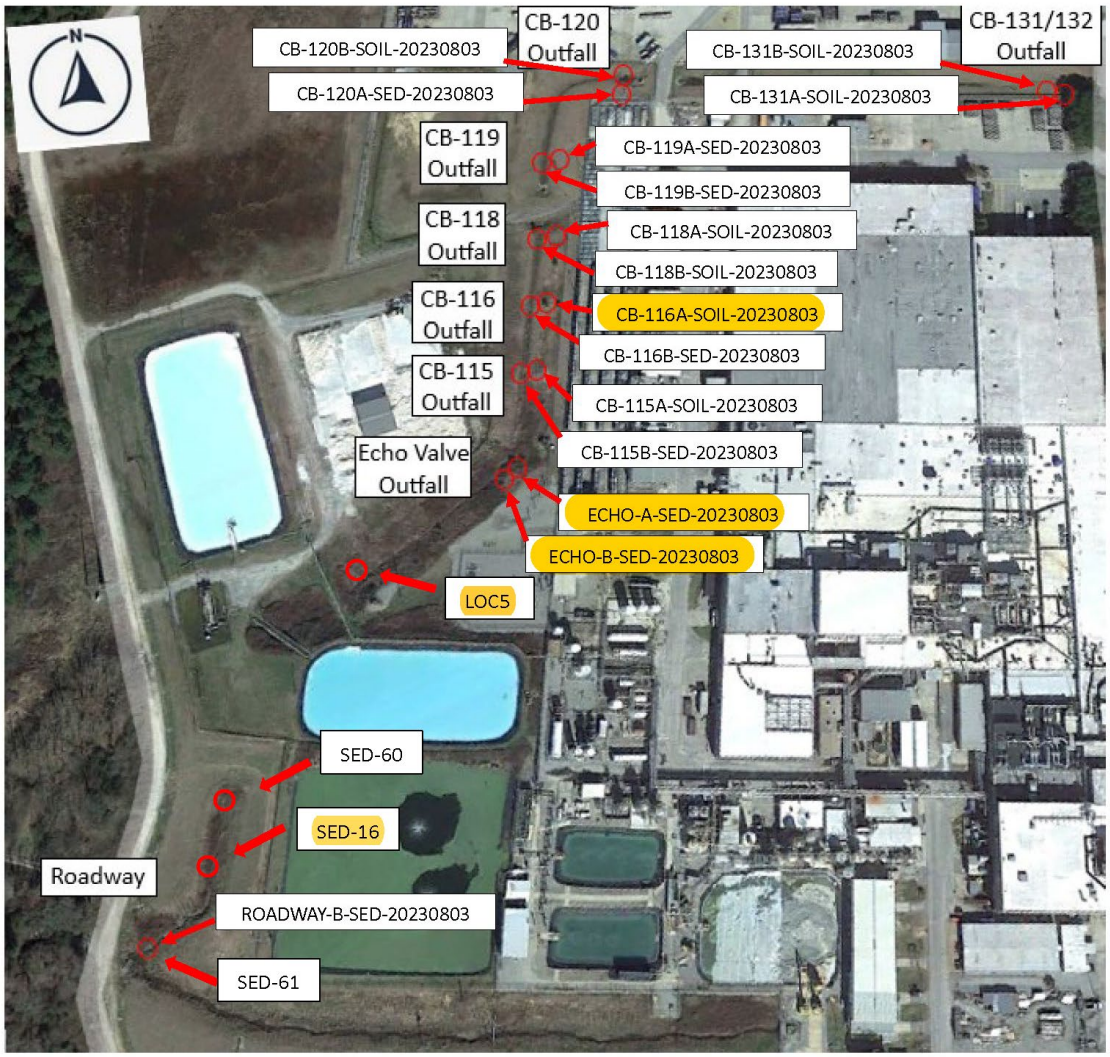
Figure 1 – CFFF Site Features



On July 31, 2023, prior to soil sampling, CFFF Health Physics (HP) personnel completed direct radiological surveys of the soil using an Eberline E-600 with an alpha/beta probe instrument. No survey results indicated alpha contamination above background levels.

On August 3, 2023, 15 supplemental soil samples were collected and analyzed as described in the work plan. A composite sample of the top 8 inches of soil/sediment was collected in accordance with the site's sampling procedure. Samples were taken where storm water catch basins ("CB") 131/132, 120, 119, 118, 116, 115, and Control Valve Echo's outfall enter the ditch and at the corresponding locations near the ditch bottom. An additional sample was taken downstream near the roadway prior to Charlie Valve (identified in **Figure 2**). The samples were sent to a state-certified laboratory and tested for the site COPCs: VOCs, uranium (isotopic analysis), Tc-99, nitrate and fluoride. Additionally, Westinghouse sampled for ammonia and nickel based on historical activities performed in the adjacent operable units.

Figure 2 – Middle Ditch Sample Locations



Note: The sample locations highlighted exceed the proposed DCGL but are well under the IUSL. The radionuclide sample results are provided in **Table 1**.

DCGL Development

Proposed site-specific Derived Concentration Guideline Levels (DCGLs) (commonly referred to as radiological clean up goals) as described in the FSWP, which was approved by the Department on September 1, 2023. These cleanup goals, developed to return the site to residential use at the time of decommissioning in accordance with Nuclear Regulatory Commission (NRC) regulations, are presented in **Attachment B** of this document.

Sampling results and subsequent comparison against the DCGLs identified small areas with residual uranium (U) activity above the proposed residential-use DCGLs; however, there were no results that exceeded the NRC Industrial Use Screening Levels (IUSL) incorporated in site procedure, RA-433 "*Environmental Remediation*." IUSLs are representative of the ongoing use

of the property, until such time as the CFFF undergoes full site decommissioning. IUSLs presume that the industrial worker does not live on the property, nor does the worker consume any food or water produced on the facility property.

Moving forward, the calculated DCGLs along with the IUSLs are intended to guide remedial decision making for impacted soils and sediments at CFFF. While some DCGLs are exceeded in the Middle Ditch, the impacted area is part of the active industrial site and is not publicly accessible. There are no current or future concerns for these Middle Ditch impacts to potentially migrate offsite, and the limited impacts pose no threat to plant workers, the general public or the environment.

Middle Ditch Sample Results

Soil/sediment samples were collected at several locations along the flow path of the Middle Ditch. These locations are shown in **Figure 2**. Additionally, previously collected samples LOC5, SED-16, SED-60, and SED-61 are shown for reference. Location 5 ("LOC5"), a routine environmental sample required in CFFF's NRC SNM-1107 License, is located within the Middle Ditch and is sampled semiannually per site procedures. Samples SED-16, SED-60, and SED-61 were collected during previous RI sampling.

As with the RI results, the Middle Ditch supplemental sampling results for CVOCs, fluoride, nitrate, ammonia, and nickel did not result in exceedances of the EPA Regional Screening Levels for residential use or the toxicity characteristics for hazardous waste determination, as applicable. Therefore, decisions regarding the future disposition of solid media from the Middle Ditch will not be affected by these non-radiological COPCs. The tabulated results are included in **Attachment A**.

As shown in Figure 10 of the FSWP, previous RI sampling of solid media at locations SED-15 upstream, and SED-17 downstream bound the study area. Both SED-15 and SED-17 were below the NRC Residential Use Screening Levels (RUSLs) at the time of the RI Sampling. SED-16 however was identified to contain elevated residual concentrations of U in soil and was therefore bounded by SED-60 and SED-61. Legacy impacts in the Middle Ditch were analyzed in the *Final RI Report*, with the detailed assessment included in Appendix V.

Table 1 – Middle Ditch Sample Results

Sample ID	Gross Analyte Activity (pCi/g)				DCGL	IUSL
	U-234	U-235	U-238	Tc-99	SOF[1]	SOF[2]
CB-131A-SOIL-20230803	1.2	0.1	0.7	-0.1	0.0	0.0
CB-131B-SOIL-20230803	0.6	0.1	0.5	0.0	0.0	0.0
CB-120A-SED-20230803	2.3	0.2	2.3	0.3	0.1	0.0
CB-120B-SOIL-20230803	2.2	0.0	2.1	0.0	0.1	0.0
CB-119A-SED-20230803	0.4	0.0	0.5	0.1	0.0	0.0
CB-119B-SED-20230803	0.7	0.2	1.1	-0.3	0.0	0.0
CB-118A-SOIL-20230803	1.2	0.2	1.1	0.2	0.0	0.0
CB-118B-SOIL-20230803	2.1	0.1	1.6	0.0	0.0	0.0
CB-116A-SOIL-20230803	67.7	3.5	16.0	0.0	**1.2**	0.2
CB-116B-SED-20230803	4.5	0.3	1.5	0.0	0.1	0.0
CB-115A-SOIL-20230803	44.7	2.4	8.2	-0.4	0.8	0.1
CB-115B-SED-20230803	27.4	1.3	4.6	0.0	0.5	0.1
ECHO-A-SED-20230803	140.0	7.5	27.6	0.1	**2.4**	0.4
ECHO-B-SED-20230803	70.1	4.3	14.2	0.3	**1.2**	0.2
LOC5 (May 2023)	221.0	14.9	43.0	3.1	**4.0**	0.7
SED-16 (RI Phase II)	67.2	3.3	12.1	0.6	**1.1**	0.2
SED-60 (RI Phase II)	39.7	2.2	7.4	0.4	0.7	0.1
SED-61 (RI Phase II)	4.3	0.2	0.8	1.2	0.1	0.0
ROADWAY-B-SED-20230803	41.1	2.3	8.3	3.1	0.8	0.1

[1] DCGLs and the Sum of Fractions (SOF) calculation are presented in Attachment B.
[2] IUSLs are presented in procedure RA-433, *Environmental Remediation*.

Sufficient sampling has been performed to demonstrate that between Outfall CB-131/132 on the Northern end of the Middle Ditch and Outfall CB-118 in the center of the Middle Ditch, no impacts have been observed in this area.

Starting at Outfall CB-116, and moving South towards Echo Valve, elevated residual U exceeding the proposed DCGL has been identified in surface soil samples. A small area of residual U exceeding the proposed DCGL has also been identified at Location SED-16, but is well bounded by locations SED-60 and SED-61.

The proposed DCGLs are based on the hypothetical future use of a resident farmer. In this hypothetical scenario, a future resident establishes a residence on the property, grows and consumes crops, raises and consumes livestock, consumes fish caught from surface waters, and drinks water from groundwater wells. This is a conservative assessment of the potential future use, which produces conservative DCGLs. Given that none of these activities will occur during the operational lifetime of the CFFF, comparison to the IUSL is a more appropriate evaluation.

The IUSL is based on an industrial use scenario, which is the current and actual use of the site, and not based on any assumed conditions or future hypotheticals. The IUSL considers the exposure time of an industrial worker and considers all relevant potential pathways of exposure including direct exposure, inhalation of dusts, and incidental ingestion of soil.

For these reasons, comparison of the Middle Ditch sample results to the IUSL is appropriate, and is protective of the plant workers, as well as public health and safety. In accordance with RA-433, once compliance with the IUSL has been demonstrated, the data is used to update the Conceptual Site Model (CSM) and the residual risk registry.

Recommendations

Routine sampling is currently performed at LOC5, which is downstream of Echo Valve and near the stormwater Delta Valve. Results are evaluated in accordance with site procedure, RA-434, "*Environmental Data Management*."

As a result of the Middle Ditch supplemental sampling and assessment, the following is recommended:

- Further evaluate the data in this report as part of the ongoing Feasibility Study to assess clean-up alternatives as described in the FSWP.
- Add a Roadway soil sample each time LOC5 is sampled. The purpose of this routine sampling is to look for trends, or indications of potential migration.

Attachment A

Tabulated Middle Ditch Analytical Results and Location Diagram

GEL WO 632081
August 2023

Attachment A: Middle Ditch Sampling Results

Westinghouse Columbia Fuel Fabrication Facility, Hopkins, SC

GEL WO: 632081

		CB-115A-SOIL-20230803	CB-115B-SED-20230803	CB-116A-SOIL-20230803	CB-116B-SED-20230803	CB-118A-SOIL-20230803	CB-118B-SOIL-20230803	CB-119A-SED-20230803	CB-119B-SED-20230803	CB-120A-SED-20230803	CB-120B-SOIL-20230803	CB-131A-SOIL-20230803	CB-131B-SOIL-20230803	ECHO-A-SED-20230803	ECHO-B-SED-20230803	ROADWAY-B-SED-20230803
Sample																
Date		8/3/23 9:32	8/3/23 9:38	8/3/23 9:10	8/3/23 9:16	8/3/23 8:46	8/3/23 8:56	8/3/23 10:50	8/3/23 10:59	8/3/23 10:30	8/3/23 10:41	8/3/23 10:13	8/3/23 10:17	8/3/23 8:30	8/3/23 8:35	8/3/23 11:21
% moisture		17.9	20.9	18.1	17.7	21.2	20.7	21.5	16.7	31.8	26.3	15.8	11.4	40.8	25.3	23.5
Analyte	Units															
Metals																
Nickel	mg/L	**0.0466**	**0.0133**	**0.0132**	< 0.0200	**0.00607**	< 0.0200	< 0.0200	< 0.0200	**0.0226**	**0.0528**	**0.0282**	**0.00764**	**0.0440**	**0.0891**	**0.0333**
Misc																
Fluoride	mg/kg	**4.78**	**4.21**	**3.86**	**7.03**	**3.11**	**4.50**	**1.29**	**0.429**	**4.39**	**0.749**	**4.24**	**1.29**	**3.68**	**10.9**	**8.12**
Nitrate ion	mg/kg	**1.69**	**0.984**	**0.599**	< 1.17	< 1.27	**0.612**	**0.590**	< 1.15	**0.486**	**0.434**	**0.448**	**0.576**	**0.778**	< 1.31	**0.453**
Nutrients																
Ammonia	mg/kg	**95.0**	**15.0**	**38.4**	**17.6**	**40.4**	**27.4**	**8.34**	**28.1**	**71.8**	**9.01**	**82.1**	**67.0**	**48.2**	**189**	**34.7**
Rad																
Technetium-99	pCi/g	0 ##	0 ##	0.0219 #	0.00664 #	0.168 #	0 ##	0.116 #	0 ##	0.310 #	0 ##	0 ##	0.0492 #	0.0992 #	0.322 #	**3.11**
Total Uranium Isotopes	pCi/g	**55.3**	**33.3**	**87.2**	**6.30**	**2.47**	**3.85**	**1.03**	**2.07**	**4.80**	**4.31**	**2.02**	**1.18**	**175**	**88.7**	**51.7**
Uranium-233/234	pCi/g	**44.7**	**27.4**	**67.7**	**4.48**	**1.19**	**2.10**	**0.441**	**0.733**	**2.29**	**2.23**	**1.21**	**0.589**	**140**	**70.1**	**41.1**
Uranium-235/236	pCi/g	**2.38**	**1.30**	**3.47**	**0.306**	0.172 #	0.115 #	0.0465 #	**0.235**	**0.210**	0.0262 #	**0.112**	0.129 #	**7.46**	**4.34**	**2.25**
Uranium-238	pCi/g	**8.22**	**4.62**	**16.0**	**1.52**	**1.11**	**1.63**	**0.545**	**1.10**	**2.30**	**2.05**	**0.696**	**0.458**	**27.6**	**14.2**	**8.28**
VOCs																
(1-Methylethyl)-Benzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	**0.456**	< 0.951
1,1,1-Trichloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,1,2,2-Tetrachloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,1,2-Trichlor-1,2,2-trifluoroethane	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
1,1,2-Trichloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,1-Dichloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,1-Dichloroethene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2,3-Trichlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2,4-Trichlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2-Dibromo-3-chloropropane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2-Dibromoethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2-Dichlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2-Dichloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,2-Dichloropropane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,3-Dichlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1,4-Dichlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
1-Chlorohexane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
2-Butanone	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	**2.42**	< 6.02	< 5.38	< 5.10	< 7.53	**12.8**	**6.74**
2-Hexanone	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
4-Methyl-2-pentanone	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
Acetone	ug/kg	< 5.09	**3.57**	**5.16**	**5.46**	< 5.21	< 5.01	< 4.83	**2.50**	**21.4**	**26.0**	< 5.38	**2.09**	< 7.53	**61.3**	**36.3**
Benzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Bromochloromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Bromodichloromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Bromoform	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Bromomethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Carbon disulfide	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
Carbon tetrachloride	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Chlorobenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Chloroethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Chloroform	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Chloromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
cis-1,2-Dichloroethene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
cis-1,3-Dichloropropene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Cyclohexane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Dibromochloromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Dichlorodifluoromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Ethylbenzene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Methyl acetate	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
Methyl tert-butyl ether	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Methylcyclohexane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Methylene chloride	ug/kg	< 5.09	< 5.85	< 5.00	< 4.88	< 5.21	< 5.01	< 4.83	< 5.54	< 6.86	< 6.02	< 5.38	< 5.10	< 7.53	< 5.57	< 4.76
Naphthalene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	**0.401**	< 0.951
o-Xylene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Styrene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Tetrachloroethene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Toluene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	**0.818**
trans-1,2-Dichloroethene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
trans-1,3-Dichloropropene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Trichloroethene	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Trichlorofluoromethane	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Vinyl chloride	ug/kg	< 1.02	< 1.17	< 0.999	< 0.976	< 1.04	< 1.00	< 0.965	< 1.11	< 1.37	< 1.20	< 1.08	< 1.02	< 1.51	< 1.11	< 0.951
Xylenes, m- & p-	ug/kg	< 2.03	< 2.34	< 2.00	< 1.95	< 2.08	< 2.01	< 1.93	< 2.22	< 2.74	< 2.41	< 2.15	< 2.04	< 3.01	< 2.23	< 1.90

Notes: **Bold concentrations indicate detections**

NA - not analyzed

- value is below minimum detectable concentration

- value shown as zero reported by analytical laboratory as a negative number

pCi/g - picocuires per gram

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

VOCs - volatile organic compounds

DUP - field duplicate sample

Attachment B

Columbia Fuel Fabrication Facility (CFFF) Potential Future Decommissioning Derived Concentration Guidance Levels (DCGLs)

Technical Basis Document

Columbia Fuel Fabrication Facility (CFFF) Potential Future Decommissioning Derived Concentration Guidance Levels (DCGLs)

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November 15, 2023

Executive Summary

The Columbia Fuel Fabrication Facility (CFFF) located in Hopkins, South Carolina, routinely engages in voluntary remediation of areas within the site that have been impacted by legacy site operations. Much of this voluntary remediation involves the removal of soil impacted with low levels of residual radioactivity. Since radioactivity is naturally occurring, and is found in all soil across the world, it is impossible to remove all radioactivity from any area containing soil. Even the off-site soil that is brought in to fill holes will contain levels of naturally occurring radioactivity. Therefore, in order to determine when an area has been remediated appropriately, the acceptable levels of residual radioactivity that do not pose a risk to public health and safety must be identified. These levels of residual radioactivity are often referred to as "clean up levels" or "remediation goals", however in regulatory terms these levels are known as the derived concentration guideline levels (DCGLs). The DCGLs represent the level of residual radioactivity, above background, in soil or sediment that would result in a total effective dose equivalent (TEDE) of no more than 25 mrem/yr (a level which poses no potentially significant health risk) to the average member of the critical group (e.g., a hypothetical future site resident farmer).

To determine the DCGLs for the CFFF, site specific data was used where available, and conservative assumptions were made about the future use of the site. These data points were used to create a conceptual site model (CSM), which in turn was used to calculate site specific DCGLs. These DCGLs represent a level of residual radioactivity in soil that is protective of public health and safety and may be used to support the ongoing and future decommissioning efforts at the CFFF.

Introduction

The purpose of this Technical Basis Document (TBD) is to describe the methods used to calculate proposed site-specific DCGLs for soil and sediments to be used as: 1) a guideline for planned future decommissioning activities at the CFFF, and 2) to help understand and plan current site activities, with regards to future decommissioning. These DCGLs may also provide a basis for decisions at the time of full site decommissioning to demonstrate compliance with the dose criteria in 10 CFR Part 20.1402 (Reference 1), although the DCGLs will need to be revaluated at the time of decommissioning based on current conditions and regulations.

The dose modeling methods and assumptions are described, and the results of the DCGL calculations provided herein. This includes selection of the critical group of future land users, exposure scenarios, and the CSM for residual contamination in soils. Sediments are considered to be soils for the purpose of this CSM, with the conservative assumption of no additional shielding from water added as a factor. The Residual Radioactivity (RESRAD) Code, Version 7.2 was used to calculate the DCGLs. The model input parameters for the RESRAD code are described and justified. In addition, the correction factors for DCGLs that are applicable to small areas (i.e., area factors [AF]) are calculated and the results provided.

The calculations provide DCGLs for each radionuclide of concern (ROC) at the site that represent a maximum potential future exposure of 25 mrem/yr (in accordance with 10 CFR Part

20.1402 [Reference 1]) given the assumptions of the applicable scenario. The presence of multiple radionuclides is addressed using the Unity Rule, also known as the "Sum of Fractions" (SOF) method as described in Chapter 4.4 of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM [Reference 2]).

The DCGLs were calculated using a CSM that represents the in-situ geometry of the assumed residual contamination at the time of NRC license termination. Many factors may need to be considered, investigated, and applied at the time of final site decommissioning to ensure that the modeling parameters are appropriate for the final site configuration, and the intended future use of the facility. Factors such as the chosen exposure scenario, hydrogeology of the site, remediation progress, and any significant regulatory changes will need to be considered, and the dose model appropriately updated before DCGLs are selected and implemented at the time of full site decommissioning. Additionally, NRC preapproval of the DCGLs would be required. These proposed site-specific DCGLs are provided as a guideline to help understand and plan current site activities, with regards to future decommissioning.

Radionuclides of Concern (ROCs)

Based on the facility operating history and the recent Remedial Investigation (RI) (Reference 4) data being evaluated in the CFFF Feasibility Study Work Plan (FSWP) (Reference 5), the potential ROCs identified at the CFFF are listed below:

- Uranium-234 (U-234);
- Uranium-235 (U-235+D);
- Uranium-238 (U-238+D); and
- Technetium-99 (Tc-99).

Note: The nomenclature "+D" indicates that the dose contribution of the short-lived progeny are accounted for by the parent.

The CFFF is located on a semi-rural plot of approximately 1,151 acres, with controlled access to the site. The main manufacturing building, wastewater treatment areas and settling ponds, parking lots, and other miscellaneous buildings occupy approximately 6 % (68 acres) of the site area. The vast majority of residual radioactivity from historical operations can be attributed to U-234, U-235, and U-238. This impact defined in the RI is primarily limited to portions of the areas where manufacturing and wastewater treatment operations are ongoing.

Residual levels of Tc-99 are also present in certain small areas of the site as a result of the use of reprocessed Uranium in the gaseous diffusion process. A Tc-99 Source Investigation was performed to determine the nature and extent of Tc-99 impacts at the site (Reference 6). This investigation determined that there are no ongoing Tc-99 sources, and that the Tc-99 present at the CFFF is a result of historic Tc-99 contamination in the nuclear fuel supply from offsite enrichment facilities. These Tc-99 impacts are mostly limited to small areas of the site known as

the Gator Pond, and groundwater wells where elevated Tc-99 has been detected. Transuranic radionuclides are not expected to be present in any significant or measurable quantities and are not a significant contributor to dose. No DCGLs have been calculated for these radionuclides. At the time of full site decommissioning and in accordance with NRC regulations, the Historical Site Assessment (HSA) and Site Characterization will determine if any additional radionuclides warrant consideration.

Selection of the Critical Group

The Resident Farmer was selected as the critical group based on the current use of the surrounding property and the potential future use of the land over a period of 100 years after future decommissioning. The consideration of a 100-year period for the future land use projection is consistent with the guidance provided in NUREG-1757, Volume 2, Appendix I (Reference 3).

The surrounding property is currently used for a mixture of agricultural and recreational activities. It is therefore reasonable, albeit quite conservative, to assume that the CFFF property could be used as a residential farm sometime following license termination. Westinghouse has no plans to cease operations as nuclear energy is a critical part of the nation's energy portfolio and even if they did, a more likely future use than farming would be some other ongoing industrial use. Therefore, a Resident Farmer critical group results in more conservative DCGLs (i.e., lower concentrations) than either a residential or industrial use critical group because it accounts for the increased dose from the consumption of food grown onsite as well as occupancy time considerations.

Exposure Pathways

A Resident Farmer is assumed to move onto the site after license termination, build a home, and establish a farm for raising crops and livestock. The Resident Farmer scenario provides a conservative assessment by assuming exposure to residual radioactivity through numerous exposure pathways including:

- Direct radiation;
- Inhalation of re-suspended dust;
- Direct ingestion of soil;
- Ingestion of food from crops grown in contaminated soil and irrigated with site water;
- Ingestion of fish and other aquatic food from a nearby pond contaminated by run-off and water percolated through the contaminated area;
- Ingestion of water from a well contaminated by water percolated through the contaminated area;
- Ingestion of meat and milk from livestock raised using on-site well water and feed grown within the contaminated soil that has been irrigated with site water; and
- Inhalation of Radon Gas from soil vapor intrusion into the future residence.

Conceptual Site Model

The CSM includes the surface and subsurface geometry of the contaminated zone and the hydrogeological conditions of the site that affect radionuclide transport and exposure.

Contaminated Zone

Based on the RI, the Contaminated Zone was estimated to be equivalent to 75 acres (303,514 m^2). This conservatively includes the manufacturing and wastewater treatment areas as well as the Middle Ditch, Gator Pond, and Sunset Lake. The portions of CFFF excluded from the CSM are considered to be non-impacted.

Based on experience from recent remediation performed in areas like the Hydrofluoric Acid (HF) Spiking Station, and the former East Lagoon, the depth of contamination was estimated to be approximately 1.25 m (4 ft), and the thickness of the unsaturated zone was estimated to be approximately 2.5 m (8 ft). This represents a soil layer that is approximately 3.75 m (12 ft) after remediation above the saturated zone, and reflects the expected final condition of the site. Some

areas of the site may not require remediation if soil concentrations are confirmed to be lower than the DCGLs. There have been no burials onsite that would require the evaluation of residual contamination at deeper intervals. Prior to full site decommissioning, a HSA and Site Characterization will be performed to provide the justification for designating areas as impacted and non-impacted, as well as verifying the depth of contamination across the impacted area of the site.

The residual radioactive soil contamination was modeled using a soil column with uniform contamination from the ground surface over the entire depth of the Contaminated Zone (1.25 m). Demonstration of compliance with the Uniform CSM DCGLs is simply a comparison of the DCGL to the average concentration of residual contamination regardless of the depth of the contamination. Because the DCGLs represent the amount of each nuclide that is equivalent to 25 mrem/yr from each isotope independently, the Unity Rule must be used to demonstrate compliance with the release criteria. This Uniform CSM is a conservative assessment, because it assumes contamination will be spread over a large contiguous area of the site (75 acres), even when only small non-contiguous areas of surficial or shallow contamination are present, and it does not account for the natural shielding that occurs when subsurface contamination is covered by low concentration "clean" material. When the surface soil layer, and the subsurface soil layer are considered independently, the resulting DCGLs may increase substantially (i.e., become less restrictive).

The geometries and compliance demonstration discussed above would apply equally to existing contamination below the DCGLs, residual soil contamination remaining in-situ after excavation, or residual contamination in soil that is used as backfill after excavation is completed.

Site Hydrogeology

A detailed description of the hydrogeological conditions at the CFFF in the surface and subsurface soils and water table aquifer extending to the surface of the uppermost aquitard (collectively referred to as overburden) is included in the FSWP along with the various site-specific parameters affecting migration and transport through the contaminated, unsaturated, and saturated zones. An overview of the overburden hydrogeology, particularly as it affects the development of the CSM, is provided below.

The CFFF is underlain by three hydrogeologic units: the Surficial Aquifer, the Black Creek Aquifer, and the Middendorf Aquifer. The predominant direction of groundwater flow in the surficial aquifer is to the southwest with components of flow to the west and south. The inferred groundwater flow direction in the Black Creek Aquifer is to the southwest. Hydraulic conductivity tests were performed during the RI and ranged from 0.06 to 125.20 ft per day (ft/day). Based on these values, the average hydraulic conductivity calculated for the site is 16.44 ft/day (1,829 m/yr).

Because the water table generally mimics topography and the bluff represents a comparatively dramatic change in elevation over a short distance, the horizonal hydraulic gradients were

assessed for areas of the site above the bluff, near the bluff, and below the bluff. Across the area of groundwater impact, an average hydraulic gradient of 0.0075 ft per foot (ft/ft) was calculated during the RI for the surficial aquifer. Groundwater velocity was calculated using Darcy's Law which incorporates hydraulic gradient, hydraulic conductivity and effective porosity. Using an assumed effective porosity of 30 percent (0.30), the average hydraulic gradient, and average hydraulic conductivity, a groundwater flow velocity for the surficial aquifer at CFFF was calculated to be 150 ft/year.

The development of a sustainable water supply from the surficial aquifer for the purposes of domestic supply or irrigation is considered impractical and infeasible based on the low hydraulic conductivity of the aquifer. It is assumed that any future potential water supply wells will be installed in the Black Creek Aquifer which is protected from the overburden and surficial aquifer by an aquitard (low conductivity clay layer) that is approximately 20-30 meters below the surficial water table.

Currently, limited radionuclide impacts have been observed in isolated areas of the CFFF within the surficial aquifer only; no radiological impacts have been observed in the Black Creek Aquifer. Limited remediation of areas where surficial aquifer impacts have been observed are anticipated before site closure. Therefore, it is assumed that drinking water will not be a significant contributor to dose in the future. However, as a conservative measure the CSM will still consider the impacts of potential migration of contaminants, and the subsequent consumption of water from the Black Creek Aquifer by hypothetical future residents.

RESRAD Input Parameters

The default Resident Farmer Scenario was selected as a starting point, and adjustments were made as necessary to reflect assumed future site-specific conditions at the time of decommissioning. No adjustments were made to behavioral parameters such as occupancy factors, or food and water consumption rates. Review of the generic behavioral and environmental parameters determined that the standard Resident Farmer Scenario was an appropriate yet conservative land use and exposure scenario.

Several of the physical parameters were determined by analysis of site geology or hydrogeology. For example, the hydraulic conductivities of the contaminated, unsaturated and saturated zones were determined by laboratory and field testing. The depth of the Contaminated Zone was determined by analysis of the data provided in the RI, the CSM and planned/potential future remedial actions. Only those parameters that differ from the default Resident Farmer Scenario parameters (which are needed to re-create and/or validate the model) are described in the following table.

RESRAD Input Parameters

Parameter	Default	CFFF Specific	Reason
Internal Dose Library	N/A	FGR 11	N/A
External Dose Library	N/A	FGR 12	N/A
Risk Factors	N/A	FGR 13	N/A
Pathways	N/A	All	N/A
Area of Contaminated Zone	10,000 m^2	303,514 m^2	Reflects a potentially impacted area of 75 acres at the site
Thickness of Contaminated Zone (Uniform CSM)	2 m	1.25 m	Assumed a representative depth of 1.25 m residual contamination at time of decommissioning; reduction from 2 m due to planned remediation of surface contamination, and prior site remediation efforts
Length parallel to the aquifer	100 m	551 m	Square root of the area of contamination
Contaminated Zone Hydraulic Conductivity	10 m/yr	182.9 m/yr	10% of Saturated Zone Conductivity
Saturated Zone Effective Porosity	0.2	0.3	Site specific value from RI
Saturated Zone Hydraulic Conductivity	100 m/yr	1829 m/yr	Site specific value from RI
Saturated Zone Hydraulic Gradient	0.02	0.0075	Site specific value from RI
Well pump intake depth	10 m	20 m	Assumed well pump intake depth based on current hydrogeological profile
Unsaturated Zone Thickness	4 m	2.5 m	Assumed a more conservative depth of 1.25 m residual contamination, plus minimum 2.5 m unimpacted above the saturated zone after remediation, based on current site conditions (approximate 3.75 m of soil above the saturated zone)
Unsaturated Zone Effective Porosity	0.2	0.3	Site specific value from RI
Unsaturated Zone Hydraulic Conductivity	10 m/yr	182.9 m/yr	10% of Saturated Zone Conductivity

Future CSM Considerations

No adjustments were made to the distribution coefficients for each radionuclide; the default values were used. When full site decommissioning does occur, these values should be evaluated to determine if any adjustments are necessary, or if empirical evidence justifies changes. Furthermore, the HSA should consider the time frame when original impacts occurred, and any remedial actions that were taken; adjustments to the CSM may be necessary based on the amount of time that each radionuclide was present in the environment.

Soil DCGL Calculations

An initial unit concentration of 1 picocurie per gram (pCi/g) for each ROC was used in conjunction with the RESRAD input parameters provided in the table above for the dose assessments. The peak dose to the average member of the critical group, from each ROC, was calculated over a 1000-year period in accordance with 10 CFR 20.1402 (Reference 1) and was defined as the peak dose-to-source ratio (DSR). The DSR, in units of mrem/yr per pCi/g, was then divided into the 25 mrem/yr dose limit to determine the site-specific DCGL for each ROC. The RESRAD Summary Reports are provided in Appendix A. The Table below provides the results of the dose assessment, and DCGL Calculations.

Uniform CSM Soil DCGLs

Isotope	DSR (Dose to Source Ratio in mRem/yr / pCi/g)	DCGL (pCi/g concentration equal to 25 mRem/yr)
U-234	2.404 E-1	104.0
U-235	1.136 E+0	22.0
U-238	2.184 E-1	114.5
Tc-99	3.613E-1	69.1

Each radionuclide-specific DCGL represents the concentration of residual activity, above background, that would result in 25 mrem/yr to the average member of the critical group. When multiple radionuclides are present, compliance is addressed using the Unity Rule (e.g., "Sum of Fractions"), using the following equation:

$$\text{SOF} = \frac{U{-}234\ Conc.}{U{-}234\ DCGL} + \frac{U{-}235\ Conc.}{U{-}235\ DCGL} + \frac{U{-}238\ Conc.}{U{-}238\ DCGL} + \frac{Tc{-}99\ Conc.}{Tc{-}99\ DCGL}$$

When the SOF < 1.0, the DCGL has been met, and the area may be suitable for unrestricted release (pending all formal and statistical evaluations). When the SOF $\geq$ 1.0, the DCGL has been exceeded and further evaluation of the area is required.

The concentration of Uranium isotopes in soil at the time of license termination will be much lower than the listed DCGLs because U-234, U-235, and U-238 are always present together, and due to the required application of the unity rule when demonstrating compliance. As an example, based upon the lower and upper range of expected Uranium enrichment (nominally 3.5-4.5%), the actual concentration of U-235 will be approximately 10-20% of the DCGL values.

At a nominal 4% U-235 enrichment by weight, a Total Uranium concentration of 90.5 pCi/g would be equal to the DCGL using the SOF approach. The isotopic mixture is shown below.

Total Uranium DCGL (Nominal 4% Enrichment by Weight)

Isotope	Concentration	Activity Fraction
U-234	71.7 pCi/g	79.28%
U-235	4.0 pCi/g	4.38%
U-238	14.8 pCi/g	16.34%
Total U (in pCi/g)	90.5 pCi/g	100%
Total U (in ppm)	45.8 ppm U	100%

It is expected that all final decommissioning samples will be analyzed for individual isotopic results, and that the SOF will be applied to each sample independent of enrichment. The Total Uranium values presented here, at a nominal 4% enrichment are merely provided as an example to demonstrate the limiting factors of the isotopic DCGLs.

Area Factors

Area Factors were developed in accordance with MARSSIM Chapter 5.5.2.4 (Reference 2) to evaluate the dose from small areas of elevated activity. The Areas Factors were developed by adjusting the size of the Contaminated Zone. The resulting DCGL for the smaller areas of activity ($DCGL_{EMC}$) was then divided by the applicable site DCGL to determine the corresponding Area Factor. Area Factors were determined for contaminated zone sizes of 1, 10, 100, and 1,000 m^2. The RESRAD Summary Reports used to produce these Area Factors are provided in Appendix B.

Soil Area Factors

Isotope	DCGL (pCi/g)	AF (1 m^2)	AF (10 m^2)	AF (100 m^2)	AF (1,000 m^2)
U-234	104.0	3.1	3.0	2.9	1.0
U-235	22.0	9.1	3.8	2.5	1.2
U-238	114.5	2.6	1.9	1.5	1.0
Tc-99	69.1	1.0	1.0	1.0	1.0

Area Factors may be applied to small areas of elevated residual soil concentrations, provided an investigation has determined the bounding size of the area. When the area is well understood, the Area Factor for the bounding size is multiplied by the DCGL for each radionuclide to determine the $DCGL_{EMC}$ (elevated measurement comparison). For example, if by survey and sampling the elevated area is determined to be 6 m^2, the AF for 10 m^2 can be conservatively assigned, or the AF for 6 m^2 can be interpolated using the AFs for 1 m^2 and 10 m^2 as reference data points. The EMC value is determined by using the following equation:

$$DCGL_{EMC} = AF \times DCGL$$

These areas of elevated measurement comparison must still be evaluated and incorporated into the Unity Rule to ensure that the total dose is within the release criteria, using the following equation:

$$\frac{Ave.SU\ Conc.}{DCGL} + \frac{(Ave.\ EMC\ Conc. - Ave.\ SU\ Conc.)}{DCGL_{EMC}} < 1.0$$

Groundwater

Tc-99 has been identified in overburden monitoring wells south of the CFFF manufacturing building, and low concentrations U have been identified in overburden monitoring wells underneath and to the west of the CFFF manufacturing building. While the shallow overburden is not considered a suitable source of drinking water, and no impacts have been observed in the underlying Black Creek aquifer, the dose models still consider potential groundwater impacts from the migration of contamination through the saturated zone into drinking water aquifers. It should be noted that remediation of the areas of Tc-99 impact in the surficial aquifer are anticipated prior to site closure. In addition, post-remediation groundwater monitoring is planned to ensure that no contamination has occurred in drinking water aquifers as a result of decommissioning activities. All post decommissioning groundwater samples will be compared to the Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for radionuclides (30 ug/L for U, and 900 pCi/L for Tc-99), and if any exceedances are observed, additional dose modeling will be performed to determine the dose to source ratio, and ensure that the release criterion of 25 mRem/yr to the critical group specified in 10 CFR Part 20.1402 (Reference 1) is not exceeded.

Comparison to Similar Decommissioning Sites

For reference, the proposed DCGLs listed above were compared to the DCGLs developed for the Westinghouse Hematite Decommissioning Project (HDP) (NRC License # SNM-33). The Hematite Decommissioning Project was a fuel manufacturing site, similar to CFFF that was successfully decommissioned by Westinghouse, receiving NRC License Termination in 2018. The Hematite Decommissioning Project DCGLs were approved by NRC and were used to demonstrate compliance with the release criterion. While a previous version of RESRAD was used, and different site-specific values were used for the Hematite Site, the nature of the fuel manufacturing facility, and the types of radionuclides were very similar to the CFFF, and therefore this site serves as a reasonable comparison.

The comparable Uniform CSM values for each isotope from the HDP are provided next to the proposed DCGLs for CFFF.

Comparison of Soil DCGLs

Isotope	HDP Approved DCGLs (pCi/g)	CFFF Proposed DCGLs (pCi/g)
U-234	195.4	104.0
U-235	51.6	22.0
U-238	168.8	114.5
Tc-99	25.1	69.1

This comparison is provided for reference only to show that similar DGCLs have been approved by the NRC for use at a similar Fuel Cycle Facility. While a direct comparison would not be appropriate due to the number of different site-specific parameters between the two sites, the comparison does demonstrate that the proposed CFFF DCGLs are reasonable and could likely be used to demonstrate compliance with the dose-based release criterion in the future.

Conclusion

The proposed DCGLs presented herein are intended to be used as a decision-making tool during ongoing site operations. Knowing likely potential future release criteria will help inform the current risk-based decision-making process any time remedial activities are performed. For example, if the CFFF wishes to remediate a small area of the site, and then construct a storage building in the area that will be used for non-radiological purposes, the soil remediation values could be compared to the proposed DCGLs. This would help predict if the new building could be expected to remain in place at the time of decommissioning, or if it would have to be removed in order to allow for additional remediation.

It is important to note however, that a great number of factors could change over the operating life of the facility. New types of fuel mixtures could be introduced into the manufacturing process, or impurities in the nuclear fuel supply chain could introduce new radionuclides that were not considered by this model. The future HSA and Site Characterization performed at the time of decommissioning could alter some of the assumptions or understandings about the nature and extent of contamination, and/or the hydrogeology of the site.

For these reasons, a conservative administrative limit of 80% of the proposed DCGLs is proposed for making decisions regarding the future decommissioning of the site. This would allow for minor variations in the CSM, introduction of additional radionuclides, changes to the facility, and/or regulatory changes that affect the final exposure scenario of the site.

Therefore, the proposed Modified DCGLs, to be used for informational purposes when evaluating potential future decommissioning requirements are as follows:

Modified DCGLs (80% Administrative Limit)

Isotope	Modified DCGL
U-234	83.2 pCi/g
U-235	17.6 pCi/g
U-238	91.6 pCi/g
Tc-99	55.3 pCi/g
Total U (nom. 4% EU) in pCi/g	72.4 pCi/g
Total U (nom. 4% EU) in ppm	36.7 ppm U

When current sample data are compared to the proposed Modified DCGLs, an exceedance does not necessarily mean that remediation of the area is required, only that future decommissioning requirements of the area should be considered, and that current site operations may use these guidelines to predict whether potential future decommissioning remediation requirements exist in the area.

It should be noted that these DCGLs are not intended to support the unrestricted release of material off-site, or to allow for clearance of material from NRC License control; SNM-1107 License requirements must be followed. Also, at the time of site decommissioning and license termination, NRC preapproval of these proposed DCGLs, or alternate DCGLs calculated to then-current requirements and conditions, will be required.

References

1) 10 CFR Part 20.1402 – Radiological Criteria for unrestricted use
2) NUREG-1575, Revision 2, Multi Agency Radiation Site Survey Investigation Manual (MARSSIM)
3) NUREG-1757, Volume 2, Revision 2, Appendix I – Technical Basis for Site-Specific Dose Modeling Evaluations
4) LTR-RAC-23-21, Westinghouse Final Remedial Investigation Report, February 2023
5) LTR-RAC-23-46, Feasibility Study Work Plan, March 2023
6) LTR-RAC-20-64, Technetium-99 Source Investigation Report, July 2020

Appendices

Appendix A – RESRAD Files for DCGL Development

Appendix B – RESRAD Files for Area Factor Development

Appendix A

RESRAD Files for DCGL Development

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(22)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(23)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(24)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(25)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(26)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(27)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(28)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(29)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(30)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(31)
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	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Tc-99	8.320E-06	8.320E-06	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)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(8)
B-1	U-238	1.180E-01	1.180E-01	DCF2(9)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(10)
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	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Tc-99	1.460E-06	1.460E-06	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-1	U-235+D	2.673E-04	2.660E-04	DCF3(8)
D-1	U-238	2.550E-04	2.550E-04	DCF3(9)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(10)
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				
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				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(5,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Th-230 , beef/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				
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-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(10,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(10,3)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
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				
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				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(5,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(5,2)
D-5				
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				
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)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(10,2)

#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.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.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)	3.035E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.250E+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)	5.510E+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): Tc-99	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(9)
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)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.000E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.829E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	7.500E-03	2.000E-02	---	HGWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone b parameter	5.300E+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)	2.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.500E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.543E+00	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.662E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.800E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-06	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	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.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)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	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	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	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)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

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	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+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)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	3.000E-02	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	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	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

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	257	---	---	KYMAX

Summary of Pathway Selections

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

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	303514.00 square meters	Tc-99	1.000E+00
Thickness:	1.25 meters	U-234	1.000E+00
Cover Depth:	0.00 meters	U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.176E+00	1.036E+00	1.090E+00	1.066E+00	7.033E-01	5.011E-01	2.230E-01	1.594E+00
M(t):	4.704E-02	4.143E-02	4.362E-02	4.265E-02	2.813E-02	2.004E-02	8.922E-03	6.377E-02

Maximum TDOSE(t): 1.594E+00 mrem/yr at t = 1.000E+03 years

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.821E-05	0.0000	3.819E-07	0.0000	0.000E+00	0.0000	3.372E-01	0.2867	1.970E-03	0.0017	2.185E-02	0.0186	2.036E-05	0.0000
U-234	2.397E-04	0.0002	1.186E-02	0.0101	3.835E-08	0.0000	6.144E-02	0.0522	4.055E-03	0.0034	9.940E-03	0.0085	7.727E-03	0.0066
U-235	4.504E-01	0.3830	1.105E-02	0.0094	0.000E+00	0.0000	5.814E-02	0.0494	3.865E-03	0.0033	9.390E-03	0.0080	7.302E-03	0.0062
U-238	8.980E-02	0.0764	1.061E-02	0.0090	2.716E-14	0.0000	5.834E-02	0.0496	3.850E-03	0.0033	9.438E-03	0.0080	7.336E-03	0.0062
Total	5.405E-01	0.4596	3.352E-02	0.0285	3.835E-08	0.0000	5.151E-01	0.4380	1.374E-02	0.0117	5.062E-02	0.0430	2.239E-02	0.0190

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.914E-04	0.0002	4.042E-06	0.0000	0.000E+00	0.0000	1.114E-05	0.0000	0.000E+00	0.0000	5.200E-06	0.0000	3.613E-01	0.3072
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.526E-02	0.0810
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.402E-01	0.4593
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.794E-01	0.1525
Total	1.914E-04	0.0002	4.042E-06	0.0000	0.000E+00	0.0000	1.114E-05	0.0000	0.000E+00	0.0000	5.200E-06	0.0000	1.176E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	8.165E-06	0.0000	8.159E-08	0.0000	0.000E+00	0.0000	7.305E-02	0.0705	4.486E-04	0.0004	4.891E-03	0.0047	4.351E-06	0.0000
U-234	2.385E-04	0.0002	1.180E-02	0.0114	2.677E-07	0.0000	6.112E-02	0.0590	4.034E-03	0.0039	9.887E-03	0.0095	7.686E-03	0.0074
U-235	4.480E-01	0.4325	1.100E-02	0.0106	0.000E+00	0.0000	5.803E-02	0.0560	3.926E-03	0.0038	9.341E-03	0.0090	7.270E-03	0.0070
U-238	8.933E-02	0.0862	1.055E-02	0.0102	4.061E-13	0.0000	5.803E-02	0.0560	3.830E-03	0.0037	9.388E-03	0.0091	7.297E-03	0.0070
Total	5.376E-01	0.5190	3.334E-02	0.0322	2.677E-07	0.0000	2.502E-01	0.2416	1.224E-02	0.0118	3.351E-02	0.0323	2.226E-02	0.0215

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.186E-01	0.1145	3.875E-03	0.0037	0.000E+00	0.0000	1.862E-02	0.0180	2.179E-04	0.0002	5.372E-03	0.0052	2.251E-01	0.2173
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.476E-02	0.0915
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.376E-01	0.5190
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.784E-01	0.1722
Total	1.186E-01	0.1145	3.875E-03	0.0037	0.000E+00	0.0000	1.862E-02	0.0180	2.179E-04	0.0002	5.372E-03	0.0052	1.036E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.728E-07	0.0000	3.725E-09	0.0000	0.000E+00	0.0000	3.335E-03	0.0031	2.048E-05	0.0000	2.233E-04	0.0002	1.986E-07	0.0000
U-234	2.361E-04	0.0002	1.167E-02	0.0107	1.406E-06	0.0000	6.047E-02	0.0555	3.991E-03	0.0037	9.782E-03	0.0090	7.605E-03	0.0070
U-235	4.433E-01	0.4065	1.089E-02	0.0100	0.000E+00	0.0000	5.781E-02	0.0530	4.049E-03	0.0037	9.242E-03	0.0085	7.206E-03	0.0066
U-238	8.838E-02	0.0811	1.044E-02	0.0096	4.703E-12	0.0000	5.742E-02	0.0527	3.790E-03	0.0035	9.289E-03	0.0085	7.220E-03	0.0066
Total	5.319E-01	0.4878	3.300E-02	0.0303	1.406E-06	0.0000	1.790E-01	0.1642	1.185E-02	0.0109	2.854E-02	0.0262	2.203E-02	0.0202

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.274E-01	0.2085	7.607E-03	0.0070	0.000E+00	0.0000	3.737E-02	0.0343	5.316E-04	0.0005	1.120E-02	0.0103	2.876E-01	0.2638
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.376E-02	0.0860
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.325E-01	0.4883
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.765E-01	0.1619
Total	2.274E-01	0.2085	7.607E-03	0.0070	0.000E+00	0.0000	3.737E-02	0.0343	5.316E-04	0.0005	1.120E-02	0.0103	1.090E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	7.576E-12	0.0000	7.571E-14	0.0000	0.000E+00	0.0000	6.778E-08	0.0000	4.163E-10	0.0000	4.538E-09	0.0000	4.037E-12	0.0000
U-234	2.287E-04	0.0002	1.125E-02	0.0105	1.229E-05	0.0000	5.827E-02	0.0546	3.846E-03	0.0036	9.425E-03	0.0088	7.328E-03	0.0069
U-235	4.272E-01	0.4006	1.052E-02	0.0099	0.000E+00	0.0000	5.707E-02	0.0535	4.455E-03	0.0042	8.906E-03	0.0084	6.995E-03	0.0066
U-238	8.516E-02	0.0799	1.006E-02	0.0094	1.215E-10	0.0000	5.532E-02	0.0519	3.651E-03	0.0034	8.949E-03	0.0084	6.957E-03	0.0065
Total	5.125E-01	0.4807	3.183E-02	0.0298	1.229E-05	0.0000	1.707E-01	0.1600	1.195E-02	0.0112	2.728E-02	0.0256	2.128E-02	0.0200

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.327E-01	0.2182	7.788E-03	0.0073	0.000E+00	0.0000	3.828E-02	0.0359	5.472E-04	0.0005	1.148E-02	0.0108	2.908E-01	0.2727
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.035E-02	0.0847
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.151E-01	0.4831
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.701E-01	0.1595
Total	2.327E-01	0.2182	7.788E-03	0.0073	0.000E+00	0.0000	3.828E-02	0.0359	5.472E-04	0.0005	1.148E-02	0.0108	1.066E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.977E-25	0.0000	2.975E-27	0.0000	0.000E+00	0.0000	2.663E-21	0.0000	1.636E-23	0.0000	1.783E-22	0.0000	1.586E-25	0.0000
U-234	2.154E-04	0.0003	1.012E-02	0.0144	9.711E-05	0.0001	5.240E-02	0.0745	3.458E-03	0.0049	8.475E-03	0.0121	6.591E-03	0.0094
U-235	3.843E-01	0.5465	9.598E-03	0.0136	0.000E+00	0.0000	5.515E-02	0.0784	5.430E-03	0.0077	8.012E-03	0.0114	6.458E-03	0.0092
U-238	7.657E-02	0.1089	9.043E-03	0.0129	2.754E-09	0.0000	4.975E-02	0.0707	3.283E-03	0.0047	8.047E-03	0.0114	6.256E-03	0.0089
Total	4.611E-01	0.6557	2.876E-02	0.0409	9.711E-05	0.0001	1.573E-01	0.2237	1.217E-02	0.0173	2.453E-02	0.0349	1.930E-02	0.0274

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.605E-13	0.0000	1.582E-14	0.0000	0.000E+00	0.0000	7.957E-14	0.0000	1.361E-15	0.0000	2.481E-14	0.0000	5.821E-13	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.136E-02	0.1157
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.690E-01	0.6668
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.529E-01	0.2175
Total	4.605E-13	0.0000	1.582E-14	0.0000	0.000E+00	0.0000	7.957E-14	0.0000	1.361E-15	0.0000	2.481E-14	0.0000	7.033E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.366E-04	0.0005	6.989E-03	0.0139	8.419E-04	0.0017	3.625E-02	0.0723	2.392E-03	0.0048	5.847E-03	0.0117	4.552E-03	0.0091
U-235	2.658E-01	0.5303	7.095E-03	0.0142	0.000E+00	0.0000	4.804E-02	0.0959	7.179E-03	0.0143	5.538E-03	0.0111	4.956E-03	0.0099
U-238	5.278E-02	0.1053	6.235E-03	0.0124	7.566E-08	0.0000	3.430E-02	0.0684	2.264E-03	0.0045	5.548E-03	0.0111	4.313E-03	0.0086
Total	3.188E-01	0.6361	2.032E-02	0.0405	8.420E-04	0.0017	1.186E-01	0.2366	1.183E-02	0.0236	1.693E-02	0.0338	1.382E-02	0.0276

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.711E-02	0.1140
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.386E-01	0.6756
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.054E-01	0.2104
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.011E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.252E-04	0.0024	2.445E-03	0.0110	4.076E-03	0.0183	1.323E-02	0.0593	8.701E-04	0.0039	2.052E-03	0.0092	1.602E-03	0.0072
U-235	9.271E-02	0.4157	2.962E-03	0.0133	0.000E+00	0.0000	2.667E-02	0.1196	5.862E-03	0.0263	1.929E-03	0.0086	2.236E-03	0.0100
U-238	1.823E-02	0.0817	2.155E-03	0.0097	9.712E-07	0.0000	1.185E-02	0.0531	7.824E-04	0.0035	1.918E-03	0.0086	1.491E-03	0.0067
Total	1.115E-01	0.4998	7.563E-03	0.0339	4.077E-03	0.0183	5.175E-02	0.2320	7.514E-03	0.0337	5.899E-03	0.0264	5.328E-03	0.0239

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.480E-02	0.1112
U-235	2.149E-02	0.0964	6.267E-03	0.0281	0.000E+00	0.0000	1.650E-03	0.0074	9.125E-06	0.0000	2.008E-05	0.0001	1.618E-01	0.7255
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.643E-02	0.1633
Total	2.149E-02	0.0964	6.267E-03	0.0281	0.000E+00	0.0000	1.650E-03	0.0074	9.125E-06	0.0000	2.008E-05	0.0001	2.230E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.033E-03	0.0006	1.075E-04	0.0001	5.838E-03	0.0037	5.762E-04	0.0004	7.413E-05	0.0000	8.295E-05	0.0001	9.846E-05	0.0001
U-235	2.315E-03	0.0015	1.148E-04	0.0001	0.000E+00	0.0000	4.143E-04	0.0003	2.532E-04	0.0002	4.048E-05	0.0000	9.821E-05	0.0001
U-238	4.326E-04	0.0003	5.234E-05	0.0000	2.850E-06	0.0000	8.016E-05	0.0001	1.554E-05	0.0000	3.931E-05	0.0000	3.621E-05	0.0000
Total	3.781E-03	0.0024	2.747E-04	0.0002	5.841E-03	0.0037	1.071E-03	0.0007	3.429E-04	0.0002	1.627E-04	0.0001	2.329E-04	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.021E-01	0.1268	7.664E-03	0.0048	1.253E-04	0.0001	1.555E-02	0.0098	1.503E-03	0.0009	5.663E-03	0.0036	2.404E-01	0.1508
U-235	8.736E-01	0.5479	1.673E-01	0.1049	0.000E+00	0.0000	6.720E-02	0.0421	1.842E-02	0.0116	5.837E-03	0.0037	1.136E+00	0.7122
U-238	1.902E-01	0.1193	6.115E-03	0.0038	1.615E-07	0.0000	1.463E-02	0.0092	1.385E-03	0.0009	5.349E-03	0.0034	2.184E-01	0.1370
Total	1.266E+00	0.7940	1.811E-01	0.1136	1.255E-04	0.0001	9.738E-02	0.0611	2.131E-02	0.0134	1.685E-02	0.0106	1.594E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform)
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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.613E-01	2.251E-01	2.876E-01	2.908E-01	5.821E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	9.526E-02	9.476E-02	9.376E-02	9.033E-02	8.122E-02	5.597E-02	1.932E-02	2.282E-01
U-234	Th-230	1.000E+00	4.493E-07	1.303E-06	2.990E-06	8.753E-06	2.408E-05	6.651E-05	1.279E-04	1.024E-04
U-234	Ra-226+D	1.000E+00	4.562E-08	3.200E-07	1.684E-06	1.475E-05	1.166E-04	1.012E-03	4.927E-03	8.066E-03
U-234	Pb-210+D	1.000E+00	4.994E-11	6.451E-10	6.722E-09	1.560E-07	3.051E-06	5.820E-05	4.208E-04	4.066E-03
U-234	∑DSR(j)		9.526E-02	9.476E-02	9.376E-02	9.035E-02	8.136E-02	5.711E-02	2.480E-02	2.404E-01
U-235+D	U-235+D	1.000E+00	5.400E-01	5.372E-01	5.315E-01	5.121E-01	4.604E-01	3.174E-01	1.096E-01	2.184E-01
U-235+D	Pa-231	1.000E+00	1.324E-04	4.171E-04	9.815E-04	2.863E-03	7.500E-03	1.704E-02	1.757E-02	1.933E-01
U-235+D	Ac-227+D	1.000E+00	7.906E-07	4.782E-06	2.271E-05	1.720E-04	1.020E-03	4.134E-03	3.461E-02	7.238E-01
U-235+D	∑DSR(j)		5.402E-01	5.376E-01	5.325E-01	5.151E-01	4.690E-01	3.386E-01	1.618E-01	1.136E+00
U-238	U-238	5.400E-05	4.622E-06	4.598E-06	4.549E-06	4.383E-06	3.941E-06	2.717E-06	9.384E-07	1.114E-05
U-238+D	U-238+D	9.999E-01	1.794E-01	1.784E-01	1.765E-01	1.701E-01	1.529E-01	1.054E-01	3.641E-02	2.177E-01
U-238+D	U-234	9.999E-01	1.349E-07	4.028E-07	9.301E-07	2.689E-06	7.022E-06	1.595E-05	1.647E-05	6.482E-04
U-238+D	Th-230	9.999E-01	4.384E-13	2.922E-12	1.501E-11	1.295E-10	1.014E-09	8.640E-09	4.059E-08	5.630E-08
U-238+D	Ra-226+D	9.999E-01	3.222E-14	4.846E-13	5.630E-12	1.457E-10	3.306E-09	9.097E-08	1.174E-06	4.695E-06
U-238+D	Pb-210+D	9.999E-01	2.967E-17	7.882E-16	1.752E-14	1.189E-12	6.814E-11	4.424E-09	9.313E-08	4.811E-06
U-238+D	∑DSR(j)		1.794E-01	1.784E-01	1.765E-01	1.701E-01	1.529E-01	1.054E-01	3.643E-02	2.184E-01

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

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

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	6.919E+01	1.111E+02	8.691E+01	8.598E+01	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10
U-234	2.624E+02	2.638E+02	2.666E+02	2.767E+02	3.073E+02	4.378E+02	1.008E+03	1.040E+02
U-235	4.628E+01	4.650E+01	4.695E+01	4.853E+01	5.331E+01	7.384E+01	1.545E+02	2.202E+01
U-238	1.394E+02	1.401E+02	1.416E+02	1.470E+02	1.635E+02	2.371E+02	6.862E+02	1.145E+02

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Tc-99	1.000E+00	0.000E+00	3.613E-01	6.919E+01	0.000E+00	*1.697E+10
U-234	1.000E+00	1.000E+03	2.404E-01	1.040E+02	2.404E-01	1.040E+02
U-235	1.000E+00	1.000E+03	1.136E+00	2.202E+01	1.136E+00	2.202E+01
U-238	1.000E+00	1.000E+03	2.184E-01	1.145E+02	2.184E-01	1.145E+02

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.613E-01	2.251E-01	2.876E-01	2.908E-01	5.821E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	9.526E-02	9.476E-02	9.376E-02	9.033E-02	8.122E-02	5.597E-02	1.932E-02	2.282E-01
U-234	U-238	9.999E-01	1.349E-07	4.028E-07	9.301E-07	2.689E-06	7.022E-06	1.595E-05	1.647E-05	6.482E-04
U-234	∑DOSE(j)		9.526E-02	9.476E-02	9.376E-02	9.033E-02	8.122E-02	5.599E-02	1.934E-02	2.289E-01
Th-230	U-234	1.000E+00	4.493E-07	1.303E-06	2.990E-06	8.753E-06	2.408E-05	6.651E-05	1.279E-04	1.024E-04
Th-230	U-238	9.999E-01	4.384E-13	2.922E-12	1.501E-11	1.295E-10	1.014E-09	8.640E-09	4.059E-08	5.630E-08
Th-230	∑DOSE(j)		4.493E-07	1.303E-06	2.990E-06	8.754E-06	2.408E-05	6.652E-05	1.279E-04	1.024E-04
Ra-226	U-234	1.000E+00	4.562E-08	3.200E-07	1.684E-06	1.475E-05	1.166E-04	1.012E-03	4.927E-03	8.066E-03
Ra-226	U-238	9.999E-01	3.222E-14	4.846E-13	5.630E-12	1.457E-10	3.306E-09	9.097E-08	1.174E-06	4.695E-06
Ra-226	∑DOSE(j)		4.562E-08	3.200E-07	1.684E-06	1.475E-05	1.166E-04	1.012E-03	4.928E-03	8.071E-03
Pb-210	U-234	1.000E+00	4.994E-11	6.451E-10	6.722E-09	1.560E-07	3.051E-06	5.820E-05	4.208E-04	4.066E-03
Pb-210	U-238	9.999E-01	2.967E-17	7.882E-16	1.752E-14	1.189E-12	6.814E-11	4.424E-09	9.313E-08	4.811E-06
Pb-210	∑DOSE(j)		4.994E-11	6.451E-10	6.722E-09	1.560E-07	3.051E-06	5.821E-05	4.209E-04	4.071E-03
U-235	U-235	1.000E+00	5.400E-01	5.372E-01	5.315E-01	5.121E-01	4.604E-01	3.174E-01	1.096E-01	2.184E-01
Pa-231	U-235	1.000E+00	1.324E-04	4.171E-04	9.815E-04	2.863E-03	7.500E-03	1.704E-02	1.757E-02	1.933E-01
Ac-227	U-235	1.000E+00	7.906E-07	4.782E-06	2.271E-05	1.720E-04	1.020E-03	4.134E-03	3.461E-02	7.238E-01
U-238	U-238	5.400E-05	4.622E-06	4.598E-06	4.549E-06	4.383E-06	3.941E-06	2.717E-06	9.384E-07	1.114E-05
U-238	U-238	9.999E-01	1.794E-01	1.784E-01	1.765E-01	1.701E-01	1.529E-01	1.054E-01	3.641E-02	2.177E-01
U-238	∑DOSE(j)		1.794E-01	1.784E-01	1.765E-01	1.701E-01	1.529E-01	1.054E-01	3.641E-02	2.177E-01

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

Summary : CFFF Resident Farmer Scenario (Uniform)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+00	2.137E-01	9.753E-03	1.982E-07	7.789E-21	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.525E-01	5.876E-01	2.028E-01	4.904E-03
U-234	U-238	9.999E-01	0.000E+00	2.820E-06	8.370E-06	2.688E-05	7.251E-05	1.666E-04	1.726E-04	1.392E-05
U-234	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Th-230	U-234	1.000E+00	0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.977E-04	1.346E-03	1.666E-03
Th-230	U-238	9.999E-01	0.000E+00	1.271E-11	1.136E-10	1.232E-09	1.033E-08	9.019E-08	4.267E-07	8.672E-07
Th-230	∑S(j):		0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.978E-04	1.346E-03	1.667E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.172E-05	1.629E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.836E-15	4.920E-14	1.775E-12	4.451E-11	1.276E-09	1.707E-08	7.948E-08
Ra-226	∑S(j):		0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.174E-05	1.629E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.963E-06	5.820E-05	1.490E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.418E-17	1.127E-15	1.301E-13	8.755E-12	6.015E-10	1.286E-08	7.204E-08
Pb-210	∑S(j):		0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.964E-06	5.821E-05	1.491E-04
U-235	U-235	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Pa-231	U-235	1.000E+00	0.000E+00	2.105E-05	6.247E-05	2.006E-04	5.410E-04	1.242E-03	1.285E-03	1.030E-04
Ac-227	U-235	1.000E+00	0.000E+00	3.306E-07	2.868E-06	2.809E-05	1.802E-04	7.496E-04	9.430E-04	8.042E-05
U-238	U-238	5.400E-05	5.400E-05	5.371E-05	5.315E-05	5.120E-05	4.604E-05	3.174E-05	1.096E-05	2.655E-07
U-238	U-238	9.999E-01	9.999E-01	9.946E-01	9.841E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
U-238	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03

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

RESCALC.EXE execution time = 9.46 seconds

Appendix B

RESRAD Files for Area Factor Development

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(22)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(23)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(24)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(25)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(26)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(27)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(28)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(29)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(30)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(31)
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	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Tc-99	8.320E-06	8.320E-06	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)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(8)
B-1	U-238	1.180E-01	1.180E-01	DCF2(9)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(10)
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	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Tc-99	1.460E-06	1.460E-06	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-1	U-235+D	2.673E-04	2.660E-04	DCF3(8)
D-1	U-238	2.550E-04	2.550E-04	DCF3(9)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(10)
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				
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				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(5,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Th-230 , beef/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				
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-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(10,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(10,3)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
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				
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				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(5,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(5,2)
D-5				
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				
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)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(10,2)

#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.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
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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)	1.000E+00	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.250E+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)	5.510E+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): Tc-99	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(9)
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)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.000E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.829E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	7.500E-03	2.000E-02	---	HGWT

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone b parameter	5.300E+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)	2.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.500E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.543E+00	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.662E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.800E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-06	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	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

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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)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	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	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	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)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

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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	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+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)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	3.000E-02	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	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	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

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	257	---	---	KYMAX

Summary of Pathway Selections

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

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1.00 square meters	Tc-99	1.000E+00
Thickness:	1.25 meters	U-234	1.000E+00
Cover Depth:	0.00 meters	U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.483E-01	3.647E-01	2.877E-01	2.758E-01	2.528E-01	1.881E-01	7.961E-02	4.868E-03
M(t):	2.593E-02	1.459E-02	1.151E-02	1.103E-02	1.011E-02	7.524E-03	3.184E-03	1.947E-04

Maximum TDOSE(t): 6.483E-01 mrem/yr at t = 0.000E+00 years

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.414E-06	0.0000	1.017E-07	0.0000	0.000E+00	0.0000	3.372E-01	0.5201	1.970E-03	0.0030	2.185E-02	0.0337	2.036E-08	0.0000
U-234	2.968E-05	0.0000	3.158E-03	0.0049	3.442E-10	0.0000	6.141E-02	0.0947	4.053E-03	0.0063	9.935E-03	0.0153	7.727E-06	0.0000
U-235	5.050E-02	0.0779	2.943E-03	0.0045	0.000E+00	0.0000	5.811E-02	0.0896	3.863E-03	0.0060	9.386E-03	0.0145	7.302E-06	0.0000
U-238	9.469E-03	0.0146	2.823E-03	0.0044	2.438E-16	0.0000	5.831E-02	0.0899	3.848E-03	0.0059	9.433E-03	0.0146	7.336E-06	0.0000
Total	6.000E-02	0.0926	8.924E-03	0.0138	3.442E-10	0.0000	5.150E-01	0.7944	1.373E-02	0.0212	5.061E-02	0.0781	2.239E-05	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.812E-07	0.0000	1.332E-11	0.0000	0.000E+00	0.0000	2.219E-08	0.0000	0.000E+00	0.0000	1.036E-08	0.0000	3.610E-01	0.5569
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.859E-02	0.1212
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.248E-01	0.1925
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.389E-02	0.1294
Total	3.812E-07	0.0000	1.332E-11	0.0000	0.000E+00	0.0000	2.219E-08	0.0000	0.000E+00	0.0000	1.036E-08	0.0000	6.483E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	9.433E-07	0.0000	2.172E-08	0.0000	0.000E+00	0.0000	7.306E-02	0.2003	4.487E-04	0.0012	4.892E-03	0.0134	4.351E-09	0.0000
U-234	2.953E-05	0.0001	3.141E-03	0.0086	2.403E-09	0.0000	6.109E-02	0.1675	4.032E-03	0.0111	9.883E-03	0.0271	7.686E-06	0.0000
U-235	5.023E-02	0.1377	2.928E-03	0.0080	0.000E+00	0.0000	5.800E-02	0.1590	3.924E-03	0.0108	9.336E-03	0.0256	7.270E-06	0.0000
U-238	9.419E-03	0.0258	2.808E-03	0.0077	3.645E-15	0.0000	5.800E-02	0.1590	3.828E-03	0.0105	9.384E-03	0.0257	7.297E-06	0.0000
Total	5.968E-02	0.1636	8.877E-03	0.0243	2.403E-09	0.0000	2.501E-01	0.6858	1.223E-02	0.0335	3.349E-02	0.0918	2.226E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.362E-04	0.0006	1.278E-08	0.0000	0.000E+00	0.0000	3.714E-05	0.0001	4.375E-07	0.0000	1.076E-05	0.0000	7.869E-02	0.2157
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.818E-02	0.2143
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.244E-01	0.3411
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.345E-02	0.2288
Total	2.362E-04	0.0006	1.278E-08	0.0000	0.000E+00	0.0000	3.714E-05	0.0001	4.375E-07	0.0000	1.076E-05	0.0000	3.647E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.306E-08	0.0000	9.917E-10	0.0000	0.000E+00	0.0000	3.335E-03	0.0116	2.048E-05	0.0001	2.233E-04	0.0008	1.986E-10	0.0000
U-234	2.923E-05	0.0001	3.108E-03	0.0108	1.262E-08	0.0000	6.044E-02	0.2101	3.989E-03	0.0139	9.778E-03	0.0340	7.605E-06	0.0000
U-235	4.970E-02	0.1727	2.899E-03	0.0101	0.000E+00	0.0000	5.778E-02	0.2008	4.047E-03	0.0141	9.238E-03	0.0321	7.206E-06	0.0000
U-238	9.319E-03	0.0324	2.779E-03	0.0097	4.222E-14	0.0000	5.739E-02	0.1995	3.788E-03	0.0132	9.285E-03	0.0323	7.220E-06	0.0000
Total	5.905E-02	0.2052	8.785E-03	0.0305	1.262E-08	0.0000	1.789E-01	0.6219	1.184E-02	0.0412	2.852E-02	0.0991	2.203E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.528E-04	0.0016	2.506E-08	0.0000	0.000E+00	0.0000	7.443E-05	0.0003	1.059E-06	0.0000	2.230E-05	0.0001	4.130E-03	0.0144
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.735E-02	0.2689
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E-01	0.4298
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.257E-02	0.2870
Total	4.528E-04	0.0016	2.506E-08	0.0000	0.000E+00	0.0000	7.443E-05	0.0003	1.059E-06	0.0000	2.230E-05	0.0001	2.877E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	8.751E-13	0.0000	2.016E-14	0.0000	0.000E+00	0.0000	6.778E-08	0.0000	4.163E-10	0.0000	4.538E-09	0.0000	4.037E-15	0.0000
U-234	2.829E-05	0.0001	2.995E-03	0.0109	1.104E-07	0.0000	5.824E-02	0.2112	3.844E-03	0.0139	9.421E-03	0.0342	7.328E-06	0.0000
U-235	4.789E-02	0.1737	2.801E-03	0.0102	0.000E+00	0.0000	5.705E-02	0.2069	4.453E-03	0.0161	8.902E-03	0.0323	6.995E-06	0.0000
U-238	8.979E-03	0.0326	2.677E-03	0.0097	1.090E-12	0.0000	5.529E-02	0.2005	3.649E-03	0.0132	8.946E-03	0.0324	6.957E-06	0.0000
Total	5.690E-02	0.2063	8.473E-03	0.0307	1.104E-07	0.0000	1.706E-01	0.6186	1.195E-02	0.0433	2.727E-02	0.0989	2.128E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.634E-04	0.0017	2.566E-08	0.0000	0.000E+00	0.0000	7.625E-05	0.0003	1.090E-06	0.0000	2.287E-05	0.0001	5.637E-04	0.0020
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.453E-02	0.2703
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.211E-01	0.4392
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.955E-02	0.2885
Total	4.634E-04	0.0017	2.566E-08	0.0000	0.000E+00	0.0000	7.625E-05	0.0003	1.090E-06	0.0000	2.287E-05	0.0001	2.758E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.439E-26	0.0000	7.920E-28	0.0000	0.000E+00	0.0000	2.663E-21	0.0000	1.636E-23	0.0000	1.783E-22	0.0000	1.586E-28	0.0000
U-234	2.642E-05	0.0001	2.694E-03	0.0107	8.723E-07	0.0000	5.238E-02	0.2072	3.457E-03	0.0137	8.471E-03	0.0335	6.591E-06	0.0000
U-235	4.309E-02	0.1705	2.555E-03	0.0101	0.000E+00	0.0000	5.512E-02	0.2181	5.428E-03	0.0215	8.009E-03	0.0317	6.458E-06	0.0000
U-238	8.073E-03	0.0319	2.408E-03	0.0095	2.473E-11	0.0000	4.972E-02	0.1967	3.282E-03	0.0130	8.044E-03	0.0318	6.256E-06	0.0000
Total	5.119E-02	0.2025	7.657E-03	0.0303	8.723E-07	0.0000	1.572E-01	0.6220	1.217E-02	0.0481	2.452E-02	0.0970	1.930E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	9.172E-16	0.0000	5.212E-20	0.0000	0.000E+00	0.0000	1.585E-16	0.0000	2.710E-18	0.0000	4.941E-17	0.0000	1.128E-15	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.703E-02	0.2652
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.142E-01	0.4518
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.153E-02	0.2830
Total	9.172E-16	0.0000	5.212E-20	0.0000	0.000E+00	0.0000	1.585E-16	0.0000	2.710E-18	0.0000	4.941E-17	0.0000	2.528E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.708E-05	0.0001	1.861E-03	0.0099	7.577E-06	0.0000	3.623E-02	0.1926	2.390E-03	0.0127	5.844E-03	0.0311	4.552E-06	0.0000
U-235	2.979E-02	0.1584	1.889E-03	0.0100	0.000E+00	0.0000	4.802E-02	0.2553	7.176E-03	0.0382	5.536E-03	0.0294	4.956E-06	0.0000
U-238	5.565E-03	0.0296	1.660E-03	0.0088	6.809E-10	0.0000	3.428E-02	0.1822	2.263E-03	0.0120	5.546E-03	0.0295	4.313E-06	0.0000
Total	3.539E-02	0.1881	5.409E-03	0.0288	7.578E-06	0.0000	1.185E-01	0.6301	1.183E-02	0.0629	1.693E-02	0.0900	1.382E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.637E-02	0.2465
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.242E-02	0.4913
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.932E-02	0.2622
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.881E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	5.397E-05	0.0007	6.510E-04	0.0082	3.694E-05	0.0005	1.322E-02	0.1661	8.696E-04	0.0109	2.051E-03	0.0258	1.602E-06	0.0000
U-235	1.039E-02	0.1305	7.886E-04	0.0099	0.000E+00	0.0000	2.666E-02	0.3349	5.860E-03	0.0736	1.928E-03	0.0242	2.236E-06	0.0000
U-238	1.922E-03	0.0241	5.737E-04	0.0072	8.802E-09	0.0000	1.185E-02	0.1488	7.820E-04	0.0098	1.917E-03	0.0241	1.491E-06	0.0000
Total	1.237E-02	0.1553	2.013E-03	0.0253	3.695E-05	0.0005	5.173E-02	0.6498	7.511E-03	0.0944	5.897E-03	0.0741	5.328E-06	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.689E-02	0.2121
U-235	4.280E-05	0.0005	2.065E-08	0.0000	0.000E+00	0.0000	3.287E-06	0.0000	1.817E-08	0.0000	3.999E-08	0.0000	4.568E-02	0.5738
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.704E-02	0.2141
Total	4.280E-05	0.0005	2.065E-08	0.0000	0.000E+00	0.0000	3.287E-06	0.0000	1.817E-08	0.0000	3.999E-08	0.0000	7.961E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	9.144E-05	0.0188	2.863E-05	0.0059	5.549E-05	0.0114	5.758E-04	0.1183	7.409E-05	0.0152	8.292E-05	0.0170	9.846E-08	0.0000
U-235	2.390E-04	0.0491	3.056E-05	0.0063	0.000E+00	0.0000	4.139E-04	0.0850	2.531E-04	0.0520	4.046E-05	0.0083	9.821E-08	0.0000
U-238	4.109E-05	0.0084	1.393E-05	0.0029	2.709E-08	0.0000	8.002E-05	0.0164	1.553E-05	0.0032	3.929E-05	0.0081	3.621E-08	0.0000
Total	3.716E-04	0.0763	7.312E-05	0.0150	5.552E-05	0.0114	1.070E-03	0.2198	3.427E-04	0.0704	1.627E-04	0.0334	2.329E-07	0.0000

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.026E-04	0.0827	2.525E-08	0.0000	2.497E-07	0.0001	3.097E-05	0.0064	2.994E-06	0.0006	1.128E-05	0.0023	1.357E-03	0.2787
U-235	1.740E-03	0.3574	5.512E-07	0.0001	0.000E+00	0.0000	1.338E-04	0.0275	3.669E-05	0.0075	1.163E-05	0.0024	2.900E-03	0.5957
U-238	3.789E-04	0.0778	2.015E-08	0.0000	3.217E-10	0.0000	2.915E-05	0.0060	2.759E-06	0.0006	1.065E-05	0.0022	6.114E-04	0.1256
Total	2.521E-03	0.5180	5.966E-07	0.0001	2.500E-07	0.0001	1.940E-04	0.0398	4.244E-05	0.0087	3.356E-05	0.0069	4.868E-03	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.610E-01	7.869E-02	4.130E-03	5.637E-04	1.128E-15	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	7.859E-02	7.818E-02	7.735E-02	7.453E-02	6.701E-02	4.618E-02	1.594E-02	5.979E-04
U-234	Th-230	1.000E+00	2.820E-07	8.026E-07	1.828E-06	5.331E-06	1.465E-05	4.044E-05	7.775E-05	3.845E-05
U-234	Ra-226+D	1.000E+00	3.730E-09	2.760E-08	1.488E-07	1.320E-06	1.050E-05	9.183E-05	4.579E-04	3.949E-04
U-234	Pb-210+D	1.000E+00	4.891E-11	6.299E-10	6.548E-09	1.517E-07	2.965E-06	5.655E-05	4.089E-04	3.253E-04
U-234	∑DSR(j)		7.859E-02	7.818E-02	7.735E-02	7.453E-02	6.703E-02	4.637E-02	1.689E-02	1.357E-03
U-235+D	U-235+D	1.000E+00	1.247E-01	1.240E-01	1.227E-01	1.182E-01	1.063E-01	7.328E-02	2.531E-02	7.945E-04
U-235+D	Pa-231	1.000E+00	1.274E-04	4.021E-04	9.467E-04	2.763E-03	7.238E-03	1.645E-02	1.696E-02	8.735E-04
U-235+D	Ac-227+D	1.000E+00	5.783E-07	3.319E-06	1.525E-05	1.131E-04	6.659E-04	2.691E-03	3.410E-03	1.232E-03
U-235+D	∑DSR(j)		1.248E-01	1.244E-01	1.237E-01	1.211E-01	1.142E-01	9.242E-02	4.568E-02	2.900E-03
U-238	U-238	5.400E-05	3.822E-06	3.802E-06	3.762E-06	3.624E-06	3.259E-06	2.246E-06	7.759E-07	2.916E-08
U-238+D	U-238+D	9.999E-01	8.389E-02	8.344E-02	8.256E-02	7.955E-02	7.152E-02	4.930E-02	1.703E-02	6.093E-04
U-238+D	U-234	9.999E-01	1.113E-07	3.323E-07	7.674E-07	2.218E-06	5.794E-06	1.316E-05	1.359E-05	1.698E-06
U-238+D	Th-230	9.999E-01	2.804E-13	1.819E-12	9.227E-12	7.903E-11	6.173E-10	5.254E-09	2.468E-08	2.002E-08
U-238+D	Ra-226+D	9.999E-01	2.555E-15	4.104E-14	4.929E-13	1.300E-11	2.973E-10	8.250E-09	1.091E-07	1.941E-07
U-238+D	Pb-210+D	9.999E-01	2.908E-17	7.704E-16	1.708E-14	1.157E-12	6.624E-11	4.299E-09	9.049E-08	1.612E-07
U-238+D	∑DSR(j)		8.389E-02	8.344E-02	8.256E-02	7.955E-02	7.153E-02	4.932E-02	1.704E-02	6.114E-04

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

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

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	6.924E+01	3.177E+02	6.054E+03	4.435E+04	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10
U-234	3.181E+02	3.198E+02	3.232E+02	3.354E+02	3.729E+02	5.392E+02	1.480E+03	1.843E+04
U-235	2.003E+02	2.009E+02	2.021E+02	2.064E+02	2.189E+02	2.705E+02	5.473E+02	8.622E+03
U-238	2.980E+02	2.996E+02	3.028E+02	3.143E+02	3.495E+02	5.069E+02	1.467E+03	4.089E+04

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Tc-99	1.000E+00	0.000E+00	3.610E-01	6.924E+01	3.610E-01	6.924E+01
U-234	1.000E+00	0.000E+00	7.859E-02	3.181E+02	7.859E-02	3.181E+02
U-235	1.000E+00	0.000E+00	1.248E-01	2.003E+02	1.248E-01	2.003E+02
U-238	1.000E+00	0.000E+00	8.389E-02	2.980E+02	8.389E-02	2.980E+02

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.610E-01	7.869E-02	4.130E-03	5.637E-04	1.128E-15	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	7.859E-02	7.818E-02	7.735E-02	7.453E-02	6.701E-02	4.618E-02	1.594E-02	5.979E-04
U-234	U-238	9.999E-01	1.113E-07	3.323E-07	7.674E-07	2.218E-06	5.794E-06	1.316E-05	1.359E-05	1.698E-06
U-234	∑DOSE(j)		7.859E-02	7.818E-02	7.735E-02	7.453E-02	6.701E-02	4.619E-02	1.596E-02	5.996E-04
Th-230	U-234	1.000E+00	2.820E-07	8.026E-07	1.828E-06	5.331E-06	1.465E-05	4.044E-05	7.775E-05	3.845E-05
Th-230	U-238	9.999E-01	2.804E-13	1.819E-12	9.227E-12	7.903E-11	6.173E-10	5.254E-09	2.468E-08	2.002E-08
Th-230	∑DOSE(j)		2.820E-07	8.026E-07	1.828E-06	5.331E-06	1.465E-05	4.044E-05	7.777E-05	3.847E-05
Ra-226	U-234	1.000E+00	3.730E-09	2.760E-08	1.488E-07	1.320E-06	1.050E-05	9.183E-05	4.579E-04	3.949E-04
Ra-226	U-238	9.999E-01	2.555E-15	4.104E-14	4.929E-13	1.300E-11	2.973E-10	8.250E-09	1.091E-07	1.941E-07
Ra-226	∑DOSE(j)		3.730E-09	2.760E-08	1.488E-07	1.320E-06	1.050E-05	9.184E-05	4.580E-04	3.951E-04
Pb-210	U-234	1.000E+00	4.891E-11	6.299E-10	6.548E-09	1.517E-07	2.965E-06	5.655E-05	4.089E-04	3.253E-04
Pb-210	U-238	9.999E-01	2.908E-17	7.704E-16	1.708E-14	1.157E-12	6.624E-11	4.299E-09	9.049E-08	1.612E-07
Pb-210	∑DOSE(j)		4.891E-11	6.299E-10	6.548E-09	1.517E-07	2.965E-06	5.656E-05	4.090E-04	3.255E-04
U-235	U-235	1.000E+00	1.247E-01	1.240E-01	1.227E-01	1.182E-01	1.063E-01	7.328E-02	2.531E-02	7.945E-04
Pa-231	U-235	1.000E+00	1.274E-04	4.021E-04	9.467E-04	2.763E-03	7.238E-03	1.645E-02	1.696E-02	8.735E-04
Ac-227	U-235	1.000E+00	5.783E-07	3.319E-06	1.525E-05	1.131E-04	6.659E-04	2.691E-03	3.410E-03	1.232E-03
U-238	U-238	5.400E-05	3.822E-06	3.802E-06	3.762E-06	3.624E-06	3.259E-06	2.246E-06	7.759E-07	2.916E-08
U-238	U-238	9.999E-01	8.389E-02	8.344E-02	8.256E-02	7.955E-02	7.152E-02	4.930E-02	1.703E-02	6.093E-04
U-238	∑DOSE(j)		8.389E-02	8.345E-02	8.257E-02	7.955E-02	7.153E-02	4.931E-02	1.703E-02	6.093E-04

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

Summary : CFFF Resident Farmer Scenario (Uniform 1m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1M2.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+00	2.137E-01	9.753E-03	1.982E-07	7.789E-21	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.525E-01	5.876E-01	2.028E-01	4.904E-03
U-234	U-238	9.999E-01	0.000E+00	2.820E-06	8.370E-06	2.688E-05	7.251E-05	1.666E-04	1.726E-04	1.392E-05
U-234	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Th-230	U-234	1.000E+00	0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.977E-04	1.346E-03	1.666E-03
Th-230	U-238	9.999E-01	0.000E+00	1.271E-11	1.136E-10	1.232E-09	1.033E-08	9.019E-08	4.267E-07	8.672E-07
Th-230	∑S(j):		0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.978E-04	1.346E-03	1.667E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.172E-05	1.629E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.836E-15	4.920E-14	1.775E-12	4.451E-11	1.276E-09	1.707E-08	7.948E-08
Ra-226	∑S(j):		0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.174E-05	1.629E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.963E-06	5.820E-05	1.490E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.418E-17	1.127E-15	1.301E-13	8.755E-12	6.015E-10	1.286E-08	7.204E-08
Pb-210	∑S(j):		0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.964E-06	5.821E-05	1.491E-04
U-235	U-235	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Pa-231	U-235	1.000E+00	0.000E+00	2.105E-05	6.247E-05	2.006E-04	5.410E-04	1.242E-03	1.285E-03	1.030E-04
Ac-227	U-235	1.000E+00	0.000E+00	3.306E-07	2.868E-06	2.809E-05	1.802E-04	7.496E-04	9.430E-04	8.042E-05
U-238	U-238	5.400E-05	5.400E-05	5.371E-05	5.315E-05	5.120E-05	4.604E-05	3.174E-05	1.096E-05	2.655E-07
U-238	U-238	9.999E-01	9.999E-01	9.946E-01	9.841E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
U-238	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03

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

RESCALC.EXE execution time = 10.10 seconds

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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Part I: Mixture Sums and Single Radionuclide Guidelines

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(22)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(23)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(24)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(25)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(26)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(27)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(28)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(29)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(30)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(31)
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	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Tc-99	8.320E-06	8.320E-06	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)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(8)
B-1	U-238	1.180E-01	1.180E-01	DCF2(9)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(10)
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	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Tc-99	1.460E-06	1.460E-06	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-1	U-235+D	2.673E-04	2.660E-04	DCF3(8)
D-1	U-238	2.550E-04	2.550E-04	DCF3(9)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(10)
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				
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				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(5,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Th-230 , beef/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				
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-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(10,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(10,3)

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
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				
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				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(5,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(5,2)
D-5				
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				
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)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(10,2)

#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.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.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)	1.000E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.250E+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)	5.510E+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): Tc-99	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(9)
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)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.000E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.829E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	7.500E-03	2.000E-02	---	HGWT

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone b parameter	5.300E+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)	2.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.500E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.543E+00	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.662E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.800E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-06	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	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
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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)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	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	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	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)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
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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	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+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)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	3.000E-02	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	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	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

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	257	---	---	KYMAX

Summary of Pathway Selections

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

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	10.00 square meters	Tc-99	1.000E+00
Thickness:	1.25 meters	U-234	1.000E+00
Cover Depth:	0.00 meters	U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	8.582E-01	5.760E-01	4.992E-01	4.798E-01	4.318E-01	3.120E-01	1.237E-01	3.189E-02
M(t):	3.433E-02	2.304E-02	1.997E-02	1.919E-02	1.727E-02	1.248E-02	4.947E-03	1.276E-03

Maximum TDOSE(t): 8.582E-01 mrem/yr at t = 0.000E+00 years

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.926E-05	0.0000	1.307E-07	0.0000	0.000E+00	0.0000	3.372E-01	0.3929	1.970E-03	0.0023	2.185E-02	0.0255	2.036E-07	0.0000
U-234	1.252E-04	0.0001	4.058E-03	0.0047	3.443E-09	0.0000	6.141E-02	0.0716	4.053E-03	0.0047	9.936E-03	0.0116	7.727E-05	0.0001
U-235	2.242E-01	0.2613	3.782E-03	0.0044	0.000E+00	0.0000	5.811E-02	0.0677	3.863E-03	0.0045	9.386E-03	0.0109	7.302E-05	0.0001
U-238	4.271E-02	0.0498	3.629E-03	0.0042	2.439E-15	0.0000	5.831E-02	0.0679	3.849E-03	0.0045	9.434E-03	0.0110	7.336E-05	0.0001
Total	2.671E-01	0.3112	1.147E-02	0.0134	3.443E-09	0.0000	5.150E-01	0.6002	1.374E-02	0.0160	5.061E-02	0.0590	2.239E-04	0.0003

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.812E-06	0.0000	1.332E-10	0.0000	0.000E+00	0.0000	2.219E-07	0.0000	0.000E+00	0.0000	1.036E-07	0.0000	3.611E-01	0.4207
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.966E-02	0.0928
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.994E-01	0.3489
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.180E-01	0.1375
Total	3.812E-06	0.0000	1.332E-10	0.0000	0.000E+00	0.0000	2.219E-07	0.0000	0.000E+00	0.0000	1.036E-07	0.0000	8.582E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.116E-06	0.0000	2.792E-08	0.0000	0.000E+00	0.0000	7.306E-02	0.1268	4.487E-04	0.0008	4.892E-03	0.0085	4.351E-08	0.0000
U-234	1.246E-04	0.0002	4.037E-03	0.0070	2.404E-08	0.0000	6.109E-02	0.1061	4.032E-03	0.0070	9.883E-03	0.0172	7.686E-05	0.0001
U-235	2.230E-01	0.3872	3.763E-03	0.0065	0.000E+00	0.0000	5.800E-02	0.1007	3.925E-03	0.0068	9.337E-03	0.0162	7.270E-05	0.0001
U-238	4.248E-02	0.0738	3.610E-03	0.0063	3.647E-14	0.0000	5.800E-02	0.1007	3.828E-03	0.0066	9.384E-03	0.0163	7.297E-05	0.0001
Total	2.656E-01	0.4612	1.141E-02	0.0198	2.404E-08	0.0000	2.502E-01	0.4343	1.223E-02	0.0212	3.350E-02	0.0582	2.226E-04	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.362E-03	0.0041	1.278E-07	0.0000	0.000E+00	0.0000	3.714E-04	0.0006	4.375E-06	0.0000	1.076E-04	0.0002	8.125E-02	0.1411
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.924E-02	0.1376
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.981E-01	0.5176
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.174E-01	0.2038
Total	2.362E-03	0.0041	1.278E-07	0.0000	0.000E+00	0.0000	3.714E-04	0.0006	4.375E-06	0.0000	1.076E-04	0.0002	5.760E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.879E-07	0.0000	1.275E-09	0.0000	0.000E+00	0.0000	3.335E-03	0.0067	2.048E-05	0.0000	2.233E-04	0.0004	1.986E-09	0.0000
U-234	1.233E-04	0.0002	3.994E-03	0.0080	1.262E-07	0.0000	6.044E-02	0.1211	3.989E-03	0.0080	9.779E-03	0.0196	7.605E-05	0.0002
U-235	2.207E-01	0.4421	3.726E-03	0.0075	0.000E+00	0.0000	5.778E-02	0.1157	4.047E-03	0.0081	9.238E-03	0.0185	7.206E-05	0.0001
U-238	4.203E-02	0.0842	3.572E-03	0.0072	4.223E-13	0.0000	5.739E-02	0.1150	3.788E-03	0.0076	9.285E-03	0.0186	7.220E-05	0.0001
Total	2.628E-01	0.5265	1.129E-02	0.0226	1.263E-07	0.0000	1.790E-01	0.3585	1.185E-02	0.0237	2.853E-02	0.0571	2.203E-04	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.528E-03	0.0091	2.506E-07	0.0000	0.000E+00	0.0000	7.443E-04	0.0015	1.059E-05	0.0000	2.230E-04	0.0004	9.086E-03	0.0182
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.841E-02	0.1571
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.955E-01	0.5921
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.161E-01	0.2327
Total	4.528E-03	0.0091	2.506E-07	0.0000	0.000E+00	0.0000	7.443E-04	0.0015	1.059E-05	0.0000	2.230E-04	0.0004	4.992E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.818E-12	0.0000	2.591E-14	0.0000	0.000E+00	0.0000	6.778E-08	0.0000	4.163E-10	0.0000	4.538E-09	0.0000	4.037E-14	0.0000
U-234	1.194E-04	0.0002	3.849E-03	0.0080	1.104E-06	0.0000	5.824E-02	0.1214	3.844E-03	0.0080	9.421E-03	0.0196	7.328E-05	0.0002
U-235	2.126E-01	0.4432	3.601E-03	0.0075	0.000E+00	0.0000	5.705E-02	0.1189	4.453E-03	0.0093	8.902E-03	0.0186	6.995E-05	0.0001
U-238	4.050E-02	0.0844	3.441E-03	0.0072	1.091E-11	0.0000	5.530E-02	0.1152	3.650E-03	0.0076	8.946E-03	0.0186	6.957E-05	0.0001
Total	2.533E-01	0.5278	1.089E-02	0.0227	1.104E-06	0.0000	1.706E-01	0.3555	1.195E-02	0.0249	2.727E-02	0.0568	2.128E-04	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.634E-03	0.0097	2.566E-07	0.0000	0.000E+00	0.0000	7.625E-04	0.0016	1.090E-05	0.0000	2.287E-04	0.0005	5.636E-03	0.0117
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.555E-02	0.1575
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.867E-01	0.5976
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.119E-01	0.2332
Total	4.634E-03	0.0097	2.566E-07	0.0000	0.000E+00	0.0000	7.625E-04	0.0016	1.090E-05	0.0000	2.287E-04	0.0005	4.798E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.500E-25	0.0000	1.018E-27	0.0000	0.000E+00	0.0000	2.663E-21	0.0000	1.636E-23	0.0000	1.783E-22	0.0000	1.586E-27	0.0000
U-234	1.119E-04	0.0003	3.463E-03	0.0080	8.726E-06	0.0000	5.238E-02	0.1213	3.457E-03	0.0080	8.471E-03	0.0196	6.591E-05	0.0002
U-235	1.913E-01	0.4431	3.284E-03	0.0076	0.000E+00	0.0000	5.512E-02	0.1277	5.428E-03	0.0126	8.009E-03	0.0185	6.458E-05	0.0001
U-238	3.641E-02	0.0843	3.094E-03	0.0072	2.475E-10	0.0000	4.972E-02	0.1152	3.282E-03	0.0076	8.044E-03	0.0186	6.256E-05	0.0001
Total	2.278E-01	0.5276	9.841E-03	0.0228	8.727E-06	0.0000	1.572E-01	0.3641	1.217E-02	0.0282	2.452E-02	0.0568	1.930E-04	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	9.172E-15	0.0000	5.212E-19	0.0000	0.000E+00	0.0000	1.585E-15	0.0000	2.710E-17	0.0000	4.941E-16	0.0000	1.128E-14	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.796E-02	0.1574
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.632E-01	0.6096
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.006E-01	0.2330
Total	9.172E-15	0.0000	5.212E-19	0.0000	0.000E+00	0.0000	1.585E-15	0.0000	2.710E-17	0.0000	4.941E-16	0.0000	4.318E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.182E-04	0.0004	2.392E-03	0.0077	7.580E-05	0.0002	3.624E-02	0.1162	2.390E-03	0.0077	5.844E-03	0.0187	4.552E-05	0.0001
U-235	1.323E-01	0.4240	2.428E-03	0.0078	0.000E+00	0.0000	4.802E-02	0.1539	7.176E-03	0.0230	5.536E-03	0.0177	4.956E-05	0.0002
U-238	2.510E-02	0.0805	2.134E-03	0.0068	6.812E-09	0.0000	3.428E-02	0.1099	2.263E-03	0.0073	5.546E-03	0.0178	4.313E-05	0.0001
Total	1.575E-01	0.5049	6.953E-03	0.0223	7.581E-05	0.0002	1.185E-01	0.3800	1.183E-02	0.0379	1.693E-02	0.0543	1.382E-04	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.710E-02	0.1510
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.955E-01	0.6267
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.937E-02	0.2224
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.476E-04	0.0020	8.368E-04	0.0068	3.696E-04	0.0030	1.322E-02	0.1069	8.697E-04	0.0070	2.052E-03	0.0166	1.602E-05	0.0001
U-235	4.614E-02	0.3731	1.014E-03	0.0082	0.000E+00	0.0000	2.666E-02	0.2156	5.860E-03	0.0474	1.929E-03	0.0156	2.236E-05	0.0002
U-238	8.670E-03	0.0701	7.374E-04	0.0060	8.806E-08	0.0000	1.185E-02	0.0958	7.821E-04	0.0063	1.917E-03	0.0155	1.491E-05	0.0001
Total	5.506E-02	0.4452	2.588E-03	0.0209	3.696E-04	0.0030	5.173E-02	0.4183	7.512E-03	0.0607	5.897E-03	0.0477	5.328E-05	0.0004

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.761E-02	0.1424
U-235	4.280E-04	0.0035	2.065E-07	0.0000	0.000E+00	0.0000	3.287E-05	0.0003	1.817E-07	0.0000	3.999E-07	0.0000	8.209E-02	0.6638
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.397E-02	0.1938
Total	4.280E-04	0.0035	2.065E-07	0.0000	0.000E+00	0.0000	3.287E-05	0.0003	1.817E-07	0.0000	3.999E-07	0.0000	1.237E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.427E-04	0.0139	3.679E-05	0.0012	5.550E-04	0.0174	5.758E-04	0.0181	7.410E-05	0.0023	8.292E-05	0.0026	9.846E-07	0.0000
U-235	1.108E-03	0.0347	3.928E-05	0.0012	0.000E+00	0.0000	4.139E-04	0.0130	2.531E-04	0.0079	4.047E-05	0.0013	9.821E-07	0.0000
U-238	1.935E-04	0.0061	1.791E-05	0.0006	2.709E-07	0.0000	8.003E-05	0.0025	1.553E-05	0.0005	3.930E-05	0.0012	3.621E-07	0.0000
Total	1.744E-03	0.0547	9.399E-05	0.0029	5.553E-04	0.0174	1.070E-03	0.0335	3.428E-04	0.0107	1.627E-04	0.0051	2.329E-06	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.026E-03	0.1262	2.525E-07	0.0000	2.497E-06	0.0001	3.097E-04	0.0097	2.994E-05	0.0009	1.128E-04	0.0035	6.249E-03	0.1959
U-235	1.740E-02	0.5455	5.512E-06	0.0002	0.000E+00	0.0000	1.338E-03	0.0420	3.669E-04	0.0115	1.163E-04	0.0036	2.108E-02	0.6610
U-238	3.789E-03	0.1188	2.015E-07	0.0000	3.217E-09	0.0000	2.915E-04	0.0091	2.759E-05	0.0009	1.065E-04	0.0033	4.562E-03	0.1430
Total	2.521E-02	0.7906	5.966E-06	0.0002	2.500E-06	0.0001	1.940E-03	0.0608	4.244E-04	0.0133	3.356E-04	0.0105	3.189E-02	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.611E-01	8.125E-02	9.086E-03	5.636E-03	1.128E-14	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	7.966E-02	7.924E-02	7.840E-02	7.554E-02	6.792E-02	4.681E-02	1.616E-02	4.575E-03
U-234	Th-230	1.000E+00	2.939E-07	8.382E-07	1.911E-06	5.575E-06	1.532E-05	4.229E-05	8.132E-05	4.289E-05
U-234	Ra-226+D	1.000E+00	8.397E-09	6.018E-08	3.200E-07	2.817E-06	2.233E-05	1.949E-04	9.643E-04	1.260E-03
U-234	Pb-210+D	1.000E+00	4.893E-11	6.302E-10	6.551E-09	1.518E-07	2.966E-06	5.658E-05	4.091E-04	3.715E-04
U-234	∑DSR(j)		7.966E-02	7.924E-02	7.841E-02	7.555E-02	6.796E-02	4.710E-02	1.761E-02	6.249E-03
U-235+D	U-235+D	1.000E+00	2.993E-01	2.977E-01	2.946E-01	2.838E-01	2.552E-01	1.759E-01	6.076E-02	5.392E-03
U-235+D	Pa-231	1.000E+00	1.280E-04	4.038E-04	9.507E-04	2.774E-03	7.268E-03	1.651E-02	1.703E-02	4.206E-03
U-235+D	Ac-227+D	1.000E+00	6.339E-07	3.702E-06	1.720E-05	1.285E-04	7.587E-04	3.069E-03	4.299E-03	1.148E-02
U-235+D	∑DSR(j)		2.994E-01	2.981E-01	2.955E-01	2.867E-01	2.632E-01	1.955E-01	8.209E-02	2.108E-02
U-238	U-238	5.400E-05	3.871E-06	3.850E-06	3.809E-06	3.670E-06	3.300E-06	2.275E-06	7.858E-07	2.232E-07
U-238+D	U-238+D	9.999E-01	1.180E-01	1.174E-01	1.161E-01	1.119E-01	1.006E-01	6.935E-02	2.396E-02	4.547E-03
U-238+D	U-234	9.999E-01	1.128E-07	3.369E-07	7.778E-07	2.248E-06	5.872E-06	1.334E-05	1.377E-05	1.299E-05
U-238+D	Th-230	9.999E-01	2.917E-13	1.898E-12	9.640E-12	8.263E-11	6.455E-10	5.495E-09	2.581E-08	2.238E-08
U-238+D	Ra-226+D	9.999E-01	5.860E-15	9.047E-14	1.065E-12	2.779E-11	6.330E-10	1.751E-08	2.298E-07	6.286E-07
U-238+D	Pb-210+D	9.999E-01	2.909E-17	7.707E-16	1.709E-14	1.157E-12	6.627E-11	4.301E-09	9.053E-08	2.184E-07
U-238+D	∑DSR(j)		1.180E-01	1.174E-01	1.161E-01	1.119E-01	1.006E-01	6.937E-02	2.397E-02	4.561E-03

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

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

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	6.924E+01	3.077E+02	2.752E+03	4.436E+03	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10
U-234	3.138E+02	3.155E+02	3.189E+02	3.309E+02	3.679E+02	5.308E+02	1.419E+03	4.001E+03
U-235	8.349E+01	8.385E+01	8.459E+01	8.719E+01	9.498E+01	1.279E+02	3.045E+02	1.186E+03
U-238	2.119E+02	2.130E+02	2.153E+02	2.234E+02	2.485E+02	3.604E+02	1.043E+03	5.481E+03

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Tc-99	1.000E+00	0.000E+00	3.611E-01	6.924E+01	3.611E-01	6.924E+01
U-234	1.000E+00	0.000E+00	7.966E-02	3.138E+02	7.966E-02	3.138E+02
U-235	1.000E+00	0.000E+00	2.994E-01	8.349E+01	2.994E-01	8.349E+01
U-238	1.000E+00	0.000E+00	1.180E-01	2.119E+02	1.180E-01	2.119E+02

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.611E-01	8.125E-02	9.086E-03	5.636E-03	1.128E-14	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	7.966E-02	7.924E-02	7.840E-02	7.554E-02	6.792E-02	4.681E-02	1.616E-02	4.575E-03
U-234	U-238	9.999E-01	1.128E-07	3.369E-07	7.778E-07	2.248E-06	5.872E-06	1.334E-05	1.377E-05	1.299E-05
U-234	∑DOSE(j)		7.966E-02	7.924E-02	7.841E-02	7.554E-02	6.792E-02	4.682E-02	1.617E-02	4.588E-03
Th-230	U-234	1.000E+00	2.939E-07	8.382E-07	1.911E-06	5.575E-06	1.532E-05	4.229E-05	8.132E-05	4.289E-05
Th-230	U-238	9.999E-01	2.917E-13	1.898E-12	9.640E-12	8.263E-11	6.455E-10	5.495E-09	2.581E-08	2.238E-08
Th-230	∑DOSE(j)		2.939E-07	8.382E-07	1.911E-06	5.575E-06	1.532E-05	4.230E-05	8.135E-05	4.292E-05
Ra-226	U-234	1.000E+00	8.397E-09	6.018E-08	3.200E-07	2.817E-06	2.233E-05	1.949E-04	9.643E-04	1.260E-03
Ra-226	U-238	9.999E-01	5.860E-15	9.047E-14	1.065E-12	2.779E-11	6.330E-10	1.751E-08	2.298E-07	6.286E-07
Ra-226	∑DOSE(j)		8.397E-09	6.018E-08	3.200E-07	2.817E-06	2.233E-05	1.949E-04	9.645E-04	1.261E-03
Pb-210	U-234	1.000E+00	4.893E-11	6.302E-10	6.551E-09	1.518E-07	2.966E-06	5.658E-05	4.091E-04	3.715E-04
Pb-210	U-238	9.999E-01	2.909E-17	7.707E-16	1.709E-14	1.157E-12	6.627E-11	4.301E-09	9.053E-08	2.184E-07
Pb-210	∑DOSE(j)		4.893E-11	6.302E-10	6.551E-09	1.518E-07	2.966E-06	5.659E-05	4.092E-04	3.717E-04
U-235	U-235	1.000E+00	2.993E-01	2.977E-01	2.946E-01	2.838E-01	2.552E-01	1.759E-01	6.076E-02	5.392E-03
Pa-231	U-235	1.000E+00	1.280E-04	4.038E-04	9.507E-04	2.774E-03	7.268E-03	1.651E-02	1.703E-02	4.206E-03
Ac-227	U-235	1.000E+00	6.339E-07	3.702E-06	1.720E-05	1.285E-04	7.587E-04	3.069E-03	4.299E-03	1.148E-02
U-238	U-238	5.400E-05	3.871E-06	3.850E-06	3.809E-06	3.670E-06	3.300E-06	2.275E-06	7.858E-07	2.232E-07
U-238	U-238	9.999E-01	1.180E-01	1.174E-01	1.161E-01	1.119E-01	1.006E-01	6.935E-02	2.396E-02	4.547E-03
U-238	∑DOSE(j)		1.180E-01	1.174E-01	1.161E-01	1.119E-01	1.006E-01	6.936E-02	2.396E-02	4.548E-03

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

Summary : CFFF Resident Farmer Scenario (Uniform 10m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 10M2.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+00	2.137E-01	9.753E-03	1.982E-07	7.789E-21	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.525E-01	5.876E-01	2.028E-01	4.904E-03
U-234	U-238	9.999E-01	0.000E+00	2.820E-06	8.370E-06	2.688E-05	7.251E-05	1.666E-04	1.726E-04	1.392E-05
U-234	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Th-230	U-234	1.000E+00	0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.977E-04	1.346E-03	1.666E-03
Th-230	U-238	9.999E-01	0.000E+00	1.271E-11	1.136E-10	1.232E-09	1.033E-08	9.019E-08	4.267E-07	8.672E-07
Th-230	∑S(j):		0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.978E-04	1.346E-03	1.667E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.172E-05	1.629E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.836E-15	4.920E-14	1.775E-12	4.451E-11	1.276E-09	1.707E-08	7.948E-08
Ra-226	∑S(j):		0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.174E-05	1.629E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.963E-06	5.820E-05	1.490E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.418E-17	1.127E-15	1.301E-13	8.755E-12	6.015E-10	1.286E-08	7.204E-08
Pb-210	∑S(j):		0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.964E-06	5.821E-05	1.491E-04
U-235	U-235	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Pa-231	U-235	1.000E+00	0.000E+00	2.105E-05	6.247E-05	2.006E-04	5.410E-04	1.242E-03	1.285E-03	1.030E-04
Ac-227	U-235	1.000E+00	0.000E+00	3.306E-07	2.868E-06	2.809E-05	1.802E-04	7.496E-04	9.430E-04	8.042E-05
U-238	U-238	5.400E-05	5.400E-05	5.371E-05	5.315E-05	5.120E-05	4.604E-05	3.174E-05	1.096E-05	2.655E-07
U-238	U-238	9.999E-01	9.999E-01	9.946E-01	9.841E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
U-238	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03

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

RESCALC.EXE execution time = 9.46 seconds

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

Table of Contents

Part I: Mixture Sums and Single Radionuclide Guidelines

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(22)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(23)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(24)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(25)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(26)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(27)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(28)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(29)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(30)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(31)
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	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Tc-99	8.320E-06	8.320E-06	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)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(8)
B-1	U-238	1.180E-01	1.180E-01	DCF2(9)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(10)
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	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Tc-99	1.460E-06	1.460E-06	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-1	U-235+D	2.673E-04	2.660E-04	DCF3(8)
D-1	U-238	2.550E-04	2.550E-04	DCF3(9)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(10)
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				
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				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(5,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Th-230 , beef/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				
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-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(10,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(10,3)

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
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				
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				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(5,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(5,2)
D-5				
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				
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)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(10,2)

#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.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.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)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.250E+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)	5.510E+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): Tc-99	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(9)
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)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.000E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.829E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	7.500E-03	2.000E-02	---	HGWT

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone b parameter	5.300E+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)	2.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.500E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.543E+00	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.662E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.800E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-06	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	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
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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)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	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	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	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)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
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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	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+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)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	3.000E-02	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	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	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

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	257	---	---	KYMAX

Summary of Pathway Selections

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

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	100.00 square meters	Tc-99	1.000E+00
Thickness:	1.25 meters	U-234	1.000E+00
Cover Depth:	0.00 meters	U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.043E+00	7.854E-01	7.306E-01	7.057E-01	5.895E-01	4.217E-01	1.694E-01	2.896E-01
M(t):	4.172E-02	3.142E-02	2.922E-02	2.823E-02	2.358E-02	1.687E-02	6.775E-03	1.158E-02

Maximum TDOSE(t): 1.043E+00 mrem/yr at t = 0.000E+00 years

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.192E-05	0.0000	1.674E-07	0.0000	0.000E+00	0.0000	3.372E-01	0.3233	1.970E-03	0.0019	2.185E-02	0.0210	2.036E-06	0.0000
U-234	2.030E-04	0.0002	5.200E-03	0.0050	3.448E-08	0.0000	6.142E-02	0.0589	4.053E-03	0.0039	9.936E-03	0.0095	7.727E-04	0.0007
U-235	3.741E-01	0.3587	4.846E-03	0.0046	0.000E+00	0.0000	5.811E-02	0.0557	3.863E-03	0.0037	9.387E-03	0.0090	7.302E-04	0.0007
U-238	7.222E-02	0.0692	4.650E-03	0.0045	2.442E-14	0.0000	5.832E-02	0.0559	3.849E-03	0.0037	9.434E-03	0.0090	7.336E-04	0.0007
Total	4.466E-01	0.4282	1.470E-02	0.0141	3.448E-08	0.0000	5.151E-01	0.4938	1.374E-02	0.0132	5.061E-02	0.0485	2.239E-03	0.0021

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.812E-05	0.0000	1.332E-09	0.0000	0.000E+00	0.0000	2.219E-06	0.0000	0.000E+00	0.0000	1.036E-06	0.0000	3.611E-01	0.3462
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.158E-02	0.0782
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.511E-01	0.4325
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.492E-01	0.1431
Total	3.812E-05	0.0000	1.332E-09	0.0000	0.000E+00	0.0000	2.219E-06	0.0000	0.000E+00	0.0000	1.036E-06	0.0000	1.043E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	6.821E-06	0.0000	3.578E-08	0.0000	0.000E+00	0.0000	7.306E-02	0.0930	4.487E-04	0.0006	4.892E-03	0.0062	4.351E-07	0.0000
U-234	2.019E-04	0.0003	5.172E-03	0.0066	2.407E-07	0.0000	6.109E-02	0.0778	4.032E-03	0.0051	9.884E-03	0.0126	7.686E-04	0.0010
U-235	3.721E-01	0.4738	4.821E-03	0.0061	0.000E+00	0.0000	5.800E-02	0.0739	3.925E-03	0.0050	9.337E-03	0.0119	7.270E-04	0.0009
U-238	7.184E-02	0.0915	4.625E-03	0.0059	3.652E-13	0.0000	5.801E-02	0.0739	3.829E-03	0.0049	9.385E-03	0.0119	7.297E-04	0.0009
Total	4.442E-01	0.5656	1.462E-02	0.0186	2.407E-07	0.0000	2.502E-01	0.3185	1.223E-02	0.0156	3.350E-02	0.0427	2.226E-03	0.0028

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.362E-02	0.0301	1.278E-06	0.0000	0.000E+00	0.0000	3.714E-03	0.0047	4.375E-05	0.0001	1.076E-03	0.0014	1.069E-01	0.1361
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.115E-02	0.1033
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.489E-01	0.5716
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.484E-01	0.1890
Total	2.362E-02	0.0301	1.278E-06	0.0000	0.000E+00	0.0000	3.714E-03	0.0047	4.375E-05	0.0001	1.076E-03	0.0014	7.854E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.114E-07	0.0000	1.633E-09	0.0000	0.000E+00	0.0000	3.335E-03	0.0046	2.048E-05	0.0000	2.233E-04	0.0003	1.986E-08	0.0000
U-234	1.999E-04	0.0003	5.118E-03	0.0070	1.264E-06	0.0000	6.045E-02	0.0827	3.990E-03	0.0055	9.779E-03	0.0134	7.605E-04	0.0010
U-235	3.682E-01	0.5040	4.773E-03	0.0065	0.000E+00	0.0000	5.778E-02	0.0791	4.048E-03	0.0055	9.239E-03	0.0126	7.206E-04	0.0010
U-238	7.108E-02	0.0973	4.576E-03	0.0063	4.229E-12	0.0000	5.740E-02	0.0786	3.788E-03	0.0052	9.285E-03	0.0127	7.220E-04	0.0010
Total	4.395E-01	0.6016	1.447E-02	0.0198	1.264E-06	0.0000	1.790E-01	0.2450	1.185E-02	0.0162	2.853E-02	0.0390	2.203E-03	0.0030

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.528E-02	0.0620	2.506E-06	0.0000	0.000E+00	0.0000	7.443E-03	0.0102	1.059E-04	0.0001	2.230E-03	0.0031	5.864E-02	0.0803
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.030E-02	0.1099
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.448E-01	0.6088
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.468E-01	0.2010
Total	4.528E-02	0.0620	2.506E-06	0.0000	0.000E+00	0.0000	7.443E-03	0.0102	1.059E-04	0.0001	2.230E-03	0.0031	7.306E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	6.328E-12	0.0000	3.319E-14	0.0000	0.000E+00	0.0000	6.778E-08	0.0000	4.163E-10	0.0000	4.538E-09	0.0000	4.037E-13	0.0000
U-234	1.936E-04	0.0003	4.932E-03	0.0070	1.106E-05	0.0000	5.824E-02	0.0825	3.844E-03	0.0054	9.422E-03	0.0134	7.328E-04	0.0010
U-235	3.548E-01	0.5027	4.613E-03	0.0065	0.000E+00	0.0000	5.705E-02	0.0808	4.454E-03	0.0063	8.903E-03	0.0126	6.995E-04	0.0010
U-238	6.848E-02	0.0970	4.409E-03	0.0062	1.092E-10	0.0000	5.530E-02	0.0784	3.650E-03	0.0052	8.947E-03	0.0127	6.957E-04	0.0010
Total	4.235E-01	0.6000	1.395E-02	0.0198	1.106E-05	0.0000	1.706E-01	0.2417	1.195E-02	0.0169	2.727E-02	0.0386	2.128E-03	0.0030

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.634E-02	0.0657	2.566E-06	0.0000	0.000E+00	0.0000	7.625E-03	0.0108	1.090E-04	0.0002	2.287E-03	0.0032	5.636E-02	0.0799
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.738E-02	0.1096
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.305E-01	0.6100
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.415E-01	0.2005
Total	4.634E-02	0.0657	2.566E-06	0.0000	0.000E+00	0.0000	7.625E-03	0.0108	1.090E-04	0.0002	2.287E-03	0.0032	7.057E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.486E-25	0.0000	1.304E-27	0.0000	0.000E+00	0.0000	2.663E-21	0.0000	1.636E-23	0.0000	1.783E-22	0.0000	1.586E-26	0.0000
U-234	1.819E-04	0.0003	4.436E-03	0.0075	8.738E-05	0.0001	5.238E-02	0.0889	3.457E-03	0.0059	8.472E-03	0.0144	6.591E-04	0.0011
U-235	3.192E-01	0.5415	4.208E-03	0.0071	0.000E+00	0.0000	5.513E-02	0.0935	5.428E-03	0.0092	8.010E-03	0.0136	6.458E-04	0.0011
U-238	6.157E-02	0.1044	3.965E-03	0.0067	2.478E-09	0.0000	4.973E-02	0.0844	3.282E-03	0.0056	8.045E-03	0.0136	6.256E-04	0.0011
Total	3.810E-01	0.6462	1.261E-02	0.0214	8.739E-05	0.0001	1.572E-01	0.2667	1.217E-02	0.0206	2.453E-02	0.0416	1.930E-03	0.0033

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	9.172E-14	0.0000	5.212E-18	0.0000	0.000E+00	0.0000	1.585E-14	0.0000	2.710E-16	0.0000	4.941E-15	0.0000	1.128E-13	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.968E-02	0.1182
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.926E-01	0.6660
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.272E-01	0.2158
Total	9.172E-14	0.0000	5.212E-18	0.0000	0.000E+00	0.0000	1.585E-14	0.0000	2.710E-16	0.0000	4.941E-15	0.0000	5.895E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	1.959E-04	0.0005	3.064E-03	0.0073	7.590E-04	0.0018	3.624E-02	0.0859	2.391E-03	0.0057	5.845E-03	0.0139	4.552E-04	0.0011
U-235	2.207E-01	0.5234	3.110E-03	0.0074	0.000E+00	0.0000	4.802E-02	0.1139	7.177E-03	0.0170	5.536E-03	0.0131	4.956E-04	0.0012
U-238	4.244E-02	0.1006	2.734E-03	0.0065	6.821E-08	0.0000	3.428E-02	0.0813	2.263E-03	0.0054	5.547E-03	0.0132	4.313E-04	0.0010
Total	2.634E-01	0.6245	8.908E-03	0.0211	7.591E-04	0.0018	1.185E-01	0.2811	1.183E-02	0.0281	1.693E-02	0.0401	1.382E-03	0.0033

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.895E-02	0.1161
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.851E-01	0.6760
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.770E-02	0.2080
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.217E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.226E-04	0.0025	1.072E-03	0.0063	3.700E-03	0.0218	1.322E-02	0.0781	8.697E-04	0.0051	2.052E-03	0.0121	1.602E-04	0.0009
U-235	7.699E-02	0.4545	1.299E-03	0.0077	0.000E+00	0.0000	2.666E-02	0.1574	5.860E-03	0.0346	1.929E-03	0.0114	2.236E-04	0.0013
U-238	1.466E-02	0.0866	9.448E-04	0.0056	8.817E-07	0.0000	1.185E-02	0.0700	7.821E-04	0.0046	1.917E-03	0.0113	1.491E-04	0.0009
Total	9.207E-02	0.5436	3.316E-03	0.0196	3.701E-03	0.0219	5.174E-02	0.3054	7.512E-03	0.0443	5.897E-03	0.0348	5.328E-04	0.0031

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.150E-02	0.1269
U-235	4.280E-03	0.0253	2.065E-06	0.0000	0.000E+00	0.0000	3.287E-04	0.0019	1.817E-06	0.0000	3.999E-06	0.0000	1.176E-01	0.6942
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.031E-02	0.1789
Total	4.280E-03	0.0253	2.065E-06	0.0000	0.000E+00	0.0000	3.287E-04	0.0019	1.817E-06	0.0000	3.999E-06	0.0000	1.694E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	8.222E-04	0.0028	4.714E-05	0.0002	5.554E-03	0.0192	5.759E-04	0.0020	7.410E-05	0.0003	8.292E-05	0.0003	9.846E-06	0.0000
U-235	1.918E-03	0.0066	5.033E-05	0.0002	0.000E+00	0.0000	4.140E-04	0.0014	2.531E-04	0.0009	4.047E-05	0.0001	9.821E-06	0.0000
U-238	3.488E-04	0.0012	2.295E-05	0.0001	2.711E-06	0.0000	8.005E-05	0.0003	1.553E-05	0.0001	3.930E-05	0.0001	3.621E-06	0.0000
Total	3.089E-03	0.0107	1.204E-04	0.0004	5.557E-03	0.0192	1.070E-03	0.0037	3.428E-04	0.0012	1.627E-04	0.0006	2.329E-05	0.0001

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.026E-02	0.1390	2.525E-06	0.0000	2.497E-05	0.0001	3.097E-03	0.0107	2.994E-04	0.0010	1.128E-03	0.0039	5.197E-02	0.1795
U-235	1.740E-01	0.6008	5.512E-05	0.0002	0.000E+00	0.0000	1.338E-02	0.0462	3.669E-03	0.0127	1.163E-03	0.0040	1.949E-01	0.6732
U-238	3.789E-02	0.1308	2.015E-06	0.0000	3.217E-08	0.0000	2.915E-03	0.0101	2.759E-04	0.0010	1.065E-03	0.0037	4.266E-02	0.1473
Total	2.521E-01	0.8707	5.966E-05	0.0002	2.500E-05	0.0001	1.940E-02	0.0670	4.244E-03	0.0147	3.356E-03	0.0116	2.896E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.611E-01	1.069E-01	5.864E-02	5.636E-02	1.128E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	8.158E-02	8.115E-02	8.029E-02	7.736E-02	6.955E-02	4.794E-02	1.655E-02	4.430E-02
U-234	Th-230	1.000E+00	3.138E-07	8.977E-07	2.048E-06	5.981E-06	1.644E-05	4.539E-05	8.727E-05	5.053E-05
U-234	Ra-226+D	1.000E+00	4.087E-08	2.869E-07	1.511E-06	1.323E-05	1.046E-04	9.100E-04	4.454E-03	6.791E-03
U-234	Pb-210+D	1.000E+00	4.902E-11	6.316E-10	6.567E-09	1.522E-07	2.974E-06	5.674E-05	4.102E-04	8.313E-04
U-234	∑DSR(j)		8.158E-02	8.115E-02	8.030E-02	7.738E-02	6.968E-02	4.895E-02	2.150E-02	5.197E-02
U-235+D	U-235+D	1.000E+00	4.509E-01	4.485E-01	4.438E-01	4.276E-01	3.845E-01	2.650E-01	9.154E-02	4.380E-02
U-235+D	Pa-231	1.000E+00	1.287E-04	4.061E-04	9.561E-04	2.790E-03	7.309E-03	1.661E-02	1.712E-02	3.749E-02
U-235+D	Ac-227+D	1.000E+00	6.880E-07	4.075E-06	1.910E-05	1.435E-04	8.491E-04	3.437E-03	8.915E-03	1.137E-01
U-235+D	∑DSR(j)		4.511E-01	4.489E-01	4.448E-01	4.305E-01	3.926E-01	2.851E-01	1.176E-01	1.949E-01
U-238	U-238	5.400E-05	3.961E-06	3.940E-06	3.898E-06	3.756E-06	3.377E-06	2.328E-06	8.041E-07	2.162E-06
U-238+D	U-238+D	9.999E-01	1.492E-01	1.484E-01	1.468E-01	1.415E-01	1.272E-01	8.769E-02	3.029E-02	4.253E-02
U-238+D	U-234	9.999E-01	1.155E-07	3.450E-07	7.966E-07	2.303E-06	6.014E-06	1.366E-05	1.410E-05	1.258E-04
U-238+D	Th-230	9.999E-01	3.104E-13	2.029E-12	1.033E-11	8.863E-11	6.927E-10	5.897E-09	2.770E-08	2.678E-08
U-238+D	Ra-226+D	9.999E-01	2.886E-14	4.344E-13	5.049E-12	1.307E-10	2.967E-09	8.177E-08	1.061E-06	3.451E-06
U-238+D	Pb-210+D	9.999E-01	2.915E-17	7.724E-16	1.713E-14	1.160E-12	6.645E-11	4.313E-09	9.078E-08	7.899E-07
U-238+D	∑DSR(j)		1.492E-01	1.484E-01	1.468E-01	1.415E-01	1.272E-01	8.770E-02	3.030E-02	4.266E-02

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

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

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	6.923E+01	2.339E+02	4.263E+02	4.436E+02	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10
U-234	3.064E+02	3.081E+02	3.113E+02	3.231E+02	3.588E+02	5.107E+02	1.163E+03	4.810E+02
U-235	5.543E+01	5.569E+01	5.621E+01	5.807E+01	6.367E+01	8.770E+01	2.126E+02	1.282E+02
U-238	1.676E+02	1.685E+02	1.703E+02	1.767E+02	1.965E+02	2.851E+02	8.249E+02	5.860E+02

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Tc-99	1.000E+00	0.000E+00	3.611E-01	6.923E+01	3.611E-01	6.923E+01
U-234	1.000E+00	0.000E+00	8.158E-02	3.064E+02	8.158E-02	3.064E+02
U-235	1.000E+00	0.000E+00	4.511E-01	5.543E+01	4.511E-01	5.543E+01
U-238	1.000E+00	0.000E+00	1.492E-01	1.676E+02	1.492E-01	1.676E+02

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.611E-01	1.069E-01	5.864E-02	5.636E-02	1.128E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	8.158E-02	8.115E-02	8.029E-02	7.736E-02	6.955E-02	4.794E-02	1.655E-02	4.430E-02
U-234	U-238	9.999E-01	1.155E-07	3.450E-07	7.966E-07	2.303E-06	6.014E-06	1.366E-05	1.410E-05	1.258E-04
U-234	∑DOSE(j)		8.158E-02	8.115E-02	8.029E-02	7.736E-02	6.956E-02	4.795E-02	1.656E-02	4.443E-02
Th-230	U-234	1.000E+00	3.138E-07	8.977E-07	2.048E-06	5.981E-06	1.644E-05	4.539E-05	8.727E-05	5.053E-05
Th-230	U-238	9.999E-01	3.104E-13	2.029E-12	1.033E-11	8.863E-11	6.927E-10	5.897E-09	2.770E-08	2.678E-08
Th-230	∑DOSE(j)		3.138E-07	8.977E-07	2.048E-06	5.981E-06	1.644E-05	4.540E-05	8.730E-05	5.056E-05
Ra-226	U-234	1.000E+00	4.087E-08	2.869E-07	1.511E-06	1.323E-05	1.046E-04	9.100E-04	4.454E-03	6.791E-03
Ra-226	U-238	9.999E-01	2.886E-14	4.344E-13	5.049E-12	1.307E-10	2.967E-09	8.177E-08	1.061E-06	3.451E-06
Ra-226	∑DOSE(j)		4.087E-08	2.869E-07	1.511E-06	1.323E-05	1.046E-04	9.100E-04	4.455E-03	6.794E-03
Pb-210	U-234	1.000E+00	4.902E-11	6.316E-10	6.567E-09	1.522E-07	2.974E-06	5.674E-05	4.102E-04	8.313E-04
Pb-210	U-238	9.999E-01	2.915E-17	7.724E-16	1.713E-14	1.160E-12	6.645E-11	4.313E-09	9.078E-08	7.899E-07
Pb-210	∑DOSE(j)		4.903E-11	6.316E-10	6.567E-09	1.522E-07	2.975E-06	5.674E-05	4.103E-04	8.321E-04
U-235	U-235	1.000E+00	4.509E-01	4.485E-01	4.438E-01	4.276E-01	3.845E-01	2.650E-01	9.154E-02	4.380E-02
Pa-231	U-235	1.000E+00	1.287E-04	4.061E-04	9.561E-04	2.790E-03	7.309E-03	1.661E-02	1.712E-02	3.749E-02
Ac-227	U-235	1.000E+00	6.880E-07	4.075E-06	1.910E-05	1.435E-04	8.491E-04	3.437E-03	8.915E-03	1.137E-01
U-238	U-238	5.400E-05	3.961E-06	3.940E-06	3.898E-06	3.756E-06	3.377E-06	2.328E-06	8.041E-07	2.162E-06
U-238	U-238	9.999E-01	1.492E-01	1.484E-01	1.468E-01	1.415E-01	1.272E-01	8.769E-02	3.029E-02	4.253E-02
U-238	∑DOSE(j)		1.492E-01	1.484E-01	1.468E-01	1.415E-01	1.272E-01	8.769E-02	3.029E-02	4.253E-02

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

Summary : CFFF Resident Farmer Scenario (Uniform 100m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 100M2.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+00	2.137E-01	9.753E-03	1.982E-07	7.789E-21	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.525E-01	5.876E-01	2.028E-01	4.904E-03
U-234	U-238	9.999E-01	0.000E+00	2.820E-06	8.370E-06	2.688E-05	7.251E-05	1.666E-04	1.726E-04	1.392E-05
U-234	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Th-230	U-234	1.000E+00	0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.977E-04	1.346E-03	1.666E-03
Th-230	U-238	9.999E-01	0.000E+00	1.271E-11	1.136E-10	1.232E-09	1.033E-08	9.019E-08	4.267E-07	8.672E-07
Th-230	∑S(j):		0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.978E-04	1.346E-03	1.667E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.172E-05	1.629E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.836E-15	4.920E-14	1.775E-12	4.451E-11	1.276E-09	1.707E-08	7.948E-08
Ra-226	∑S(j):		0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.174E-05	1.629E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.963E-06	5.820E-05	1.490E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.418E-17	1.127E-15	1.301E-13	8.755E-12	6.015E-10	1.286E-08	7.204E-08
Pb-210	∑S(j):		0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.964E-06	5.821E-05	1.491E-04
U-235	U-235	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Pa-231	U-235	1.000E+00	0.000E+00	2.105E-05	6.247E-05	2.006E-04	5.410E-04	1.242E-03	1.285E-03	1.030E-04
Ac-227	U-235	1.000E+00	0.000E+00	3.306E-07	2.868E-06	2.809E-05	1.802E-04	7.496E-04	9.430E-04	8.042E-05
U-238	U-238	5.400E-05	5.400E-05	5.371E-05	5.315E-05	5.120E-05	4.604E-05	3.174E-05	1.096E-05	2.655E-07
U-238	U-238	9.999E-01	9.999E-01	9.946E-01	9.841E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
U-238	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03

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

RESCALC.EXE execution time = 9.54 seconds

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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Part I: Mixture Sums and Single Radionuclide Guidelines

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: FGR 12)	4.951E-04	4.951E-04	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-211 (Source: FGR 12)	2.559E-01	2.559E-01	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Fr-223 (Source: FGR 12)	1.980E-01	1.980E-01	DCF1(6)
A-1	Pa-231 (Source: FGR 12)	1.906E-01	1.906E-01	DCF1(7)
A-1	Pa-234 (Source: FGR 12)	1.155E+01	1.155E+01	DCF1(8)
A-1	Pa-234m (Source: FGR 12)	8.967E-02	8.967E-02	DCF1(9)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(10)
A-1	Pb-211 (Source: FGR 12)	3.064E-01	3.064E-01	DCF1(11)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(12)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(13)
A-1	Po-211 (Source: FGR 12)	4.764E-02	4.764E-02	DCF1(14)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(15)
A-1	Po-215 (Source: FGR 12)	1.016E-03	1.016E-03	DCF1(16)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(17)
A-1	Ra-223 (Source: FGR 12)	6.034E-01	6.034E-01	DCF1(18)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(19)
A-1	Rn-219 (Source: FGR 12)	3.083E-01	3.083E-01	DCF1(20)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(21)
A-1	Tc-99 (Source: FGR 12)	1.255E-04	1.255E-04	DCF1(22)
A-1	Th-227 (Source: FGR 12)	5.212E-01	5.212E-01	DCF1(23)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(24)
A-1	Th-231 (Source: FGR 12)	3.643E-02	3.643E-02	DCF1(25)
A-1	Th-234 (Source: FGR 12)	2.410E-02	2.410E-02	DCF1(26)
A-1	Tl-207 (Source: FGR 12)	1.980E-02	1.980E-02	DCF1(27)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(28)
A-1	U-234 (Source: FGR 12)	4.017E-04	4.017E-04	DCF1(29)
A-1	U-235 (Source: FGR 12)	7.211E-01	7.211E-01	DCF1(30)
A-1	U-238 (Source: FGR 12)	1.031E-04	1.031E-04	DCF1(31)
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	Pb-210+D	2.320E-02	1.360E-02	DCF2(3)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(4)
B-1	Tc-99	8.320E-06	8.320E-06	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)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(8)
B-1	U-238	1.180E-01	1.180E-01	DCF2(9)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(10)
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	Pb-210+D	7.276E-03	5.370E-03	DCF3(3)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(4)

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Tc-99	1.460E-06	1.460E-06	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-1	U-235+D	2.673E-04	2.660E-04	DCF3(8)
D-1	U-238	2.550E-04	2.550E-04	DCF3(9)
D-1	U-238+D	2.687E-04	2.550E-04	DCF3(10)
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				
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				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(5,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(5,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(6,1)
D-34	Th-230 , beef/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				
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-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(10,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(10,3)

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Menu	Parameter	Current Value#	Base Case*	Parameter Name
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				
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				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(5,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(5,2)
D-5				
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				
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)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(10,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(10,2)

#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.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.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)	1.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.250E+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)	5.510E+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): Tc-99	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): U-234	1.000E+00	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-235	1.000E+00	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g): U-238	1.000E+00	0.000E+00	---	S1(9)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(9)
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)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.000E+00	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	3.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.829E+03	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	7.500E-03	2.000E-02	---	HGWT

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Saturated zone b parameter	5.300E+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)	2.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	2.500E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	3.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.829E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.543E+00	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.322E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.315E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.662E-03	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.800E-03	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.444E-06	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	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	5.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
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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)	1.600E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	5.400E+00	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)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	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	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-01	-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)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	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)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	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)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
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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	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+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)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	1.000E-01	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	3.000E-02	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	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	-1.000E+00	-1.000E+00	code computed (time dependent)	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	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

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	257	---	---	KYMAX

Summary of Pathway Selections

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

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	1000.00 square meters	Tc-99	1.000E+00
Thickness:	1.25 meters	U-234	1.000E+00
Cover Depth:	0.00 meters	U-235	1.000E+00
		U-238	1.000E+00

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.117E+00	9.737E-01	1.025E+00	1.003E+00	6.532E-01	4.662E-01	2.040E-01	1.413E+00
M(t):	4.470E-02	3.895E-02	4.101E-02	4.012E-02	2.613E-02	1.865E-02	8.162E-03	5.653E-02

Maximum TDOSE(t): 1.413E+00 mrem/yr at t = 1.000E+03 years

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.530E-05	0.0000	2.137E-07	0.0000	0.000E+00	0.0000	3.372E-01	0.3018	1.970E-03	0.0018	2.185E-02	0.0196	2.036E-05	0.0000
U-234	2.231E-04	0.0002	6.636E-03	0.0059	3.463E-08	0.0000	6.142E-02	0.0550	4.054E-03	0.0036	9.937E-03	0.0089	7.727E-03	0.0069
U-235	4.149E-01	0.3713	6.184E-03	0.0055	0.000E+00	0.0000	5.812E-02	0.0520	3.864E-03	0.0035	9.388E-03	0.0084	7.302E-03	0.0065
U-238	8.155E-02	0.0730	5.933E-03	0.0053	2.453E-14	0.0000	5.832E-02	0.0522	3.849E-03	0.0034	9.435E-03	0.0084	7.336E-03	0.0066
Total	4.967E-01	0.4445	1.875E-02	0.0168	3.463E-08	0.0000	5.151E-01	0.4609	1.374E-02	0.0123	5.061E-02	0.0453	2.239E-02	0.0200

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.914E-04	0.0002	1.332E-08	0.0000	0.000E+00	0.0000	1.114E-05	0.0000	0.000E+00	0.0000	5.200E-06	0.0000	3.613E-01	0.3233
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.000E-02	0.0805
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.997E-01	0.4472
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.664E-01	0.1489
Total	1.914E-04	0.0002	1.332E-08	0.0000	0.000E+00	0.0000	1.114E-05	0.0000	0.000E+00	0.0000	5.200E-06	0.0000	1.117E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	7.541E-06	0.0000	4.565E-08	0.0000	0.000E+00	0.0000	7.305E-02	0.0750	4.486E-04	0.0005	4.891E-03	0.0050	4.351E-06	0.0000
U-234	2.219E-04	0.0002	6.600E-03	0.0068	2.418E-07	0.0000	6.110E-02	0.0628	4.033E-03	0.0041	9.884E-03	0.0102	7.686E-03	0.0079
U-235	4.127E-01	0.4239	6.153E-03	0.0063	0.000E+00	0.0000	5.801E-02	0.0596	3.925E-03	0.0040	9.338E-03	0.0096	7.270E-03	0.0075
U-238	8.112E-02	0.0833	5.902E-03	0.0061	3.668E-13	0.0000	5.801E-02	0.0596	3.829E-03	0.0039	9.385E-03	0.0096	7.297E-03	0.0075
Total	4.940E-01	0.5074	1.866E-02	0.0192	2.418E-07	0.0000	2.502E-01	0.2569	1.224E-02	0.0126	3.350E-02	0.0344	2.226E-02	0.0229

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	1.186E-01	0.1218	1.277E-05	0.0000	0.000E+00	0.0000	1.862E-02	0.0191	2.179E-04	0.0002	5.372E-03	0.0055	2.212E-01	0.2272
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.952E-02	0.0919
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.974E-01	0.5108
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.655E-01	0.1700
Total	1.186E-01	0.1218	1.277E-05	0.0000	0.000E+00	0.0000	1.862E-02	0.0191	2.179E-04	0.0002	5.372E-03	0.0055	9.737E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	3.443E-07	0.0000	2.084E-09	0.0000	0.000E+00	0.0000	3.335E-03	0.0033	2.048E-05	0.0000	2.233E-04	0.0002	1.986E-07	0.0000
U-234	2.197E-04	0.0002	6.531E-03	0.0064	1.270E-06	0.0000	6.045E-02	0.0590	3.990E-03	0.0039	9.780E-03	0.0095	7.605E-03	0.0074
U-235	4.083E-01	0.3983	6.091E-03	0.0059	0.000E+00	0.0000	5.779E-02	0.0564	4.048E-03	0.0039	9.240E-03	0.0090	7.206E-03	0.0070
U-238	8.026E-02	0.0783	5.840E-03	0.0057	4.248E-12	0.0000	5.740E-02	0.0560	3.788E-03	0.0037	9.286E-03	0.0091	7.220E-03	0.0070
Total	4.888E-01	0.4768	1.846E-02	0.0180	1.270E-06	0.0000	1.790E-01	0.1746	1.185E-02	0.0116	2.853E-02	0.0278	2.203E-02	0.0215

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.274E-01	0.2218	2.506E-05	0.0000	0.000E+00	0.0000	3.737E-02	0.0365	5.316E-04	0.0005	1.120E-02	0.0109	2.801E-01	0.2732
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.858E-02	0.0864
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.927E-01	0.4806
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.638E-01	0.1598
Total	2.274E-01	0.2218	2.506E-05	0.0000	0.000E+00	0.0000	3.737E-02	0.0365	5.316E-04	0.0005	1.120E-02	0.0109	1.025E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	6.997E-12	0.0000	4.236E-14	0.0000	0.000E+00	0.0000	6.778E-08	0.0000	4.163E-10	0.0000	4.538E-09	0.0000	4.037E-12	0.0000
U-234	2.128E-04	0.0002	6.293E-03	0.0063	1.110E-05	0.0000	5.825E-02	0.0581	3.844E-03	0.0038	9.423E-03	0.0094	7.328E-03	0.0073
U-235	3.935E-01	0.3923	5.887E-03	0.0059	0.000E+00	0.0000	5.706E-02	0.0569	4.454E-03	0.0044	8.903E-03	0.0089	6.995E-03	0.0070
U-238	7.733E-02	0.0771	5.627E-03	0.0056	1.097E-10	0.0000	5.530E-02	0.0551	3.650E-03	0.0036	8.947E-03	0.0089	6.957E-03	0.0069
Total	4.710E-01	0.4696	1.781E-02	0.0178	1.110E-05	0.0000	1.706E-01	0.1701	1.195E-02	0.0119	2.727E-02	0.0272	2.128E-02	0.0212

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.327E-01	0.2320	2.566E-05	0.0000	0.000E+00	0.0000	3.828E-02	0.0382	5.472E-04	0.0005	1.148E-02	0.0114	2.830E-01	0.2822
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.536E-02	0.0851
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.768E-01	0.4754
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.578E-01	0.1574
Total	2.327E-01	0.2320	2.566E-05	0.0000	0.000E+00	0.0000	3.828E-02	0.0382	5.472E-04	0.0005	1.148E-02	0.0114	1.003E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	2.749E-25	0.0000	1.664E-27	0.0000	0.000E+00	0.0000	2.663E-21	0.0000	1.636E-23	0.0000	1.783E-22	0.0000	1.586E-25	0.0000
U-234	2.003E-04	0.0003	5.661E-03	0.0087	8.776E-05	0.0001	5.239E-02	0.0802	3.457E-03	0.0053	8.473E-03	0.0130	6.591E-03	0.0101
U-235	3.540E-01	0.5420	5.370E-03	0.0082	0.000E+00	0.0000	5.513E-02	0.0844	5.429E-03	0.0083	8.010E-03	0.0123	6.458E-03	0.0099
U-238	6.953E-02	0.1065	5.059E-03	0.0077	2.489E-09	0.0000	4.973E-02	0.0761	3.282E-03	0.0050	8.045E-03	0.0123	6.256E-03	0.0096
Total	4.237E-01	0.6487	1.609E-02	0.0246	8.777E-05	0.0001	1.573E-01	0.2408	1.217E-02	0.0186	2.453E-02	0.0376	1.930E-02	0.0296

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	4.605E-13	0.0000	5.212E-17	0.0000	0.000E+00	0.0000	7.957E-14	0.0000	1.361E-15	0.0000	2.481E-14	0.0000	5.663E-13	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.686E-02	0.1177
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.344E-01	0.6651
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.419E-01	0.2173
Total	4.605E-13	0.0000	5.212E-17	0.0000	0.000E+00	0.0000	7.957E-14	0.0000	1.361E-15	0.0000	2.481E-14	0.0000	6.532E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.181E-04	0.0005	3.910E-03	0.0084	7.623E-04	0.0016	3.624E-02	0.0777	2.391E-03	0.0051	5.845E-03	0.0125	4.552E-03	0.0098
U-235	2.448E-01	0.5251	3.969E-03	0.0085	0.000E+00	0.0000	4.802E-02	0.1030	7.177E-03	0.0154	5.537E-03	0.0119	4.956E-03	0.0106
U-238	4.793E-02	0.1028	3.488E-03	0.0075	6.850E-08	0.0000	3.429E-02	0.0735	2.263E-03	0.0049	5.547E-03	0.0119	4.313E-03	0.0093
Total	2.929E-01	0.6283	1.137E-02	0.0244	7.624E-04	0.0016	1.186E-01	0.2543	1.183E-02	0.0254	1.693E-02	0.0363	1.382E-02	0.0296

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.392E-02	0.1157
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.145E-01	0.6745
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.783E-02	0.2098
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.662E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	4.786E-04	0.0023	1.368E-03	0.0067	3.715E-03	0.0182	1.322E-02	0.0648	8.698E-04	0.0043	2.052E-03	0.0101	1.602E-03	0.0078
U-235	8.539E-02	0.4185	1.657E-03	0.0081	0.000E+00	0.0000	2.667E-02	0.1307	5.860E-03	0.0287	1.929E-03	0.0095	2.236E-03	0.0110
U-238	1.656E-02	0.0811	1.206E-03	0.0059	8.852E-07	0.0000	1.185E-02	0.0581	7.822E-04	0.0038	1.917E-03	0.0094	1.491E-03	0.0073
Total	1.024E-01	0.5020	4.231E-03	0.0207	3.716E-03	0.0182	5.174E-02	0.2536	7.512E-03	0.0368	5.898E-03	0.0289	5.328E-03	0.0261

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.331E-02	0.1142
U-235	2.149E-02	0.1053	2.065E-05	0.0001	0.000E+00	0.0000	1.650E-03	0.0081	9.125E-06	0.0000	2.008E-05	0.0001	1.469E-01	0.7201
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.380E-02	0.1657
Total	2.149E-02	0.1053	2.065E-05	0.0001	0.000E+00	0.0000	1.650E-03	0.0081	9.125E-06	0.0000	2.008E-05	0.0001	2.040E-01	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	9.629E-04	0.0007	6.016E-05	0.0000	5.565E-03	0.0039	5.759E-04	0.0004	7.411E-05	0.0001	8.293E-05	0.0001	9.846E-05	0.0001
U-235	2.183E-03	0.0015	6.423E-05	0.0000	0.000E+00	0.0000	4.140E-04	0.0003	2.532E-04	0.0002	4.047E-05	0.0000	9.821E-05	0.0001
U-238	4.033E-04	0.0003	2.928E-05	0.0000	2.716E-06	0.0000	8.007E-05	0.0001	1.553E-05	0.0000	3.930E-05	0.0000	3.621E-05	0.0000
Total	3.549E-03	0.0025	1.537E-04	0.0001	5.568E-03	0.0039	1.070E-03	0.0008	3.428E-04	0.0002	1.627E-04	0.0001	2.329E-04	0.0002

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

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	2.021E-01	0.1430	2.525E-05	0.0000	1.253E-04	0.0001	1.555E-02	0.0110	1.503E-03	0.0011	5.663E-03	0.0040	2.324E-01	0.1644
U-235	8.736E-01	0.6181	5.512E-04	0.0004	0.000E+00	0.0000	6.720E-02	0.0475	1.842E-02	0.0130	5.837E-03	0.0041	9.686E-01	0.6854
U-238	1.902E-01	0.1346	2.015E-05	0.0000	1.615E-07	0.0000	1.463E-02	0.0104	1.385E-03	0.0010	5.349E-03	0.0038	2.122E-01	0.1502
Total	1.266E+00	0.8957	5.966E-04	0.0004	1.255E-04	0.0001	9.738E-02	0.0689	2.131E-02	0.0151	1.685E-02	0.0119	1.413E+00	1.0000

*Sum of all water independent and dependent pathways.

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g) 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.613E-01	2.212E-01	2.801E-01	2.830E-01	5.663E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	9.000E-02	8.952E-02	8.858E-02	8.534E-02	7.673E-02	5.288E-02	1.826E-02	2.218E-01
U-234	Th-230	1.000E+00	3.908E-07	1.128E-06	2.583E-06	7.556E-06	2.078E-05	5.739E-05	1.103E-04	8.026E-05
U-234	Ra-226+D	1.000E+00	4.151E-08	2.913E-07	1.534E-06	1.344E-05	1.063E-04	9.241E-04	4.523E-03	7.630E-03
U-234	Pb-210+D	1.000E+00	4.993E-11	6.450E-10	6.721E-09	1.560E-07	3.050E-06	5.819E-05	4.207E-04	2.901E-03
U-234	∑DSR(j)		9.000E-02	8.952E-02	8.858E-02	8.536E-02	7.686E-02	5.392E-02	2.331E-02	2.324E-01
U-235+D	U-235+D	1.000E+00	4.996E-01	4.970E-01	4.917E-01	4.738E-01	4.260E-01	2.936E-01	1.014E-01	2.122E-01
U-235+D	Pa-231	1.000E+00	1.318E-04	4.151E-04	9.769E-04	2.850E-03	7.466E-03	1.696E-02	1.749E-02	1.862E-01
U-235+D	Ac-227+D	1.000E+00	7.493E-07	4.497E-06	2.126E-05	1.605E-04	9.513E-04	3.853E-03	2.801E-02	5.702E-01
U-235+D	∑DSR(j)		4.997E-01	4.974E-01	4.927E-01	4.768E-01	4.344E-01	3.145E-01	1.469E-01	9.686E-01
U-238	U-238	5.400E-05	4.369E-06	4.346E-06	4.300E-06	4.143E-06	3.725E-06	2.568E-06	8.870E-07	1.082E-05
U-238+D	U-238+D	9.999E-01	1.664E-01	1.655E-01	1.638E-01	1.578E-01	1.419E-01	9.781E-02	3.379E-02	2.116E-01
U-238+D	U-234	9.999E-01	1.275E-07	3.806E-07	8.787E-07	2.540E-06	6.634E-06	1.507E-05	1.556E-05	6.300E-04
U-238+D	Th-230	9.999E-01	3.831E-13	2.536E-12	1.299E-11	1.119E-10	8.753E-10	7.455E-09	3.502E-08	4.416E-08
U-238+D	Ra-226+D	9.999E-01	2.931E-14	4.411E-13	5.127E-12	1.327E-10	3.013E-09	8.304E-08	1.078E-06	4.407E-06
U-238+D	Pb-210+D	9.999E-01	2.966E-17	7.881E-16	1.752E-14	1.189E-12	6.813E-11	4.423E-09	9.311E-08	3.352E-06
U-238+D	∑DSR(j)		1.664E-01	1.655E-01	1.638E-01	1.578E-01	1.419E-01	9.783E-02	3.380E-02	2.122E-01

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

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

Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	6.920E+01	1.130E+02	8.927E+01	8.834E+01	*1.697E+10	*1.697E+10	*1.697E+10	*1.697E+10
U-234	2.778E+02	2.793E+02	2.822E+02	2.929E+02	3.253E+02	4.636E+02	1.073E+03	1.076E+02
U-235	5.003E+01	5.026E+01	5.074E+01	5.244E+01	5.755E+01	7.950E+01	1.702E+02	2.581E+01
U-238	1.502E+02	1.510E+02	1.526E+02	1.584E+02	1.762E+02	2.555E+02	7.396E+02	1.178E+02

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 1.000E+03 years

Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Tc-99	1.000E+00	0.000E+00	3.613E-01	6.920E+01	0.000E+00	*1.697E+10
U-234	1.000E+00	1.000E+03	2.324E-01	1.076E+02	2.324E-01	1.076E+02
U-235	1.000E+00	1.000E+03	9.686E-01	2.581E+01	9.686E-01	2.581E+01
U-238	1.000E+00	1.000E+03	2.122E-01	1.178E+02	2.122E-01	1.178E+02

*At specific activity limit

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

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

Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	3.613E-01	2.212E-01	2.801E-01	2.830E-01	5.663E-13	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	9.000E-02	8.952E-02	8.858E-02	8.534E-02	7.673E-02	5.288E-02	1.826E-02	2.218E-01
U-234	U-238	9.999E-01	1.275E-07	3.806E-07	8.787E-07	2.540E-06	6.634E-06	1.507E-05	1.556E-05	6.300E-04
U-234	∑DOSE(j)		9.000E-02	8.952E-02	8.858E-02	8.534E-02	7.674E-02	5.290E-02	1.827E-02	2.224E-01
Th-230	U-234	1.000E+00	3.908E-07	1.128E-06	2.583E-06	7.556E-06	2.078E-05	5.739E-05	1.103E-04	8.026E-05
Th-230	U-238	9.999E-01	3.831E-13	2.536E-12	1.299E-11	1.119E-10	8.753E-10	7.455E-09	3.502E-08	4.416E-08
Th-230	∑DOSE(j)		3.908E-07	1.128E-06	2.583E-06	7.556E-06	2.078E-05	5.739E-05	1.104E-04	8.031E-05
Ra-226	U-234	1.000E+00	4.151E-08	2.913E-07	1.534E-06	1.344E-05	1.063E-04	9.241E-04	4.523E-03	7.630E-03
Ra-226	U-238	9.999E-01	2.931E-14	4.411E-13	5.127E-12	1.327E-10	3.013E-09	8.304E-08	1.078E-06	4.407E-06
Ra-226	∑DOSE(j)		4.151E-08	2.913E-07	1.534E-06	1.344E-05	1.063E-04	9.241E-04	4.524E-03	7.634E-03
Pb-210	U-234	1.000E+00	4.993E-11	6.450E-10	6.721E-09	1.560E-07	3.050E-06	5.819E-05	4.207E-04	2.901E-03
Pb-210	U-238	9.999E-01	2.966E-17	7.881E-16	1.752E-14	1.189E-12	6.813E-11	4.423E-09	9.311E-08	3.352E-06
Pb-210	∑DOSE(j)		4.993E-11	6.450E-10	6.721E-09	1.560E-07	3.050E-06	5.819E-05	4.208E-04	2.904E-03
U-235	U-235	1.000E+00	4.996E-01	4.970E-01	4.917E-01	4.738E-01	4.260E-01	2.936E-01	1.014E-01	2.122E-01
Pa-231	U-235	1.000E+00	1.318E-04	4.151E-04	9.769E-04	2.850E-03	7.466E-03	1.696E-02	1.749E-02	1.862E-01
Ac-227	U-235	1.000E+00	7.493E-07	4.497E-06	2.126E-05	1.605E-04	9.513E-04	3.853E-03	2.801E-02	5.702E-01
U-238	U-238	5.400E-05	4.369E-06	4.346E-06	4.300E-06	4.143E-06	3.725E-06	2.568E-06	8.870E-07	1.082E-05
U-238	U-238	9.999E-01	1.664E-01	1.655E-01	1.638E-01	1.578E-01	1.419E-01	9.781E-02	3.379E-02	2.116E-01
U-238	∑DOSE(j)		1.664E-01	1.655E-01	1.638E-01	1.578E-01	1.419E-01	9.781E-02	3.379E-02	2.116E-01

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

Summary : CFFF Resident Farmer Scenario (Uniform 1000m2)
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\CFFF RES FARM DCGL UNIFORM 1000M2.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+00	2.137E-01	9.753E-03	1.982E-07	7.789E-21	0.000E+00	0.000E+00	0.000E+00
U-234	U-234	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.525E-01	5.876E-01	2.028E-01	4.904E-03
U-234	U-238	9.999E-01	0.000E+00	2.820E-06	8.370E-06	2.688E-05	7.251E-05	1.666E-04	1.726E-04	1.392E-05
U-234	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Th-230	U-234	1.000E+00	0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.977E-04	1.346E-03	1.666E-03
Th-230	U-238	9.999E-01	0.000E+00	1.271E-11	1.136E-10	1.232E-09	1.033E-08	9.019E-08	4.267E-07	8.672E-07
Th-230	∑S(j):		0.000E+00	8.978E-06	2.679E-05	8.766E-05	2.496E-04	6.978E-04	1.346E-03	1.667E-03
Ra-226	U-234	1.000E+00	0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.172E-05	1.629E-04
Ra-226	U-238	9.999E-01	0.000E+00	1.836E-15	4.920E-14	1.775E-12	4.451E-11	1.276E-09	1.707E-08	7.948E-08
Ra-226	∑S(j):		0.000E+00	1.944E-09	1.738E-08	1.889E-07	1.596E-06	1.427E-05	7.174E-05	1.629E-04
Pb-210	U-234	1.000E+00	0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.963E-06	5.820E-05	1.490E-04
Pb-210	U-238	9.999E-01	0.000E+00	1.418E-17	1.127E-15	1.301E-13	8.755E-12	6.015E-10	1.286E-08	7.204E-08
Pb-210	∑S(j):		0.000E+00	1.999E-11	5.281E-10	1.816E-08	4.003E-07	7.964E-06	5.821E-05	1.491E-04
U-235	U-235	1.000E+00	1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
Pa-231	U-235	1.000E+00	0.000E+00	2.105E-05	6.247E-05	2.006E-04	5.410E-04	1.242E-03	1.285E-03	1.030E-04
Ac-227	U-235	1.000E+00	0.000E+00	3.306E-07	2.868E-06	2.809E-05	1.802E-04	7.496E-04	9.430E-04	8.042E-05
U-238	U-238	5.400E-05	5.400E-05	5.371E-05	5.315E-05	5.120E-05	4.604E-05	3.174E-05	1.096E-05	2.655E-07
U-238	U-238	9.999E-01	9.999E-01	9.946E-01	9.841E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03
U-238	∑S(j):		1.000E+00	9.947E-01	9.842E-01	9.482E-01	8.526E-01	5.877E-01	2.030E-01	4.917E-03

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

RESCALC.EXE execution time = 9.51 seconds