Rancho Seco Nuclear Generating Station Decommissioning Technical Basis Document	DTBD–05-007 Revision No. 0 DPT 05-074 RIC 2A.900

Containment Building DCGLs

PREPARED BY: L. Brown /RA/ 8/24/05
Author Date

REVIEWED BY: J. Newey /RA/ 2/15/06
Technical Reviewer Date

REVIEWED BY: M. Braun /RA/ 3/2 /05
QA Reviewer Date

APPROVED BY: E. Ronningen /RA/ 6/2/06
Principal Radiological Engineer Date

Table of Contents

1.0 PURPOSE

The purpose of this Decommissioning Technical Basis Document (DTBD) is to establish bounding single nuclide derived concentration guideline levels (DCGLs) that are appropriate for evaluating Rancho Seco Nuclear Generating Station (RSNGS) containment building interior surfaces while performing characterization or final status surveys.

2.0 DISCUSSION

The Sacramento Municipal Utility District (District) has no plans for beneficial reuse of the RSNGS containment building. Furthermore, remediation during the decommissioning process will remove all equipment and structures from the containment building interior, possibly with the exception of the polar crane, and all interior concrete will be also be removed leaving only the carbon steel liner plate. Because of this, the industrial worker building occupancy scenario used to generate structural surface DCGLs in DTBD-04-004, DCGLs for RSNGS Structural Surfaces, [Reference 7.1] is not a realistic scenario to be applied to the interior surface of the containment building after completion of remediation.

The final condition of the containment building will be one of no ventilation, lighting or power. Also, access will be extremely restricted with most containment penetrations, including personnel access hatches, seal welded shut. Under these conditions, the occupancy factor may not provide the limiting condition for the derivation of containment building surface DCGLs with RESRAD-BUILD using a normal mathematical model. An industrial worker building inspection scenario is developed in Section 6.1 and containment surface DCGLs were calculated for this scenario.

The District has no current plans to renovate or demolish the containment building, either prior to or after license termination; however, a building renovation/demolition scenario would be the most limiting scenario for the derivation of containment building surface DCGLs. Therefore, even though it is unlikely that the containment building will be renovated or demolished soon after license termination, a building renovation/demolition scenario is used in this DTBD to derive containment building surface DCGLs for this scenario.

NUREG/CR-5512, Vol. 1, Residual Radioactive Contamination from Decommissioning – Technical Basis for Translating Contamination Levels to Annual Total Effective Dose Equivalent, [Reference 7.2] describes a building renovation scenario. It states:

> *"The building renovation scenario, in Section 3.1, accounts for an average volume (subsurface) concentration of radionuclides in building walls, floors and ceilings. …*
>
> *…During renovation or demolition, surface and volume sources will be disturbed, creating loose contamination. This loose contamination can*

produce higher concentrations of radionuclides in the air or on surfaces than the levels in an undisturbed building.

Renovation conditions serve as the prudently conservative basis for this scenario analysis. The differences between renovation and demolition are difficult to predict, but both can likely be represented by the same conceptual model. For some conditions, demolition may represent a worst-case situation; in others, renovation may be the worst case. …"

ANL/EAD/03-1, User's Manual for RESRAD-BUILD Version 3, [Reference 7.3] provides directions for the use of RESRAD-BUILD for various scenarios, including the building renovation scenario described in NUREG/CR-5512, Vol. 1. The exposure pathways considered when using RESRAD-BUILD include:

1. External exposure to penetrating radiation emitted directly from the source,
2. External exposure to penetrating radiation emitted from radioactive particulates deposited on the floors of the compartments,
3. External exposure to penetrating radiation due to submersion in airborne radioactive particulates,
4. Inhalation of airborne radioactive particulates,
5. Inhalation of aerosol indoor tritiated water vapor,
6. Inadvertent ingestion of radioactive material contained in removable material directly from the source, and
7. Inadvertent ingestion of airborne radioactive particulates deposited on the surfaces of the building.

ANL/EAD/03-1 also provides an input data template and input parameter values for the building renovation scenario. The template and input parameter values are designed to match the building renovation scenario introduced in NUREG/CR-5512, Vol. 1. The calculations contained in this DTBD use these parameter values. The exposure duration specified in ANL/EAD/03-1 is 179 days, which is the renovation period specified in NUREG/CR-5512, Vol. 1 for the building renovation scenario. Based on the Maine Yankee containment building demolition experience, this is a reasonable exposure duration.

3.0 DEFINITIONS

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

concentration of a radionuclide which, if distributed uniformly across a survey unit, would result in an estimated dose equal to the applicable dose limit. The $DCGL_{EMC}$ is the concentration of a radionuclide which, if distributed uniformly across a smaller limited area within a survey unit, would result in an estimated dose equal to the applicable dose limit. DCGLs are derived from activity/dose relationships through various exposure pathway scenarios.

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

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

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

4.0 TECHNICAL POSITION

Use of the single nuclide DCGLs provided in Table 6-2 for final status surveys will ensure that, if the containment building is renovated or demolished at some point after license termination, potential dose received by a renovation/demolition worker will not exceed the regulatory criteria for unrestricted use given in 10 CFR 20.1402. The single nuclide DCGLs provided in Table 6-2 also bound the single nuclide DCGLs calculated under an industrial worker building inspection scenario.

5.0 LIMITATIONS

The DCGL values provided in Table 6-1 are single nuclide DCGLs. That is, a concentration of an individual radionuclide at the specified DCGL value will result in a calculated annual dose to a renovation/demolition worker of 25 millirem. If multiple radionuclides are present on containment building interior surfaces, the unity rule must be applied to allowable radionuclide concentrations to maintain the total dose from the radionuclide mixture to 25 millirem per year.

6.0 TECHNICAL BASES

6.1 Application of an Industrial Worker Building Inspection Scenario

6.1.1 Radionuclides of Concern for Industrial Worker Building Inspection Scenario DCGL Calculations

A list of nine significant radionuclides out of the 26 radionuclides in the site-specific suite of radionuclides based on characterization samples were identified in DTBD-05-015, Rancho Seco Nuclear Generating Station Structure Nuclide Fraction and DCGLs, [Reference 7.4]. These nine

radionuclides include Co-60, Sr-90, Cs-134, Cs-137, Pu-238, Pu-239, Pu-240, Pu-241 and Am-241. Industrial worker building inspection scenario single nuclide DCGLs were derived for these nine radionuclides.

6.1.2 Mathematical Containment Building Model Used with RESRAD-BUILD

RESRAD-BUILD is designed to perform dose modeling on up to three rectangular compartments containing a floor, four walls and a ceiling. For purposes of modeling the RSNGS containment building, a single compartment was selected. The compartment is specified by defining a floor area and compartment height. The demolition scenario defined in ANL/EAD/03-1 specifies the use of volume sources in the mathematical model. Volume sources are modeled in RESRAD-BUILD as cylinders with the source direction defined as the vector from the face of the cylinder perpendicular to the exposed area.

The RSNGS containment building is a cylindrical structure containing a circular basemat, cylindrical walls and a domed ceiling. Therefore, several simplifying assumptions were necessary to model the containment building to obtain a mathematical model usable by RESRAD-BUILD. For use by RESRAD-BUILD, the floor and ceiling were modeled as circular sources 130-feet in diameter to match the containment building interior diameter. The floor source represented the containment basement floor and the ceiling source represented the base of the dome located 145-feet above the center of the basement floor. Next, the cylindrical vertical wall area (59,400 ft^2) was divided into four equal areas and each fourth of the area assigned as the area of each of the four wall sources. The resulting mathematical model is depicted in Figure 6-1.

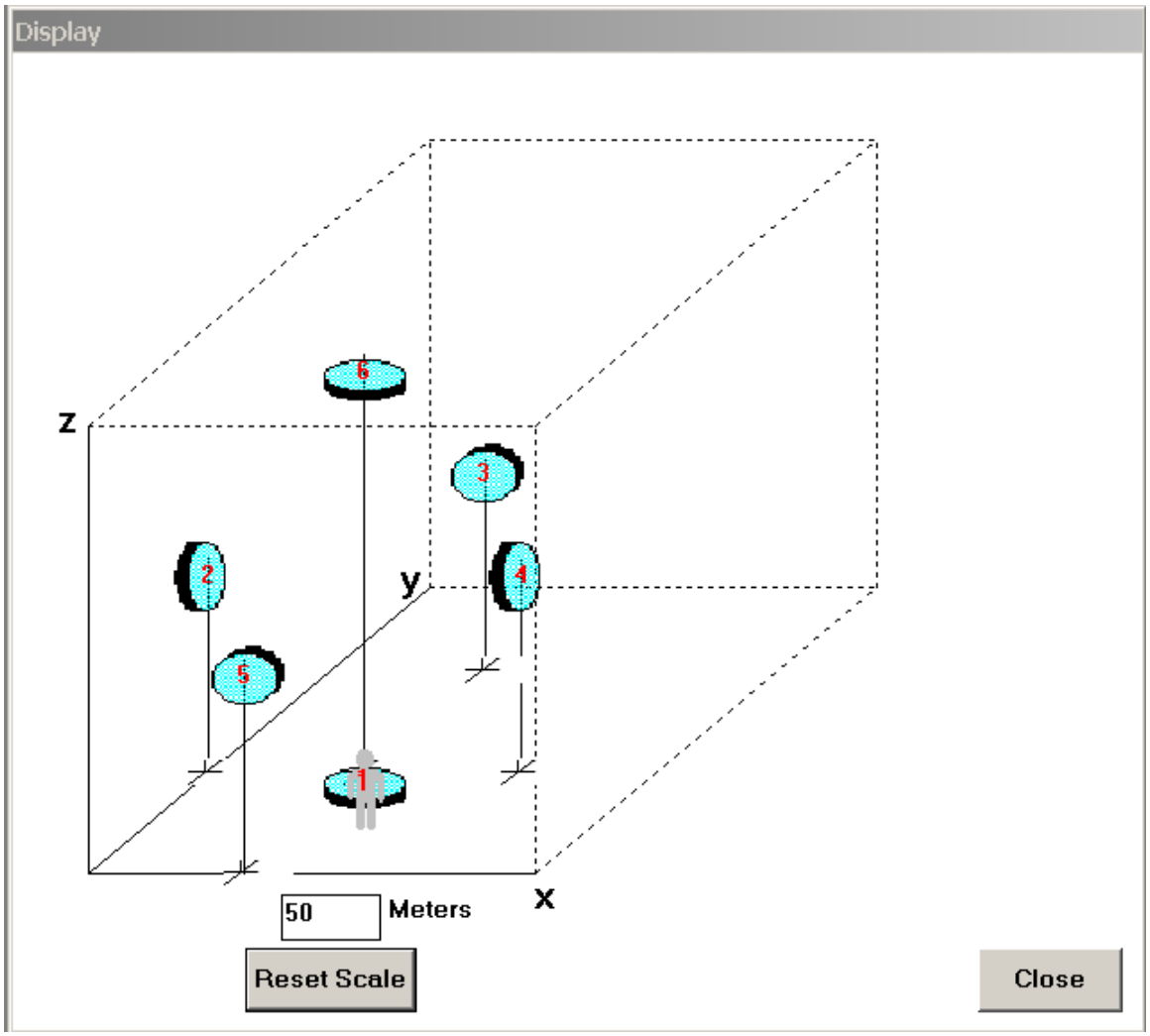

Figure 6-1

This is an acceptable approximation of the containment building interior because the majority of calculated potential dose to the demolition worker is from inhalation and ingestion of the dust created during demolition. This is proportional to total volume, not the shape of the containment building interior surfaces.

6.1.3 Derivation Of Industrial Worker Building Inspection Scenario Single Nuclide DCGL Values

Industrial worker building inspection scenario single nuclide DCGLs were derived deterministically using the same parameters used to derive structural surface DCGLs in DTBD-04-004. RESRAD-BUILD was used in the deterministic mode to conserve calculation time since it was anticipated that single nuclide DCGLs calculated under a building renovation/demolition would bound single nuclide DCGLs calculated under

an industrial worker building inspection scenario. The parameters are provided in Attachment 8.1, RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs.

The input parameters contained in Attachment 8.1 were input into the RESRAD-BUILD v3.3 code for each of the nine radionclides of concern (electronic files CBBldInsCo60.bld, CBBldInsSr90.bld, CBBldInsCs134.bld, CBBldInsCs137.bld, CBBldInsPu238.bld, CBBldInsPu239.bld, CBBldInsPu240.bld, CBBldInsPu241.bld, and CBBldInsAm241.bld). The input parameter entries and calculation results are contained in Attachment 8.2, RESRAD-BUILD v3.3 Deterministic Output Report Nuclide Specific Parameter Input Entries and Results. The DCFs selected (in units of mrem/yr per 100 dpm/100 cm^2) are the average total dose values for the receptor. DCGL values were then calculated by dividing the dose limit (25 mrem/yr) by the DCF value to give DCGL values in units of dpm/100 cm^2. Results of these calculations are provided in Table 6-1.

Table 6-1

Containment Building Surface Single Nuclide DCF and DCGL Values for the Industrial Worker Building Inspection Scenario

Radionuclide	Dose Conversion Factor (mrem/yr per 100 dpm/100 cm^2)	DCGL (dpm/100 cm^2)
Co-60	2.81E-05	8.90E+05
Sr-90	1.46E-05	1.71E+06
Cs-134	2.38E-05	1.05E+06
Cs-137	1.09E-05	2.29E+06
Pu-238	3.10E-04	8.06E+04
Pu-239	3.43E-04	7.29E+04
Pu-240	3.43E-04	7.29E+04
Pu-241	6.63E-06	3.77E+06
Am-241	3.53E-04	7.08E+04

6.2 Application of a Building Renovation/Demolition Scenario

6.2.1 Radionuclides of Concern for Containment Building Renovation/Demolition DCGL Calculations

A theoretical site-specific suite of 26 radionuclides potentially present at RSNGS was derived in DTBD-04-001, Radionuclides for Consideration During Rancho Seco Nuclear Generating Station Characterization or Final Status Surveys, [Reference 7.5]. Single nuclide DCGL values were derived in this DTBD for each radionuclide in this theoretical site-specific suite. These radionuclides include:

H-3	C-14	Na-22	Fe-55
Ni-59	Co-60	Ni-63	Sr-90
Nb-94	Tc-99	Ag-108m	Sb-125
Cs-134	Cs-137	Pm-147	Eu-152
Eu-154	Eu-155	Np-237	Pu-238
Pu-239	Pu-240	Pu-241	Am-241
Pu-242	Cm-244		

6.2.2 Identification of RESRAD-BUILD Sensitive Parameters

Although any residual contamination would likely be on the surface of the carbon steel liner of the containment building, the building renovation template (according to NUREG/CR-5512, Vol. 1, acceptable for use as a building demolition scenario) described in Table 3.1 of ANL/EAD/03-1 specifies a volume source 15 cm thick. Therefore, the surface activity is assumed to be homogeneously mixed in a 15 cm thick layer of concrete. During the Maine Yankee containment building demolition, the carbon steel liner was not separated from the concrete until after the building had been turned into rubble. Therefore, this is an acceptable modeling assumption.

DTBD-04-004 used RESRAD-BUILD v3.22 to identify sensitive parameters and established the dose model for derivation of DCGLs for structural surfaces. Parameters that were found to be sensitive in DTBD-04-004 and treated deterministically for the derivation of structural surface single nuclide DCGLs may not remain sensitive for volume sources. Therefore, they are treated stochastically for the sensitivity analysis using volume sources. Also, ANL/EAD/03-01 identifies an additional eight parameters associated with volume sources and for which statistical parameter distributions were developed. These parameters were also treated stochastically for the sensitivity analysis using volume sources.

For the case of tritium in the volume sources, the tritium was assumed to be present in the volume sources in the form of water that is released from the volume sources in the form of vapor (HTO vapor). Under this assumption, ANL/EAD/03-01 recommends that the deposition velocity be treated deterministically and set to “0”.

The same parameter selection process used in DTBD-04-004 was used for this sensitivity analysis. The parameter selection process is shown schematically in Attachment 8.3, RESRAD-BUILD Parameter Selection Process. The parameter values for sensitivity analysis and their assigned classification and priority are provided in Attachment 8.4, RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building Renovation/Demolition

DCGL Sensitivity Analysis. The parameter statistical distributions for RSNGS priority 1 and 2 physical parameters are listed in Attachment 8.5, Statistical Distribution Parameters for Sensitivity Analysis of Containment Building Renovation/Demolition DCGLs and Sensitive Parameter Results, Table 8.3-1.

The parameter values for sensitivity analysis in Attachment 8.4 and the parameter distributions listed in Attachment 8.5 were loaded into RESRAD-BUILD v3.3 separately for each radionuclide (electronic files CBDMSensH3.bld, CBDMSensC14.bld, CBDMSensNa22.bld, CBDMSensFe55.bld, CBDMSensNi59.bld, CBDMSensCo60.bld, CBDMSensNi63.bld, CBDMSensSr90.bld, CBDMSensNb94.bld, CBDMSensTc99.bld, CBDMSensAg108m.bld, CBDMSensSb125.bld, CBDMSensCs134.bld, CBDMSensCs137.bld, CBDMSensPm147.bld, CBDMSensEu152.bld, CBDMSensEu154.bld, CBDMSensEu155.bld, CBDMSensNp237.bld, CBDMSensPu238.bld, CBDMSensPu239.bld, CBDMSensPu240.bld, CBDMSensPu241.bld, CBDMSensAm241.bld, CBDMSensPu242.bld and CBDMSensCm244.bld).

Once the parameter values and the statistical parameter distributions were loaded into RESRAD-BUILD v3.3 the code was run in the probabilistic mode for each radionuclide of concern to identify the sensitive parameters for that radionuclide. For each calculation, the Latin Hypercube sampling technique was used with a random seed of 1000, 300 observations and one repetition. RESRAD-BUILD v3.3 deterministic and probabilistic input parameters from the respective output reports are provided in Attachment 8.6, RESRAD-BUILD v3.3 Deterministic and Probabilistic Input Parameters for Containment Building Renovation/Demolition DCGL Sensitivity Analysis, and Probabilistic Output Report result excerpts providing the calculated partial ranked correlation coefficient (PRCC) are provided in Attachment 8.7, RESRAD-BUILD v3.3 Probabilistic Output Report Nuclide Specific Parameter Sensitivity Results for Containment Building Renovation/Demolition DCGLs. The absolute value of the calculated PRCC at time 1 was then used to classify the parameters with statistical distributions as sensitive or non-sensitive. PRCC was chosen because NUREG/CR-6692, Probabilistic Modules for the RESRAD and RESRAD-BUILD Computer Codes [Reference 7.6], recommends that it be used when nonlinear relationships, widely disparate scales or long tails are present in the inputs and outputs. The maximum calculated PRCC values (either maximum positive or maximum negative) for sensitive parameters are listed in Attachment 8.5, Table 8.3-2. If the absolute value of the PRCC was greater than 0.10, then the parameter was classified as sensitive. If the absolute value of the PRCC was equal to or less than 0.10, then the parameter was classified as non-sensitive.

Values for use in dose modeling for the physical parameters with sensitive parameters were selected based on sensitivity of the calculated PRCC following the guidance of NUREG/CR-6676, Probabilistic Dose Analysis Using Parameter Distributions Developed for RESRAD and RESRAD-BUILD Codes [Reference 7.7]. If the absolute value of the PRCC was greater than 0.10, then the parameter value at either the 75% quartile or the 25% quartile was selected based on total effective dose equivalent (TEDE) correlation with the parameter. If the PRCC value was negative, the parameter to dose correlation is negative and the parameter value at the 25% quartile was selected. If the PRCC value was positive, the parameter to dose correlation is positive and the parameter value at the 75% quartile was selected. The sensitive parameter deterministic values and the highest sensitive parameter PRCC values (absolute value) of all radionuclides evaluated are listed in Attachment 8.5, Table 8.3-1 (with an accuracy of three significant figures).

The parameter values were obtained from the RESRAD-BUILD probabilistic calculation results using the interactive output feature of the uncertainty results. A click on the left mouse button on “Uncertainty Graphics” from the “View” menu (Figure 6-2) opened the interactive output dropdown window (Figure 6-3). From the interactive output dropdown window the “Results” folder was selected. From the “Results” folder the “Graphics” sub-folder was selected. The “Cumulative Density” was then selected as the Plot Type, the “Input Vector” was selected as the Primary Object and the parameter of interest was selected (Figure 6-4). The parameter value was determined by a right mouse button click on the plot and selecting “Edit Chart Data” from the dropdown window. This opened the Data Grid Editor dropdown window (Figure 6-5). From this window, 0.25 or 0.75 was selected, as appropriate from the C2 column, which represents the appropriate quartile value. The corresponding parameter value was contained in the C1 column (Figure 6-6).

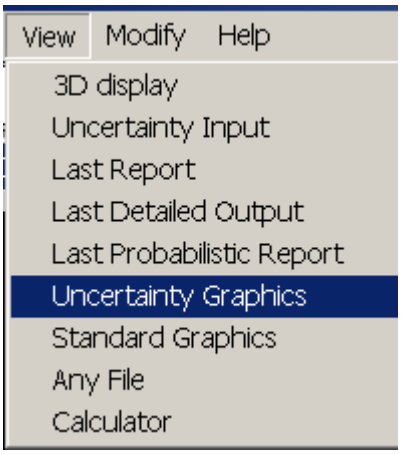

Figure 6-2

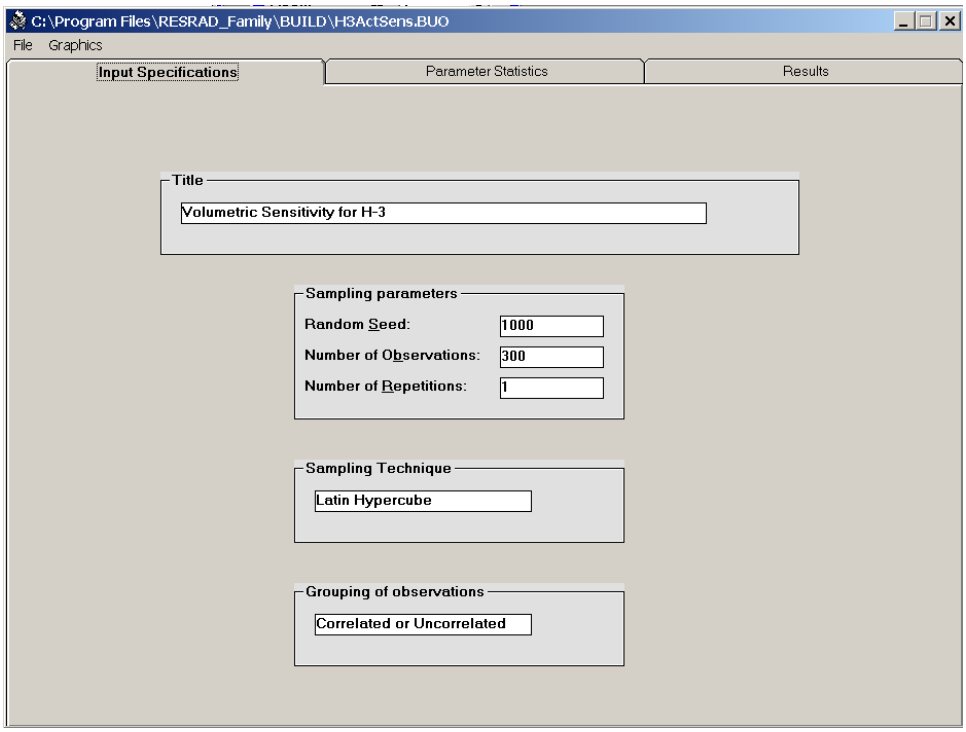

Figure 6-3

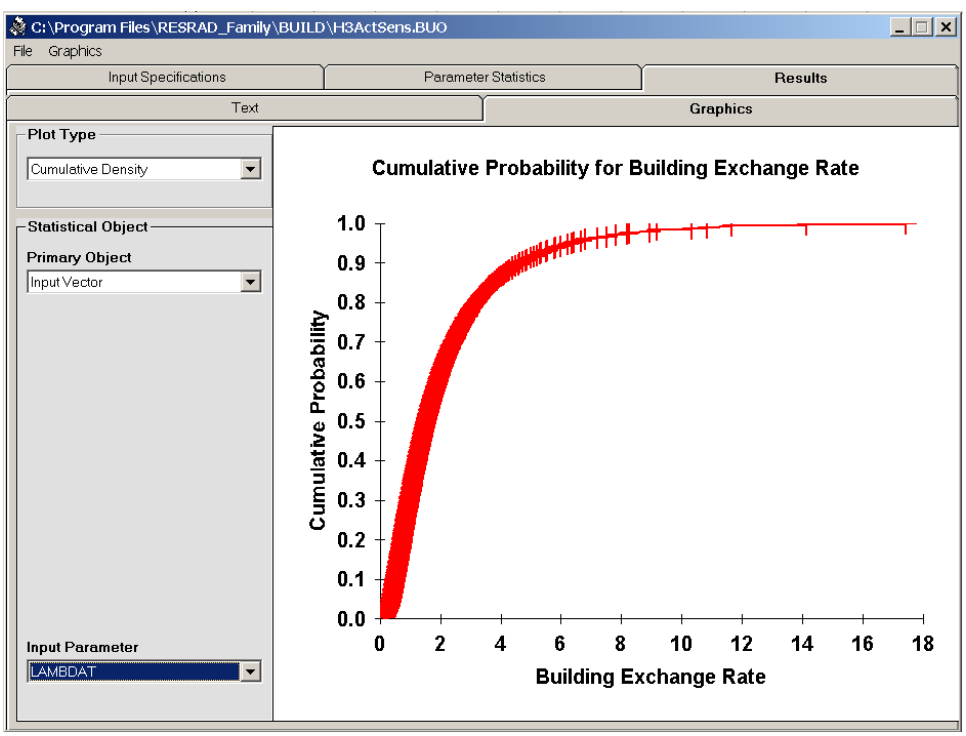

Figure 6-4

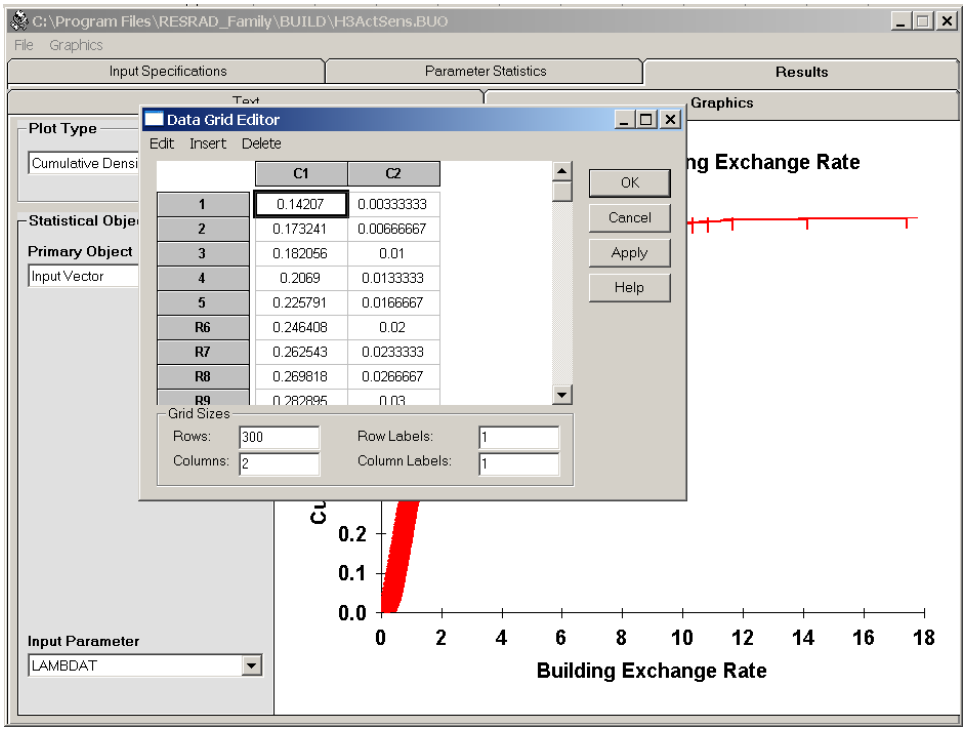

Figure 6-5

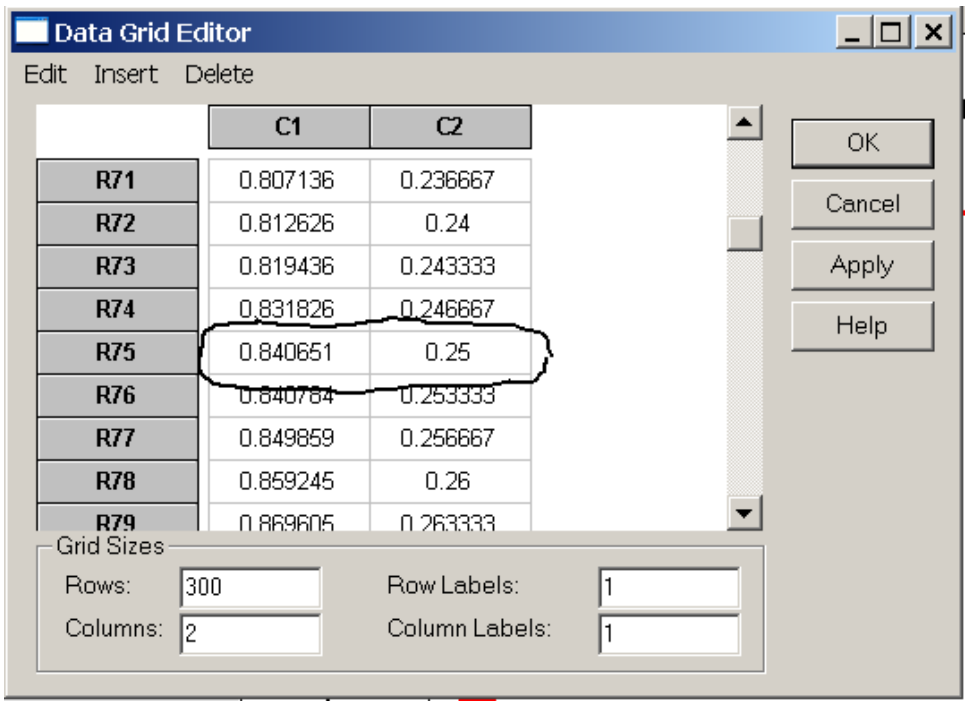

Figure 6-6

6.2.3 Derivation Of Containment Building Renovation/Demolition Single Nuclide DCGL Values

Single nuclide dose conversion factors (DCFs) were calculated deterministically if all parameters treated stochastically in Section 6.2.2 were determined to be sensitive or probabilistically if some non-sensitive parameters could be treated stochastically, repeating the RESRAD-BUILD v3.3 calculations performed in Section 6.2.2 by replacing the stochastic parameter distributions for each radionuclide identified to be sensitive in Attachment 8.5, Table 8.3-2, with the assigned deterministic parameter value listed in Attachment 8.5, Table 8.3-1, (electronic files CBDemH3DCF.bld, CBDemC14DCF.bld, CBDemNa22DCF.bld, CBDemFe55DCF.bld, CBDemNi59DCF.bld, CBDemCo60DCF.bld, CBDemNi63DCF.bld, CBDemSr90DCF.bld, CBDemNb94DCF.bld, CBDemTc99DCF.bld, CBDemAg108mDCF.bld, CBDemSb125DCF.bld, CBDemCs134DCF.bld, CBDemCs137DCF.bld, CBDemPm147DCF.bld, CBDemEu152DCF.bld, CBDemEu154DCF.bld, CBDemEu155DCF.bld, CBDemNp237DCF.bld, CBDemPu238DCF.bld, CBDemPu239DCF.bld, CBDemPu240DCF.bld, CBDemPu241DCF.bld, CBDemAm241DCF.bld, CBDemPu242DCF.bld, and CBDemCm244DCF.bld).

RESRAD-BUILD v3.3 deterministic and probabilistic input parameters from the respective output reports for each radionuclide are provided in Attachment 8.8, RESRAD-BUILD v3.3 Input Parameters for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs, and deterministic or probabilistic output report result excerpts from page “Source Contributions to Receptor Doses” for deterministic calculations or “Statistics for Dose (mrem) for Time: 1” for probabilistic calculations are provided in Attachment 8.9, RESRAD-BUILD v3.3 Output Report Nuclide Specific Results for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs. The DCF for each radionuclide was determined by performing the above calculations with a source concentration of 1,000 dpm/gram to provide a DCF with the units of mrem/year per 1,000 dpm/gram. The probabilistic dose used was the average total dose from the “Statistics for Dose (mrem) for Time: 1” report. The DCF for each radionuclide (with an accuracy of three significant figures) is provided in Table 6-1.

The building renovation scenario, also applicable to building demolition (see Section 2.0), described in NUREG/CR-5512, Vol. 1, and the input data template and input parameter values provided in ANL/EAD/03-1, specify the use of a volume source with a thickness of 15 cm. In the case of the containment building any residual contamination will likely be fixed on the interior surface rather than dispersed throughout the 15 cm thickness. If the assumption is made that containment building surface activity would be mixed into the 15 cm thickness during demolition, then

DCGL values may be calculated by assuming that all of the activity contained in the source is actually on the surface and solving Equation 1 to give DCGL values in units of dpm/100 cm^2.

$$\frac{10^3}{DCF_i}\frac{dpm/g}{mrem} \times 25\ mrem \times 2.5\ g/cm^3 \times 1500\ cm^3\ \ per\ one\ hundred\ cm^2 \quad = \quad DCGL_i\ dpm/100\ cm^2$$

Equation 1

Results of these calculations are provided in Table 6-2.

Table 6-2

Containment Building Surface Single Nuclide DCF and DCGL Values for the Building Renovation/Demolition Scenario

Radionuclide	Dose Conversion Factor (mrem/yr per 10^3 dpm/g)	DCGL (dpm/100 cm^2)
H-3	7.72E-02	1.21E+09
C-14	4.61E-01	2.03E+08
Na-22	1.68E+03	5.58E+04
Fe-55	1.50E-01	6.25E+08
Ni-59	6.64E-02	1.41E+09
Co-60	1.96E+03	4.78E+04
Ni-63	1.73E-01	5.42E+08
Sr-90	4.61E+01	2.03E+06
Nb-94	1.42E+03	6.60E+04
Tc-99	3.91E-01	2.40E+08
Ag-108m	1.44E+03	6.51E+04
Sb-125	3.01E+02	3.11E+05
Cs-134	1.19E+03	7.88E+04
Cs-137	4.38E+02	2.14E+05
Pm-147	5.45E-01	1.72E+08
Eu-152	8.59E+02	1.09E+05
Eu-154	9.40E+02	9.97E+04
Eu-155	1.80E+01	5.21E+06
Np-237	5.46E+03	1.72E+04
Pu-238	3.86E+03	2.43E+04
Pu-239	4.23E+03	2.22E+04
Pu-240	4.23E+03	2.22E+04
Pu-241	8.14E+01	1.15E+06
Am-241	4.38E+03	2.14E+04
Pu-242	4.05E+03	2.31E+04
Cm-244	2.44E+03	3.84E+04

7.0 REFERENCES

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

7.2 U.S. Nuclear Regulatory Commission / Pacific Northwest Laboratory, NUREG/CR-5512, Vol. 1, Residual Radioactive Contamination from Decommissioning – Technical Basis for Translating Contamination Levels to Annual Total Effective Dose Equivalent, October 1992

7.3 Argonne National Laboratory, ANL/EAD/03-01, User's Manual for RESRAD-BUILD Version 3, June 2003

7.4 DTBD-05-015, Revision 0, Rancho Seco Nuclear Generating Station Structure Nuclide Fraction and DCGLs

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

7.6 Argonne National Laboratory / U.S. Nuclear Regulatory Commission, NUREG/CR-6692, Probabilistic Modules for the RESRAD and RESRAD-BUILD Computer Codes, November 2000

7.7 Argonne National Laboratory / U.S. Nuclear Regulatory Commission, NUREG/CR-6676, "Probabilistic Dose Analysis Using Parameter Distributions Developed for RESRAD and RESRAD-BUILD Codes", May 2000

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

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

8.0 ATTACHMENTS

8.1 RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs

8.2 RESRAD-BUILD v3.3 Deterministic Output Report Nuclide Specific Parameter Input Entries and Results

8.3 RESRAD-BUILD Parameter Selection Process

8.4 RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building Renovation/Demolition DCGL Sensitivity Analysis

8.5 Statistical Distribution Parameters for Sensitivity Analysis of Containment Building Renovation/Demolition DCGLs and Sensitive Parameter Results

8.6 RESRAD-BUILD v3.3 Deterministic and Probabilistic Input Parameters for Containment Building Renovation/Demolition DCGL Sensitivity Analysis

8.7 RESRAD-BUILD v3.3 Probabilistic Output Report Nuclide Specific Parameter Sensitivity Results for Containment Building Renovation/Demolition DCGLs

8.8 RESRAD-BUILD v3.3 Input Parameters for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs

8.9 RESRAD-BUILD v3.3 Output Report Nuclide Specific Results for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs

9.0 RESPONSIBLE INDIVIDUAL

Leon E. Brown

Attachment 8.1

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
TIME PARAMETERS							
TTIME	Exposure duration	B	3	D	d	365.25	NUREG/CR-5512, Vol. 1
FTIN	Indoor fraction	B	2	D	-	3.65E-03	4 d/yr time in the containment building.
NTIME	Number of times for calculation	P	3	D	-	1	RESRAD-BUILD current default acceptable for this calculation
DOSE_TIME	Time	P	3	D	yr	1	NUREG/CR-5512, Vol. 3 Section 5.2.2.4 [Reference 7.8]
POINT	Maximum time integration points	P	3	D	-	1	Argonne recommended value acceptable for these calculations
BUILDING PARAMETERS							
NROOM	Number of rooms	P	3	D	-	1	NUREG/CR-5512 building occupancy scenario assumes only one contaminated room
UD	Deposition velocity	P	2	D	m/s	4.78E-04	The result of DTBD-04-004 sensitivity analysis
DKSUS	Resuspension rate	P, B	1	D	s^{-1}	3.54E-05	Calculated from the NUREG-1720 [Reference 7.9] recommended DandD resuspension factor of 9.6E-07 m^{-1}, deposition velocity, air exchange rate and room height (DTBD-04-004)
H	Room height	P	2	D	m	44.2	Distance of 145 ft. from the containment building basement to the base of the dome
AREA	Room area	P	2	D	m^2	1230	Area of the containment building basement which is 130 ft. in diameter
LAMBDAT (building); LINPUT (room)	Air exchange rate	B	2	D	1/h	0.835	The result of DTBD-04-004 sensitivity analysis
Q12 and Q21; Q23 and Q32	Flow rate between rooms	B	3	D	m^3/h	0	This dose model contains only one receptor room

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
Q10 and Q01; Q20 and Q02; Q30 and Q03	Outdoor inflow and outflow	B, P	3	D	m^3/h	Not used	Outdoor inflow is calculated from room volume and air exchange rate
RECEPTOR PARAMETERS							
ND	Number of receptors	B	3	D	-	1	This dose model contains only one receptor
DLVL	Receptor room	B	3	D	-	1	This dose model contains only one receptor room
DX	Receptor location (x, y, z)	B	3	D	m	19.8, 3.05, 9.23	1 m above center of the 10 ft. x 20 ft. access platform extending into the containment building at grade level
TWGHT	Receptor time fraction	B	3	D	-	1	NUREG/CR-5512, Vol. 3
BRTRATE	Receptor breathing/inhalation rate	M, B	2	D	m^3/d	35.7	The result of the DTBD-04-004 sensitivity analysis
INGE2	Indirect ingestion rate	B	2	D	m^2/h	1.61E-04	The result of the DTBD-04-004 sensitivity analysis
SOURCE PARAMETERS							
NS	Number of sources	P	3	D	-	6	Assumes contamination on four walls plus the floor and ceiling
Source 1 - Floor							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	z	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	19.8, 19.8, 0	Center of containment building basement
SAREA	Source area	P	2	D	m^2	1230	Area of containment building basement
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	8.94E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 8.94E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1230 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
Source 2 – West wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	x	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	0, 19.8, 22.1	Y distance is half of the containment building floor diameter and the z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m/m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	7.97E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 7.97E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1380 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	**Description**	**Class[1]**	**Priority[2]**	**Treatment[3]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
Source 3 – North wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	y	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	19.8, 0, 22.1	X distance is half of the containment building floor diameter and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m/m^2	1380	One fourth of the containment building cylindrical wall area

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	7.97E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 7.97E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1380 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
Source 4 – East wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	x	NUREG/CR-5512
SX	Source location	P	3	D	m	39.6, 19.8, 22.1	X distance is the diameterof the containment building floor, the Y distance is half of the diameterof the containment building floor and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m/m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	7.97E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 7.97E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1380 m^2.

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
Source 5 – South wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	y	NUREG/CR-5512
SX	Source location	P	3	D	m	19.8, 39.6, 22.1	X is half of the diameterof the containment building floor, the Y distance is the diameterof the containment building floor and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m/m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	7.97E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 7.97E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1380 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	**Description**	**Class[1]**	**Priority[2]**	**Treatment[3]**	**Units**	**Parameter Value**	**Basis for Parameter Selection**
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
Source 6 – Ceiling							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Area	NUREG/CR-5512
SDIR	Source direction	P	3	D	-	z	NUREG/CR-5512
SX	Source location	P	3	D	m	19.8, 19.8, 44.2	This defines the center of the base of the containment building's dome
SAREA	Source area	P	2	D	m/m^2	1230	Area of the containment building basement which is 130 ft. in diameter
AIRFR	Air release fraction	B	2	D	-	0.517	The result of the DTBD-04-004 sensitivity analysis

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	8.94E-08	Calculated from the default ingestion rate of 1.1E-04 m^2/h in the NUREG/CR-5512 industrial worker building occupancy scenario. 8.94E-08 h^{-1} is 1.1E-04 m^2/h divided by the total contaminated area of 1230 m^2.
RMVFR	Removable fraction	P, B	1	D	-	0.1	10% of the contamination is removable (NUREG/CR-5512 industrial worker building occupancy scenario default). The default parameter value for the loose fraction for the building occupancy scenario is 0.1 (Table C7.1, NUREG/CR-1727).
RF0	Source lifetime (also time for source removal)	P, B	2	D	d	52800	The result of the DTBD-04-004 sensitivity analysis
RRF	Radon release fraction	P, B	3	D	-	0	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	dpm/m^2	100	Calculates a dose conversion factor in units of mrem/yr per dpm/100 cm^2
NREGI0	Number of regions in volume source	P	3	D	-	Not used	A volume source is not used in this dose model
FCONT0	Contaminated region (volume source)	P	3	D	-	Not used	A volume source is not used in this dose model
THICK0	Source region thickness (volume source)	P	2	D	cm	Not used	A volume source is not used in this dose model
DENSI0	Source density (volume source)	P	1	D	g/cm^3	Not used	A volume source is not used in this dose model
EROS0	Source erosion rate (volume source)	P, B	2	D	cm/d	Not used	A volume source is not used in this dose model
POROS0	Source porosity	P	2	D	-	Not used	A volume source is not used in this dose model
EFDIF0	Radon effective diffusion coefficient	P	3	D	m^2/sec	0	Radon exposure is not regulated by the NRC

RESRAD-BUILD v3.3 Input Parameters for Derivation of Industrial Worker Building Inspection Single Nuclide DCFs							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
EMANA0	Radon emanation fraction	P	3	D	-	0	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Not used	A volume source is not used in this dose model
SHIELDING PARAMETERS							
DSTH	Shielding thickness	P, B	2	D	cm	0	Shielding is not used in this dose model
DSDEN	Shielding density	P	1	D	g/cm^3	0	Shielding is not used in this dose model
MTLC	Shielding material	P	3	D	-	None	Shielding is not used in this dose model
TRITIUM MODEL PARAMETERS							
DRYTHICK	Dry zone thickness	P	3	D	cm	Not Used	This parameter is not used for a surface source
H3THICK	Wet + dry zone thickness	P	2	D	cm	Not Used	This parameter is not used for a surface source
H3VOLFRACT	Volumetric water content	P	2	D	-	Not Used	This parameter is not used for a surface source
H3RMVF	Water fraction available for vaporization	P	2	D	-	Not Used	This parameter is not used for a surface source
HUMIDITY	Humidity	P, B	2	D	g/m^3	Not Used	This parameter is not used for a surface source

Notes:

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

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

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

Attachment 8.2

RESRAD-BUILD v3.3 Deterministic Output Report Nuclide Specific Parameter Input Entries and Results

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 3.650000E-03

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                            <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03
```

```
Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03
```

```
Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CO-60     1.000E+02   1.212E-05   9.865E-05   6.629E-03
```

Title : Building Inspection DCF for Co-60
Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsCo60.bld
Evaluation Time: 0.00000000E+00 years

```
==================================================
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===                                            ===
===        RESRAD-BUILDDose Tables           ===
===                                            ===
==================================================
==================================================
```

Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	5.36E-06	2.51E-06	1.48E-05	2.51E-06	1.48E-06	1.39E-06	2.81E-05
Total	5.36E-06	2.51E-06	1.48E-05	2.51E-06	1.48E-06	1.39E-06	2.81E-05

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 3.650000E-03

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05
```

```
Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05
```

```
Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SR-90     1.000E+02   6.883E-05   5.894E-04   1.039E-05
```

Title : Building Inspection DCF for Sr-90
Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsSr90.bld
Evaluation Time: 0.00000000E+00 years

```
==================================================
==================================================
===                                            ===
===        RESRAD-BUILDDose Tables           ===
===                                            ===
==================================================
==================================================
```

Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	2.44E-06	2.43E-06	2.46E-06	2.43E-06	2.43E-06	2.43E-06	1.46E-05
Total	2.44E-06	2.43E-06	2.46E-06	2.43E-06	2.43E-06	2.43E-06	1.46E-05

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  3.652500E+02 days
Fraction Inside    :  3.650000E-03
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1           *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01          *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03
```

```
Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03
```

```
Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    CS-134    1.000E+02   3.302E-05   2.081E-05   3.983E-03
```

Title : Building Inspection DCF for Cs-134
Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsCs134.bld
Evaluation Time: 0.00000000E+00 years

```
==================================================
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===                                            ===
===        RESRAD-BUILDDose Tables           ===
===                                            ===
==================================================
==================================================
```

Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	4.41E-06	2.54E-06	1.06E-05	2.54E-06	1.87E-06	1.80E-06	2.38E-05
Total	4.41E-06	2.54E-06	1.06E-05	2.54E-06	1.87E-06	1.80E-06	2.38E-05

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  3.652500E+02 days
Fraction Inside    :  3.650000E-03
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.54E+04
    H1:  44.200      *           Room  1           *      Q10 :  4.54E+04
                     *   LAMBDA: 8.35E-01          *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03
```

```
Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03
```

```
Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ________________________________
                           Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    CS-137    1.000E+02   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 01/24/06 12:45:17  Page:  10 **
 Title : Building Inspection DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsCs137.bld
 Evaluation Time:  0.00000000E+00  years


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

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    1.98E-06 1.30E-06 4.24E-06 1.30E-06 1.05E-06 1.03E-06 1.09E-05
 Total          1.98E-06 1.30E-06 4.24E-06 1.30E-06 1.05E-06 1.03E-06 1.09E-05
```

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===                                            ===
===      RESRAD-BUILD Input Parameters         ===
===                                            ===
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```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  3.652500E+02 days
Fraction Inside    :  3.650000E-03
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

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

Source: 1
Location:: Room : 1 x: 19.80 y: 19.80 z: 0.00[m]
Geometry:: Type: Area Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 8.940E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-238	1.000E+02	1.441E-03	1.766E-01	2.567E-07
U-234	0.000E+00	1.275E-04	5.946E-02	4.014E-07
TH-230	0.000E+00	2.468E-04	1.468E-01	9.155E-07
RA-226	0.000E+00	5.950E-04	3.871E-03	4.663E-03
PB-210	0.000E+00	2.422E-03	6.214E-03	4.698E-06

Source: 2
Location:: Room : 1 x: 0.00 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-238	1.000E+02	1.441E-03	1.766E-01	2.567E-07

```
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06

Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]

             Radon Release Fraction:   1.000E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    PU-238    1.000E+02   1.441E-03   1.766E-01   2.567E-07
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]

             Radon Release Fraction:   1.000E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
```

PU-238	1.000E+02	1.441E-03	1.766E-01	2.567E-07
U-234	0.000E+00	1.275E-04	5.946E-02	4.014E-07
TH-230	0.000E+00	2.468E-04	1.468E-01	9.155E-07
RA-226	0.000E+00	5.950E-04	3.871E-03	4.663E-03
PB-210	0.000E+00	2.422E-03	6.214E-03	4.698E-06

Source: 5
Location:: Room : 1 x: 19.80 y: 39.60 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-238	1.000E+02	1.441E-03	1.766E-01	2.567E-07
U-234	0.000E+00	1.275E-04	5.946E-02	4.014E-07
TH-230	0.000E+00	2.468E-04	1.468E-01	9.155E-07
RA-226	0.000E+00	5.950E-04	3.871E-03	4.663E-03
PB-210	0.000E+00	2.422E-03	6.214E-03	4.698E-06

```
Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]

             Radon Release Fraction:   1.000E-01
```

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-238	1.000E+02	1.441E-03	1.766E-01	2.567E-07
U-234	0.000E+00	1.275E-04	5.946E-02	4.014E-07
TH-230	0.000E+00	2.468E-04	1.468E-01	9.155E-07
RA-226	0.000E+00	5.950E-04	3.871E-03	4.663E-03
PB-210	0.000E+00	2.422E-03	6.214E-03	4.698E-06

```
** RESRAD-BUILD Dose Program Output, Version 3.3 01/24/06 12:57:12  Page:  11 **
 Title : Building Inspection DCF for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsPu238.bld
 Evaluation Time:  0.00000000E+00  years


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              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
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              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    5.16E-05 5.18E-05 5.18E-05 5.18E-05 5.18E-05 5.16E-05 3.10E-04
 Total          5.16E-05 5.18E-05 5.18E-05 5.18E-05 5.18E-05 5.16E-05 3.10E-04
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  3.652500E+02 days
Fraction Inside    :  3.650000E-03
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

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

Source: 1
Location:: Room : 1 x: 19.80 y: 19.80 z: 0.00[m]
Geometry:: Type: Area Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 8.940E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-239	1.000E+02	1.595E-03	1.932E-01	2.231E-07
U-235	0.000E+00	1.204E-04	5.541E-02	4.063E-04
PA-231	0.000E+00	4.775E-03	5.766E-01	9.049E-05
AC-227	0.000E+00	6.665E-03	3.029E+00	9.734E-04

Source: 2
Location:: Room : 1 x: 0.00 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-239	1.000E+02	1.595E-03	1.932E-01	2.231E-07
U-235	0.000E+00	1.204E-04	5.541E-02	4.063E-04

```
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04

 Source:  3
         Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
         Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
         Pathway ::
              Direct Ingestion Rate:    7.970E-08 [1/hr]
              Fraction released to air: 5.170E-01
              Removable fraction:       1.000E-01
              Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     PU-239    1.000E+02   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04

 Source:  4
         Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
         Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    7.970E-08 [1/hr]
              Fraction released to air: 5.170E-01
              Removable fraction:       1.000E-01
              Time to Remove:           5.280E+04 [day]


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/m2]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     PU-239    1.000E+02   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
```

```
    AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04

Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    PU-239    1.000E+02   1.595E-03   1.932E-01   2.231E-07
    U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
    PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
    AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    PU-239    1.000E+02   1.595E-03   1.932E-01   2.231E-07
    U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
    PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
    AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

Title : Building Inspection DCF for Pu-239
Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsPu239.bld
Evaluation Time: 0.00000000E+00 years

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===                                          ===
===        RESRAD-BUILDDose Tables          ===
===                                          ===
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```

Source Contributions to Receptor Doses
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	5.71E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.71E-05	3.43E-04
Total	5.71E-05	5.73E-05	5.73E-05	5.73E-05	5.73E-05	5.71E-05	3.43E-04

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  3.652500E+02 days
Fraction Inside    :  3.650000E-03
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

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

Source: 1
Location:: Room : 1 x: 19.80 y: 19.80 z: 0.00[m]
Geometry:: Type: Area Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 8.940E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

Source: 2
Location:: Room : 1 x: 0.00 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07

U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

Source: 3
Location:: Room : 1 x: 19.80 y: 0.00 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/(dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

Source: 4
Location:: Room : 1 x: 39.60 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Radon Release Fraction: 1.000E-01

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/(dpm/m3)]

PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

```
Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]

             Radon Release Fraction:   1.000E-01
```

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

```
Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]

             Radon Release Fraction:   1.000E-01
```

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-240	1.000E+02	1.595E-03	1.932E-01	2.499E-07
U-236	0.000E+00	1.212E-04	5.631E-02	2.636E-07
TH-232	0.000E+00	1.230E-03	7.387E-01	4.588E-07
TH-228	0.000E+00	3.642E-04	1.556E-01	4.224E-03
RA-228	0.000E+00	6.496E-04	2.287E-03	2.515E-03

```
** RESRAD-BUILD Dose Program Output, Version 3.3 01/24/06 13:16:56  Page:  11 **
 Title : Building Inspection DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsPu240.bld
 Evaluation Time:  0.00000000E+00  years


              ================================================
              ================================================
              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    5.71E-05 5.73E-05 5.73E-05 5.73E-05 5.73E-05 5.71E-05 3.43E-04
 Total          5.71E-05 5.73E-05 5.73E-05 5.73E-05 5.73E-05 5.71E-05 3.43E-04
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 3.652500E+02 days
Fraction Inside : 3.650000E-03

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

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

Source: 1
Location:: Room : 1 x: 19.80 y: 19.80 z: 0.00[m]
Geometry:: Type: Area Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 8.940E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 2
Location:: Room : 1 x: 0.00 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08

AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 3
Location:: Room : 1 x: 19.80 y: 0.00 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 4
Location:: Room : 1 x: 39.60 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]

PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 5
Location:: Room : 1 x: 19.80 y: 39.60 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

```
Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]
```

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+02	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

```
** RESRAD-BUILD Dose Program Output, Version 3.3 01/24/06 13:33:15  Page:  11 **
 Title : Building Inspection DCF for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsPu241.bld
 Evaluation Time:  0.00000000E+00  years


              ================================================
              ================================================
              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    1.10E-06 1.11E-06 1.11E-06 1.11E-06 1.11E-06 1.10E-06 6.63E-06
 Total          1.10E-06 1.11E-06 1.11E-06 1.11E-06 1.11E-06 1.10E-06 6.63E-06
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 3.652500E+02 days
Fraction Inside   : 3.650000E-03

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	3.050	9.230	1.000	3.57E+01	1.61E-04

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


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


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.54E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.54E+04
                    *   LAMBDA: 8.35E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 4.78E-04 [m/s]   Resuspension Rate: 3.54E-05 [1/s]
```

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

Source: 1
Location:: Room : 1 x: 19.80 y: 19.80 z: 0.00[m]
Geometry:: Type: Area Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 8.940E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	1.000E+02	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 2
Location:: Room : 1 x: 0.00 y: 19.80 z: 22.10[m]
Geometry:: Type: Area Area:1.38E+03 [m2] Direction: x
Pathway ::
Direct Ingestion Rate: 7.970E-08 [1/hr]
Fraction released to air: 5.170E-01
Removable fraction: 1.000E-01
Time to Remove: 5.280E+04 [day]

Contamination::

Nuclide	Concentration [dpm/m2]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
AM-241	1.000E+02	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04

```
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04

Source:  3
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                            Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    AM-241    1.000E+02   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04

Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                            Ingestion   Inhalation  Submersion
               [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    AM-241    1.000E+02   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
```

```
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04

Source:  5
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Area        Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    7.970E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    AM-241    1.000E+02   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04

Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Area        Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    8.940E-08 [1/hr]
             Fraction released to air: 5.170E-01
             Removable fraction:       1.000E-01
             Time to Remove:           5.280E+04 [day]


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ ______________  ___________________________________
                           Ingestion   Inhalation  Submersion
              [dpm/m2]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    AM-241    1.000E+02   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

Title : Building Inspection DCF for Am-241
Input File : C:\Program Files\RESRAD_Family\BUILD\CBBldInsAm241.bld
Evaluation Time: 0.00000000E+00 years

```
==================================================
==================================================
===                                            ===
===        RESRAD-BUILDDose Tables           ===
===                                            ===
==================================================
==================================================
```

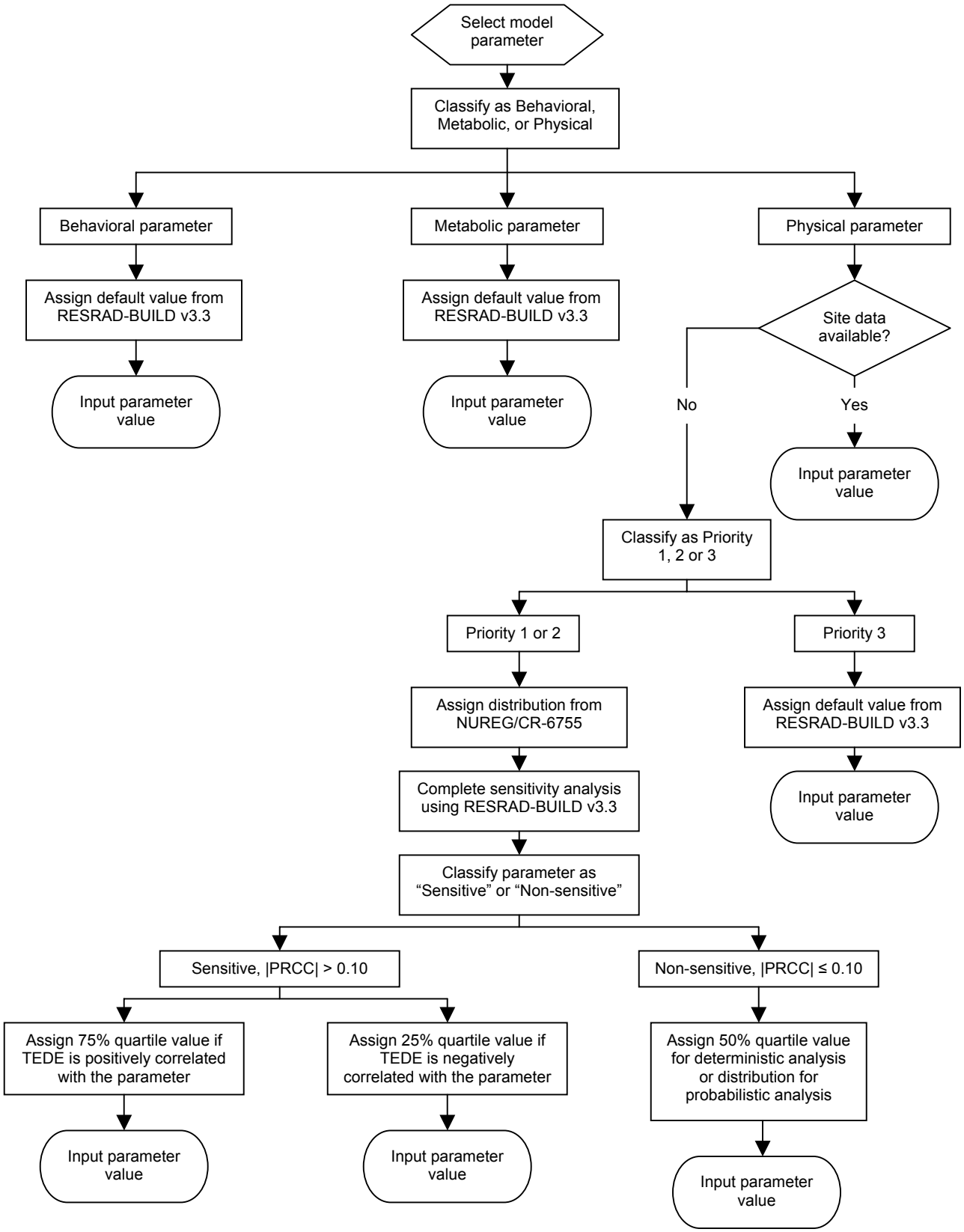
Source Contributions to Receptor Doses
==========
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	5.88E-05	5.89E-05	5.91E-05	5.89E-05	5.89E-05	5.88E-05	3.53E-04
Total	5.88E-05	5.89E-05	5.91E-05	5.89E-05	5.89E-05	5.88E-05	3.53E-04

Attachment 8.3

RESRAD-BUILD Parameter Selection Process

Parameter Selection Process



Attachment 8.4

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building Renovation/Demolition DCGL Sensitivity Analysis

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
TIME PARAMETERS							
TTIME	Exposure duration	B	3	D	d	179.00	ANL/EAD/03-01 template for building renovation scenario
FTIN	Indoor fraction	B	2	D	-	0.351	ANL/EAD/03-01 template for building renovation scenario
NTIME	Number of times for calculation	P	3	D	-	2	RESRAD-BUILD current default acceptable for the calculation
DOSE_TIME	Time	P	3	D	yr	1	NUREG/CR-5512, Vol. 3 Section 5.2.2.4
POINT	Maximum time integration points	P	3	D	-	1	Argonne National Laboratory recommended value for probabilistic calculations
BUILDING PARAMETERS							
NROOM	Number of rooms	P	3	D	-	1	The decommissioned containment building contains only one contaminated room
UD	Deposition velocity	P	2	S	m/s	Loguniform distribution	NUREG/CR-6755, Section 3.3
UD (H-3 only)	Deposition velocity	P	2	S	m/s	0	ANL-EAD-03-01, Appendix G, Section G.3.2
DKSUS	Resuspension rate	P, B	1	D	s^{-1}	1.33E-09	Calculated from the NUREG-1720 recommended DandD resuspension factor of 9.6E-07 m^{-1}, deposition velocity, air exchange rate and room height (see Section 6.2 of DTBD-04-004)
H	Room height	P	2	D	m	44.2	Distance of 145 ft. from the containment building basement to the base of the dome
AREA	Room area	P	2	D	m^2	1230	Area of the containment building basement which is 130 ft. in diameter
LAMBDAT (building)	Air exchange rate	B	2	S	1/h	Truncated lognormal-n	NUREG/CR-6755, Section 3.2
Q12 and Q21; Q23 and Q32	Flow rate between rooms	B	3	D	m^3/h	0	This dose model contains only one receptor room

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
Q10 and Q01; Q20 and Q02; Q30 and Q03	Outdoor inflow and outflow	B, P	3	NA	m^3/h	Not used	Outdoor inflow is calculated from room volume and air exchange rate
RECEPTOR PARAMETERS							
ND	Number of receptors	B	3	D	-	1	This dose model contains only one receptor
DLVL	Receptor room	B	3	D	-	1	This dose model contains only one receptor room
DX	Receptor location (x, y, z)	B	3	D	m	19.8, 19.8, 1	One meter above the center of the containment building's floor
TWGHT	Receptor time fraction	B	3	D	-	1	NUREG/CR-5512, Vol. 3
BRTRATE	Receptor breathing/inhalation rate	M, B	2	S	m^3/d	38.4	ANL/EAD/03-1 Table 3.1 receptor inhalation rate for the building renovation scenario
INGE2	Indirect ingestion rate	B	2	S	m^2/h	0	ANL/EAD/03-1 Table 3.1 receptor indirect ingestion rate for the building renovation scenario
SOURCE PARAMETERS							
NS	Number of sources	P	3	D	-	6	Assumes contamination on four walls plus the floor and ceiling
Source 1 - Floor							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	z	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	19.8, 19.8, 0	This defines the center of the containment building's floor
SAREA	Source area	P	2	D	m^2	1230	Area of the containment building basement which is 130 ft. in diameter
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
INGE1	Direct ingestion rate	B	2	D	g/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
Source 2 – West wall							

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	x	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	0, 19.8, 22.1	Y distance is half of the containment building floor diameter and the z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
Source 3 – North wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	y	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	19.8, 0, 22.1	X distance is half of the containment building floor diameter and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
Source 4 – East wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	x	NUREG/CR-5512

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
SX	Source location	P	3	D	m	39.6, 19.8, 22.1	X distance is the diameterof the containment building floor, the Y distance is half of the diameterof the containment building floor and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
Source 5 – South wall							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	y	NUREG/CR-5512
SX	Source location	P	3	D	m	19.8, 39.6, 22.1	X is half of the diameterof the containment building floor, the Y distance is the diameterof the containment building floor and the Z distance is half of the containment building distance from basement floor to base of the dome (72.5 ft.)
SAREA	Source area	P	2	D	m^2	1380	One fourth of the containment building cylindrical wall area
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario
INGE1	Direct ingestion rate	B	2	D	g/h or 1/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
Source 6 – Ceiling							
SLVL	Source room (also primary room)	P	3	D	-	1	This dose model contains only one room
STYPE	Source type	P	3	D	-	Volume	ANL/EAD/03-1 Table 3.1 source type for the building renovation scenario
SDIR	Source direction	P	3	D	-	z	NUREG/CR-5512
SX	Source location (x, y, z)	P	3	D	m	19.8, 19.8, 44.2	This defines the center of the base of the containment building's dome
SAREA	Source area	P	2	D	m^2	1230	Area of the containment building basement which is 130 ft. in diameter

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
AIRFR	Air release fraction	B	2	S	-	0.1	ANL/EAD/03-1 Table 3.1 air release fraction for the building renovation scenario
INGE1	Direct ingestion rate	B	2	D	g/h	0.052	Effective transfer rate from NUREG/CR-5512, Vol. 1 building renovation scenario for ingestion of loose dust to the hands and mouth during building renovation
RMVFR	Removable fraction	P, B	1	NA	-	Not used	Removable contamination is not assumed to be present on a volume source.
RF0	Source lifetime (also time for source removal)	P, B	2	NA	d	Not used	Removable contamination is not assumed to be present on a volume source.
RRF	Radon release fraction	P, B	3	NA	-	Not used	Radon exposure is not regulated by the NRC
RNUCACT	Radionuclide concentration/activity	P	2	D	pCi/g	1	Calculates a dose conversion factor in units of mrem/yr per pCi/g
NREGI0	Number of regions in volume source	P	3	D	-	1	One homogenous region is assumed for the volume source
FCONT0	Contaminated region (volume source)	P	3	D	-	1	One homogenous region is assumed for the volume source
THICK0	Source region thickness (volume source)	P	2	D	cm	15	ANL/EAD/03-01 template for building renovation scenario
DENSI0	Source density (volume source)	P	1	S	g/cm^3	Uniform distribution	ANL-EAD-03-01, Appendix J
EROS0	Source erosion rate (volume source)	P, B	2	S	cm/d	4.1E-4	ANL/EAD/03-1 Table 3.1 source erosion rate for the building renovation scenario
POROS0	Source porosity	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
EFDIF0	Radon effective diffusion coefficient	P	3	NA	m^2/sec	Not used	Radon exposure is not regulated by the NRC
EMANA0	Radon emanation fraction	P	3	NA	-	Not used	Radon exposure is not regulated by the NRC
MTLS	Source material			D	-	Concrete	One homogenous region is assumed
SHIELDING PARAMETERS							

RESRAD-BUILD v3.3 Parameters for RSNGS Containment Building DCGL Sensitivity Analysis							
Parameter							
Name	Description	Class[1]	Priority[2]	Treatment[3]	Units	Parameter Value	Basis for Parameter Selection
DSTH	Shielding thickness	P, B	2	S	cm	0	Shielding is not used in this dose model
DSDEN	Shielding density	P	1	NA	g/cm^3	2.4	Default value but not used in this dose model
MTLC	Shielding material	P	3	NA	-	None	Default value but not used in this dose model
TRITIUM MODEL PARAMETERS							
DRYTHICK	Dry zone thickness	P	3	D	cm	0	This model assumes that all bulk material is contaminated
H3THICK	Wet + dry zone thickness	P	2	D	cm	1	This parameter represents the depth from the surface of the contaminated material to the deepest point of the contaminated zone, thus the source region thickness.
H3VOLFRACT	Volumetric water content	P	2	S	-	Uniform distribution	ANL-EAD-03-01, Appendix J
H3RMVF	Water fraction available for vaporization	P	2	S	-	Triangular distribution	ANL-EAD-03-01, Appendix J
HUMIDITY	Humidity	P, B	2	S	g/m^3	Uniform distribution	ANL-EAD-03-01, Appendix J

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

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

[3]D = deterministic; S = stochastic; NA = not applicable

Attachment 8.5

Statistical Distribution Parameters for Sensitivity Analysis of Containment Building Renovation/Demolition DCGLs and Sensitive Parameter Results

Table 8.5-1, Statistical Distribution Parameters for Sensitivity Analysis of Containment Building DCGL and Sensitive Parameter Results

Parameter	Priority[1]	Distribution	Distribution's Statistical Parameters[2]				PRCC[3]	25% or 75% Quartile	Assigned Parameter Value
			1	2	3	4			
Deposition velocity	2	Loguniform	2.7E-06	2.7E-03	-	-	0.93	75%	0.000478
Deposition velocity (Fe-55, Ni-63, Sr-90,Pm-147, Pu-238, Pu-241, & Cm-244)	2	Loguniform	2.7E-06	2.7E-03	-	-	-0.62	25%	1.52E-05
Building air exchange rate	2	Truncated lognormal-n	0.4187	0.88	0.001	0.999	-1.00	25%	0.839
Source density (S1)	1	Uniform	2.2	2.6	-	-	0.96	75%	2.50
H-3 Source porosity (S1)	2	Uniform	0.04	0.25	-	-	0.45	75%	0.197
Source density (S2)	1	Uniform	2.2	2.6	-	-	0.18	75%	2.50
H-3 Source porosity (S2)	2	Uniform	0.04	0.25	-	-	0.51	75%	0.197
Source density (S3)	1	Uniform	2.2	2.6	-	-	0.52	75%	2.50
H-3 Source porosity (S3)	2	Uniform	0.04	0.25	-	-	0.47	75%	0.197
Source density (S4)	1	Uniform	2.2	2.6	-	-	0.47	75%	2.50
H-3 Source porosity (S4)	2	Uniform	0.04	0.25	-	-	0.44	75%	0.197
Source density (S5)	1	Uniform	2.2	2.6	-	-	0.79	75%	2.50
H-3 Source porosity (S5)	2	Uniform	0.04	0.25	-	-	0.53	75%	0.197
Source density (S6)	1	Uniform	2.2	2.6	-	-	0.23	75%	2.50
H-3 Source porosity (S6)	2	Uniform	0.04	0.25	-	-	0.42	75%	0.197
Source erosion rate (S6)	2	Triangular	0	5.6E-07	0	-	0.01	No	Distribution
H-3 Volumetric water content(S1)	2	Uniform	0.04	0.25	-	-	-0.38	25%	0.0920
H-3 Water fraction available for vaporization(S1)	2	Triangular	0.5	1.0	0.75	-	0.02	No	Distribution
H-3 Humidity(S1)	2	Uniform	6.5	13.1	-	-	-0.16	25%	8.15
H-3 Volumetric water content(S2)	2	Uniform	0.04	0.25	-	-	-0.45	25%	0.0920
H-3 Water fraction available for vaporization(S2)	2	Triangular	0.5	1.0	0.75	-	0.03	No	Distribution
H-3 Humidity(S2)	2	Uniform	6.5	13.1	-	-	-0.25	25%	8.15
H-3 Volumetric water content(S3)	2	Uniform	0.04	0.25	-	-	-0.34	25%	0.0920
H-3 Water fraction available for vaporization(S3)	2	Triangular	0.5	1.0	0.75	-	0.12	75%	0.823
H-3 Humidity(S3)	2	Uniform	6.5	13.1	-	-	-0.26	25%	8.15
H-3 Volumetric water content(S4)	2	Uniform	0.04	0.25	-	-	-0.35	25%	0.0920
H-3 Water fraction available for vaporization(S4)	2	Triangular	0.5	1.0	0.75	-	0.15	75%	0.823
H-3 Humidity(S4)	2	Uniform	6.5	13.1	-	-	-0.16	25%	8.15
H-3 Volumetric water content(S5)	2	Uniform	0.04	0.25	-	-	-0.42	25%	0.0920
H-3 Water fraction available for vaporization(S5)	2	Triangular	0.5	1.0	0.75	-	0.03	No	Distribution
H-3 Humidity(S5)	2	Uniform	6.5	13.1	-	-	-0.25	25%	8.15
H-3 Volumetric water content(S6)	2	Uniform	0.04	0.25	-	-	-0.34	25%	0.0920
H-3 Water fraction available for vaporization(S6)	2	Triangular	0.5	1.0	0.75	-	0.15	75%	0.823
H-3 Humidity(S6)	2	Uniform	6.5	13.1	-	-	-0.19	25%	8.15

Notes:

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

[2]Distribution's Statistical Parameter
Loguniform: 1 = minimum, 2 = maximum
Triangular: 1 = minimum, 2 = maximum, 3 = most likely
Uniform: 1 = minimum, 2 = maximum
Truncated lognormal-n: 1 = underlying mean value, 2 = underlying standard deviation, 3 = lower quantile, 4 = upper quantile

[3]PRCC = Partial ranked correlation coefficient for Time 1

Table 8.5-2, Radionuclide Specific RESRAD-BUILD Sensitive Parameters												
	Radionuclide											
	H-3		C-14		Na-22		Fe-55		Ni-59		Co-60	
Rank	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC
1	LAMBDAT	-1.00	LAMBDAT	-1.00	DENSI0(S1)	0.86	LAMBDAT	-1.00	LAMBDAT	-1.00	DENSI0(S1)	0.87
2	H3POROSITY(S5)	0.53	UD	0.61	UD	0.64	UD	-0.62	DENSI0(S6)	0.53	UD	0.70
3	H3POROSITY(S2)	0.51	DENSI0(S3)	0.36	DENSI0(S5)	0.59	DENSI0(S3)	0.28	DENSI0(S3)	0.52	LAMBDAT	-0.61
4	H3POROSITY(S3)	0.47	DENSI0(S2)	0.34	DENSI0(S4)	0.58	DENSI0(S2)	0.26	DENSI0(S2)	0.50	DENSI0(S4)	0.58
5	H3POROSITY(S1)	0.45	DENSI0(S6)	0.32	DENSI0(S2)	0.56	DENSI0(S1)	0.23	DENSI0(S5)	0.47	DENSI0(S5)	0.58
6	H3VOLFRACT(S2)	-0.45	DENSI0(S4)	0.26	DENSI0(S3)	0.55	DENSI0(S4)	0.23	DENSI0(S4)	0.47	DENSI0(S3)	0.55
7	H3POROSITY(S4)	0.44	DENSI0(S5)	0.25	LAMBDAT	-0.43	DENSI0(S5)	0.21	DENSI0(S1)	0.39	DENSI0(S2)	0.54
8	H3VOLFRACT(S5)	-0.42	DENSI0(S1)	0.16	DENSI0(S6)	0.41	DENSI0(S6)	0.19			DENSI0(S6)	0.35
9	H3POROSITY(S6)	0.42										
10	H3VOLFRACT(S1)	-0.38										
11	H3VOLFRACT(S4)	-0.35										
12	H3VOLFRACT(S6)	-0.34										
13	H3VOLFRACT(S3)	-0.34										
14	HUMIDITY(S3)	-0.26										
15	HUMIDITY(S2)	-0.25										
16	HUMIDITY(S5)	-0.25										
17	DENSI0(S6)	0.23										
18	HUMIDITY(S6)	-0.19										
19	DENSI0(S2)	0.18										
20	HUMIDITY(S1)	-0.16										
21	HUMIDITY(S4)	-0.16										
22	H3RMV(S4)	0.15										
23	H3RMV(S6)	0.15										
24	H3RMV(S3)	0.12										

Table 8.5-2, Radionuclide Specific Sensitive RESRAD-BUILD Parameters, Cont.

	Radionuclide											
	Ni-63		Sr-90		Nb-94		Tc-99		Ag-108m		Sb-125	
Rank	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC
1	LAMBDAT	-1.00	LAMBDAT	-1.00	UD	0.86	LAMBDAT	-1.00	UD	0.85	UD	0.60
2	DENSI0(S3)	0.49	DENSI0(S3)	0.47	LAMBDAT	-0.76	UD	0.60	LAMBDAT	-0.69	DENSI0(S1)	0.56
3	DENSI0(S2)	0.48	DENSI0(S2)	0.46	DENSI0(S1)	0.64	DENSI0(S3)	0.38	DENSI0(S1)	0.56	DENSI0(S3)	0.42
4	DENSI0(S6)	0.44	DENSI0(S6)	0.41	DENSI0(S4)	0.46	DENSI0(S2)	0.36	DENSI0(S4)	0.42	LAMBDAT	-0.42
5	DENSI0(S5)	0.44	DENSI0(S5)	0.40	DENSI0(S3)	0.41	DENSI0(S6)	0.35	DENSI0(S3)	0.41	DENSI0(S5)	0.41
6	DENSI0(S4)	0.41	DENSI0(S1)	0.39	DENSI0(S5)	0.38	DENSI0(S5)	0.34	DENSI0(S2)	0.34	DENSI0(S4)	0.40
7	DENSI0(S1)	0.41	DENSI0(S4)	0.38	DENSI0(S2)	0.35	DENSI0(S4)	0.34	DENSI0(S5)	0.34	DENSI0(S2)	0.37
8	UD	-0.21	UD	-0.30	DENSI0(S6)	0.32	DENSI0(S1)	0.14	DENSI0(S6)	0.29	DENSI0(S6)	0.35
	Radionuclide											
	Cs-134		Cs-137		Pm-147		Eu-152		Eu-154		Eu-155	
Rank	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC
1	DENSI0(S1)	0.83	UD	0.82	LAMBDAT	-1.00	UD	0.77	DENSI0(S1)	0.79	LAMBDAT	-0.97
2	UD	0.61	DENSI0(S1)	0.64	UD	-0.62	DENSI0(S1)	0.75	UD	0.75	UD	0.83
3	DENSI0(S5)	0.58	LAMBDAT	-0.61	DENSI0(S3)	0.26	LAMBDAT	-0.71	LAMBDAT	-0.74	DENSI0(S3)	0.13
4	DENSI0(S2)	0.55	DENSI0(S4)	0.43	DENSI0(S2)	0.25	DENSI0(S5)	0.48	DENSI0(S5)	0.52		
5	DENSI0(S3)	0.55	DENSI0(S5)	0.43	DENSI0(S4)	0.23	DENSI0(S4)	0.47	DENSI0(S4)	0.51		
6	DENSI0(S4)	0.54	DENSI0(S2)	0.37	DENSI0(S1)	0.22	DENSI0(S3)	0.42	DENSI0(S3)	0.48		
7	LAMBDAT	-0.45	DENSI0(S3)	0.36	DENSI0(S5)	0.21	DENSI0(S2)	0.40	DENSI0(S2)	0.45		
8	DENSI0(S6)	0.38	DENSI0(S6)	0.28	DENSI0(S6)	0.17	DENSI0(S6)	0.30	DENSI0(S6)	0.32		
	Radionuclide											
	Np-237		Pu-238		Pu-239		Pu-240		Pu-241		Am-241	
Rank	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC
1	LAMBDAT	-1.00	LAMBDAT	-1.00	LAMBDAT	-1.00	LAMBDAT	-1.00	LAMBDAT	-1.00	LAMBDAT	-1.00
2	DENSI0(S6)	0.53	DENSI0(S3)	0.48	DENSI0(S3)	0.52	DENSI0(S5)	0.48	UD	-0.57	DENSI0(S3)	0.52
3	DENSI0(S3)	0.51	DENSI0(S5)	0.46	DENSI0(S6)	0.51	DENSI0(S2)	0.48	DENSI0(S2)	0.35	DENSI0(S6)	0.50
4	DENSI0(S2)	0.49	DENSI0(S1)	0.44	DENSI0(S2)	0.48	DENSI0(S3)	0.46	DENSI0(S3)	0.35	DENSI0(S2)	0.49
5	DENSI0(S5)	0.47	DENSI0(S4)	0.42	DENSI0(S5)	0.46	DENSI0(S4)	0.44	DENSI0(S1)	0.31	DENSI0(S4)	0.47
6	DENSI0(S4)	0.46	DENSI0(S2)	0.42	DENSI0(S4)	0.46	DENSI0(S1)	0.44	DENSI0(S4)	0.27	DENSI0(S5)	0.45
7	DENSI0(S1)	0.38	DENSI0(S6)	0.41	DENSI0(S1)	0.38	DENSI0(S6)	0.40	DENSI0(S5)	0.27	DENSI0(S1)	0.39
8			UD	-0.32			POROSITY(S6)	0.13	DENSI0(S6)	0.25		

Table 8.5-2, Radionuclide Specific Sensitive RESRAD-BUILD Parameters, Cont.												
	Radionuclide											
	Pu-242		Cm-244									
Rank	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC	Parameter	PRCC
1	LAMBDAT	-1.00	LAMBDAT	-1.00								
2	DENSI0(S5)	0.48	UD	-0.56								
3	DENSI0(S2)	0.47	DENSI0(S3)	0.39								
4	DENSI0(S3)	0.46	DENSI0(S5)	0.39								
5	DENSI0(S1)	0.44	DENSI0(S1)	0.34								
6	DENSI0(S4)	0.44	DENSI0(S4)	0.32								
7	DENSI0(S6)	0.41	DENSI0(S6)	0.30								
8	POROSITY(S6)	0.12	DENSI0(S2)	0.27								

Parameter Code Explanation

DENSI0 - Source density
H3RMV - Water fraction available for vaporization (for H-3)
H3VOLFRACT - Volumetric water content (for H-3)
LAMBDAT - Building air exchange rate
POROSITY- Total porosity
UD - Deposition velocity
(S#) Source number

Attachment 8.6

RESRAD-BUILD v3.3 Deterministic and Probabilistic Input Parameters for Containment Building Renovation/Demolition DCGL Sensitivity Analysis

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.00E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.35E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                  *   LAMBDA: 8.00E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 0.00E+00 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
             ========  Source Information  ========

 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Tritium Volume Parameters ::
             Total Thickness:          1.500E+01 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 3.000E-02
             Wall Total Porosity:      1.000E-01
             Volatization Fraction:    1.000E+00
             Wall Density:             2.400E+00 [gm/cm3]
             Humidity:                 8.000E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Tritium Volume Parameters ::
             Total Thickness:          1.500E+01 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 3.000E-02
             Wall Total Porosity:      1.000E-01
             Volatization Fraction:    1.000E+00
             Wall Density:             2.400E+00 [gm/cm3]
             Humidity:                 8.000E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

```
 Source:  3
         Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
         Tritium Volume Parameters ::
              Total Thickness:          1.500E+01 [cm]
              Dry Thickness:            0.000E+00 [cm]
              Volumetric Water Content: 3.000E-02
              Wall Total Porosity:      1.000E-01
              Volatization Fraction:    1.000E+00
              Wall Density:             2.400E+00 [gm/cm3]
              Humidity:                 8.000E+00 [gm/m3]
              Erosion rate:             4.100E-04 [cm/d]
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

```
 Source:  4
         Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Tritium Volume Parameters ::
              Total Thickness:          1.500E+01 [cm]
              Dry Thickness:            0.000E+00 [cm]
              Volumetric Water Content: 3.000E-02
              Wall Total Porosity:      1.000E-01
              Volatization Fraction:    1.000E+00
              Wall Density:             2.400E+00 [gm/cm3]
              Humidity:                 8.000E+00 [gm/m3]
              Erosion rate:             4.100E-04 [cm/d]
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

```
 Source:  5
         Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
         Tritium Volume Parameters ::
              Total Thickness:          1.500E+01 [cm]
              Dry Thickness:            0.000E+00 [cm]
              Volumetric Water Content: 3.000E-02
              Wall Total Porosity:      1.000E-01
              Volatization Fraction:    1.000E+00
              Wall Density:             2.400E+00 [gm/cm3]
              Humidity:                 8.000E+00 [gm/m3]
              Erosion rate:             4.100E-04 [cm/d]
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

```
 Source:  6
         Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Tritium Volume Parameters ::
              Total Thickness:          1.500E+01 [cm]
              Dry Thickness:            0.000E+00 [cm]
              Volumetric Water Content: 3.000E-02
              Wall Total Porosity:      1.000E-01
              Volatization Fraction:    1.000E+00
              Wall Density:             2.400E+00 [gm/cm3]
              Humidity:                 8.000E+00 [gm/m3]
              Erosion rate:             4.100E-04 [cm/d]
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01
```

Contamination::

Nuclide	Concentration [pCi/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/ (pCi/m3)]
H-3	1.000E+00	6.400E-08	6.400E-08	3.866E-08

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters			
1	LAMBDAT	TRUNCATED LOGNORMAL-N	.4187	.88	.001	.999
2	H3VOLFRACT(1)	UNIFORM	.04	.25		
3	H3RMVF(1)	TRIANGULAR	.5	.75	1	
4	HUMIDITY(1)	UNIFORM	6.5	13.1		
5	H3VOLFRACT(2)	UNIFORM	.04	.25		
6	H3RMVF(2)	TRIANGULAR	.5	.75	1	
7	HUMIDITY(2)	UNIFORM	6.5	13.1		
8	H3POROSITY(2)	UNIFORM	.04	.25		
9	WALL_DENSITY(2)	UNIFORM	2.2	2.6		
10	H3VOLFRACT(3)	UNIFORM	.04	.25		
11	H3RMVF(3)	TRIANGULAR	.5	.75	1	
12	H3POROSITY(3)	UNIFORM	.04	.25		
13	WALL_DENSITY(3)	UNIFORM	2.2	2.6		
14	HUMIDITY(3)	UNIFORM	6.5	13.1		
15	H3VOLFRACT(4)	UNIFORM	.04	.25		
16	H3RMVF(4)	TRIANGULAR	.5	.75	1	
17	H3POROSITY(4)	UNIFORM	.04	.25		
18	WALL_DENSITY(4)	UNIFORM	2.2	2.6		
19	HUMIDITY(4)	UNIFORM	6.5	13.1		
20	H3VOLFRACT(5)	UNIFORM	.04	.25		
21	H3RMVF(5)	TRIANGULAR	.5	.75	1	
22	H3POROSITY(5)	UNIFORM	.04	.25		
23	WALL_DENSITY(5)	UNIFORM	2.2	2.6		
24	HUMIDITY(5)	UNIFORM	6.5	13.1		
25	H3VOLFRACT(6)	UNIFORM	.04	.25		
26	H3RMVF(6)	TRIANGULAR	.5	.75	1	
27	H3POROSITY(6)	UNIFORM	.04	.25		
28	WALL_DENSITY(6)	UNIFORM	2.2	2.6		
29	HUMIDITY(6)	UNIFORM	6.5	13.1		
30	H3POROSITY(1)	UNIFORM	.04	.25		
31	WALL_DENSITY(1)	UNIFORM	2.2	2.6		

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 0.00E+00 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:00:08  Page:   5 **
 Title : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08


-------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:00:08  Page:   6 **
 Title : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:00:08  Page:   7 **
 Title : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:00:08  Page:   8 **
 Title : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:00:08  Page:   9 **
 Title : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     C-14      1.000E+00   2.090E-06   2.090E-06   2.616E-08
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 09:00:08 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 0.00E+00 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 10:37:04  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 10:37:04  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 10:37:04  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 10:37:04  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 10:37:04  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NA-22     1.000E+00   1.150E-05   7.660E-06   1.261E-02
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 10:37:04 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00


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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:19:19  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     FE-55     1.000E+00   6.070E-07   2.690E-06   0.000E+00
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 13:19:19 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:57:36  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-59     1.000E+00   2.100E-07   2.700E-06   0.000E+00
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 13:57:36 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.bld
 ___________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02


-------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:24:38  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CO-60     1.000E+00   2.690E-05   2.190E-04   1.472E-02
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 14:24:38 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:04:37  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NI-63     1.000E+00   5.770E-07   6.290E-06   0.000E+00
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 15:04:37 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.bld
 ___________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:28:55  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SR-90     1.000E+00   1.528E-04   1.308E-03   2.307E-05
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 15:28:55 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.bld
 ___________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:09:57  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03


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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:09:57  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:09:57  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03


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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:09:57  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:09:57  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     NB-94     1.000E+00   7.140E-06   4.140E-04   8.994E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 16:09:57 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:30:50  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     TC-99     1.000E+00   1.460E-06   8.320E-06   1.892E-07
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 16:30:50 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   3 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   4 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   5 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03


-------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   6 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   7 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   8 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 17:01:49  Page:   9 **
 Title : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     AG-108M   1.000E+00   7.620E-06   2.830E-04   9.120E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 17:01:49 Page:   2 **
 Title      : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:34:23  Page:   7 **
 Title : CB Demolition DCF Sensitivity - Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSb125.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:34:23  Page:   8 **
 Title : CB Demolition DCF Sensitivity - Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSb125.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:34:23  Page:   9 **
 Title : CB Demolition DCF Sensitivity - Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSb125.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    SB-125    1.000E+00   2.810E-06   1.220E-05   2.359E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 09:34:23 Page:   2 **
 Title      : CB Demolition DCF Sensitivity - Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSb125.bld
 ____________________________________________________________________

                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:12:00  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:12:00  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:12:00  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:12:00  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:12:00  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-134    1.000E+00   7.330E-05   4.620E-05   8.842E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 10:12:00 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:32:54  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs137.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03


-----------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:32:54  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs137.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:32:54  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs137.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CS-137    1.000E+00   5.000E-05   3.190E-05   3.183E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 10:32:54 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs137.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld




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


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
     PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
     PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
     PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
     PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
     PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:20:49  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    SM-147    0.000E+00   1.850E-04   7.470E-02   0.000E+00
    PM-147    1.000E+00   1.050E-06   3.920E-05   8.094E-08
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 11:20:49 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.bld
 ____________________________________________________________________

                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
     EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
     EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
     EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:41:18  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu152.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
     EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03


-----------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:41:18  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu152.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
     EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:41:18  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu152.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    GD-152    0.000E+00   1.610E-04   2.430E-01   0.000E+00
    EU-152    1.000E+00   6.480E-06   2.210E-04   6.599E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 12:41:18 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu152.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================  ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.00E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.35E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                    *   LAMBDA: 8.00E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:32:02  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03


-------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:32:02  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:32:02  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03


-----------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:32:02  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:32:02  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-154    1.000E+00   9.550E-06   2.860E-04   7.172E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 14:32:02 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.bld
 ___________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:23:28  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:23:28  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:23:28  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:23:28  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:23:28  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     EU-155    1.000E+00   1.530E-06   4.140E-05   2.908E-04
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 15:23:28 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 16:17:38  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNp237.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 16:17:38  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNp237.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 16:17:38  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNp237.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    NP-237    1.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 16:17:38 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNp237.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================  ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
     U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
     TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
     RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
     PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 07:37:31  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05

-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 07:37:31  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld

 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 07:37:31  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld

 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 07:37:31  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld

 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 07:37:31  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld



 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-238    1.000E+00   3.200E-03   3.920E-01   5.700E-07
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 07:37:31 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300
```

Number	Name	Distribution	Parameters			
1	UD	LOGUNIFORM	.0000027	.0027		
2	LAMBDAT	TRUNCATED LOGNORMAL-N	.4187	.88	.001	.999
3	DENSI0(1, 1)	UNIFORM	2.2	2.6		
4	DENSI0(2, 1)	UNIFORM	2.2	2.6		
5	DENSI0(3, 1)	UNIFORM	2.2	2.6		
6	DENSI0(4, 1)	UNIFORM	2.2	2.6		
7	DENSI0(5, 1)	UNIFORM	2.2	2.6		
8	DENSI0(6, 1)	UNIFORM	2.2	2.6		
9	POROS0(1, 1)	UNIFORM	.04	.25		
10	POROS0(2, 1)	UNIFORM	.04	.25		
11	POROS0(3, 1)	UNIFORM	.04	.25		
12	POROS0(4, 1)	UNIFORM	.04	.25		
13	POROS0(5, 1)	UNIFORM	.04	.25		
14	POROS0(6, 1)	UNIFORM	.04	.25		

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                              Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
     U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
     PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
     AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
    U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
    PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
    AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
    U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
    PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
    AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 09:37:47  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu239.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
     U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
     PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
     AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 09:37:47  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu239.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
     U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
     PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
     AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 09:37:47  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu239.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-239    1.000E+00   3.540E-03   4.290E-01   4.952E-07
    U-235     0.000E+00   2.673E-04   1.230E-01   9.019E-04
    PA-231    0.000E+00   1.060E-02   1.280E+00   2.009E-04
    AC-227    0.000E+00   1.480E-02   6.724E+00   2.161E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 09:37:47 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu239.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   3 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld




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



       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   4 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


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


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
     U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
     TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
     TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
     RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
-------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 11:19:17  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-240    1.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 11:19:17 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
    9    POROS0( 1, 1)               UNIFORM                  .04       .25
   10    POROS0( 2, 1)               UNIFORM                  .04       .25
   11    POROS0( 3, 1)               UNIFORM                  .04       .25
   12    POROS0( 4, 1)               UNIFORM                  .04       .25
   13    POROS0( 5, 1)               UNIFORM                  .04       .25
   14    POROS0( 6, 1)               UNIFORM                  .04       .25
 ======  ========================== ======================   ==============================
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                              Ingestion   Inhalation  Submersion
                [pCi/g]      [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
     AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
    AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
    NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
    AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
    NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 13:29:33  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu241.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
    AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
    NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 13:29:33  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu241.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
    AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
    NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 13:29:33  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu241.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-241    1.000E+00   6.840E-05   8.250E-03   2.555E-08
     AM-241    0.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 13:29:33 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu241.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================  =======================  ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:44:13  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAm241.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:44:13  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAm241.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
     NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
     U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
     TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:44:13  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAm241.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _______________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    AM-241    1.000E+00   3.640E-03   4.440E-01   9.554E-05
    NP-237    0.000E+00   4.444E-03   5.400E-01   1.212E-03
    U-233     0.000E+00   2.890E-04   1.350E-01   1.904E-06
    TH-229    0.000E+00   4.027E-03   2.169E+00   1.741E-03
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 14:44:13 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAm241.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
 ======  ========================  =====================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========

Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
     PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
     U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
     U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
     TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
     RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
     PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 16:37:29  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
    U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
-------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 16:37:29  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
    U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 16:37:29  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
    U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
-------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 16:37:29  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
    U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 16:37:29  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld



 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
                [pCi/g]    [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                   (pCi/m3)]
    PU-242    1.000E+00   3.360E-03   4.110E-01   4.684E-07
    U-238     0.000E+00   2.687E-04   1.180E-01   1.597E-04
    U-234     0.000E+00   2.830E-04   1.320E-01   8.912E-07
    TH-230    0.000E+00   5.480E-04   3.260E-01   2.032E-06
    RA-226    0.000E+00   1.321E-03   8.594E-03   1.035E-02
    PB-210    0.000E+00   5.376E-03   1.380E-02   1.043E-05
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 16:37:29 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
    9    POROS0( 1, 1)               UNIFORM                  .04       .25
   10    POROS0( 2, 1)               UNIFORM                  .04       .25
   11    POROS0( 3, 1)               UNIFORM                  .04       .25
   12    POROS0( 4, 1)               UNIFORM                  .04       .25
   13    POROS0( 5, 1)               UNIFORM                  .04       .25
   14    POROS0( 6, 1)               UNIFORM                  .04       .25
 ======  ========================  ======================   ==============================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
              ========  Building Information  ========


       Building Air Exchange Rate: 8.00E-01 1/hr


    Height[m]         Air Exchanges [m3/hr]
    Area [m2]
                     ******************************
                     *                            *
                     *                            *
                     *                           <=Q01: 4.35E+04
    H1:  44.200      *           Room  1          *      Q10 :  4.35E+04
                     *   LAMBDA: 8.00E-01         *
   Area1230.000      *                            *
                     *                            *
                     ******************************


      Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
              ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ ______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                     (pCi/m3)]
     CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
     PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
     U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
     TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
     TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
     RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 06:53:06  Page:   5 **
 Title : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld

 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
    PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
-------------------------------------------------------------------------------------------------
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 06:53:06  Page:   6 **
 Title : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
    PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 06:53:06  Page:   7 **
 Title : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
    PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
-------------------------------------------------------------------------------------------------
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 06:53:06  Page:   8 **
 Title : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
    PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 06:53:06  Page:   9 **
 Title : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.40E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [pCi/g]     [mrem/pCi]  [mrem/pCi]  [mrem/yr/
                                                    (pCi/m3)]
    CM-244    1.000E+00   2.020E-03   2.480E-01   5.735E-07
    PU-240    0.000E+00   3.540E-03   4.290E-01   5.548E-07
    U-236     0.000E+00   2.690E-04   1.250E-01   5.852E-07
    TH-232    0.000E+00   2.730E-03   1.640E+00   1.018E-06
    TH-228    0.000E+00   8.086E-04   3.454E-01   9.378E-03
    RA-228    0.000E+00   1.442E-03   5.078E-03   5.583E-03

-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Probabilistic Output 3.3 12/21/05 06:53:06 Page:   2 **
 Title      : CB Demolition DCF Sensitivity for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ____________________________________
    1    UD                          LOGUNIFORM               .0000027  .0027
    2    LAMBDAT                     TRUNCATED LOGNORMAL-N    .4187     .88       .001      .999
    3    DENSI0( 1, 1)               UNIFORM                  2.2       2.6
    4    DENSI0( 2, 1)               UNIFORM                  2.2       2.6
    5    DENSI0( 3, 1)               UNIFORM                  2.2       2.6
    6    DENSI0( 4, 1)               UNIFORM                  2.2       2.6
    7    DENSI0( 5, 1)               UNIFORM                  2.2       2.6
    8    DENSI0( 6, 1)               UNIFORM                  2.2       2.6
    9    POROS0( 1, 1)               UNIFORM                  .04       .25
   10    POROS0( 2, 1)               UNIFORM                  .04       .25
   11    POROS0( 3, 1)               UNIFORM                  .04       .25
   12    POROS0( 4, 1)               UNIFORM                  .04       .25
   13    POROS0( 5, 1)               UNIFORM                  .04       .25
   14    POROS0( 6, 1)               UNIFORM                  .04       .25
 ======  ========================== ======================   ==============================
```

Attachment 8.7

RESRAD-BUILD v3.3 Probabilistic Output Report Nuclide Specific Parameter Sensitivity Results for Containment Building Renovation/Demolition DCGLs

Title : CB Demolition DCF Sensitivity for H-3
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensH3.BLD

Coefficients for Total at Time: 1

Coefficient =	PRCC
Repetition =	1

Description of Probabilistic Variable	Sig	Coeff
Building Exchange Rate	1	-1.00
Volumetric water content of 1	10	-0.38
Water fraction available for evaporation of 1	30	0.02
Humidity of 1	20	-0.16
Volumetric water content of 2	6	-0.45
Water fraction available for evaporation of 2	28	0.03
Humidity of 2	15	-0.25
Total porosity of contaminated material of 2	3	0.51
Density of material of 2	19	0.18
Volumetric water content of 3	13	-0.34
Water fraction available for evaporation of 3	24	0.12
Total porosity of contaminated material of 3	4	0.47
Density of material of 3	27	0.03
Humidity of 3	14	-0.26
Volumetric water content of 4	11	-0.35
Water fraction available for evaporation of 4	22	0.15
Total porosity of contaminated material of 4	7	0.44
Density of material of 4	25	0.10
Humidity of 4	21	-0.16
Volumetric water content of 5	8	-0.42
Water fraction available for evaporation of 5	29	0.03
Total porosity of contaminated material of 5	2	0.53
Density of material of 5	26	0.05
Humidity of 5	16	-0.25
Volumetric water content of 6	12	-0.34
Water fraction available for evaporation of 6	23	0.15
Total porosity of contaminated material of 6	9	0.42
Density of material of 6	17	0.23
Humidity of 6	18	-0.19
Total porosity of contaminated material of 1	5	0.45
Density of material of 1	31	0.01
R-SQUARE		0.99

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 09:00:08 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensC14.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ ______
  Deposition Velocity                                   2  0.61
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     8  0.16
  Density of region  1 of source  2                     4  0.34
  Density of region  1 of source  3                     3  0.36
  Density of region  1 of source  4                     6  0.26
  Density of region  1 of source  5                     7  0.25
  Density of region  1 of source  6                     5  0.32
  ____________________________________________________     ______
  R-SQUARE                                                  1.00
  ____________________________________________________     ______
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 10:37:04 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNa22.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ ______
  Deposition Velocity                                   2  0.64
  Building Exchange Rate                                7 -0.43
  Density of region  1 of source  1                     1  0.86
  Density of region  1 of source  2                     5  0.56
  Density of region  1 of source  3                     6  0.55
  Density of region  1 of source  4                     4  0.58
  Density of region  1 of source  5                     3  0.59
  Density of region  1 of source  6                     8  0.41
  ____________________________________________________     ______
  R-SQUARE                                                  0.85
  ____________________________________________________     ______
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 13:19:19 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensFe55.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2 -0.62
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      5  0.23
  Density of region  1 of source  2                      4  0.26
  Density of region  1 of source  3                      3  0.28
  Density of region  1 of source  4                      6  0.23
  Density of region  1 of source  5                      7  0.21
  Density of region  1 of source  6                      8  0.19
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 13:57:36 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi59.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    8  0.04
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      7  0.39
  Density of region  1 of source  2                      4  0.50
  Density of region  1 of source  3                      3  0.52
  Density of region  1 of source  4                      6  0.47
  Density of region  1 of source  5                      5  0.47
  Density of region  1 of source  6                      2  0.53
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 14:24:38 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCo60.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   2  0.70
  Building Exchange Rate                                3 -0.61
  Density of region  1 of source  1                     1  0.87
  Density of region  1 of source  2                     7  0.54
  Density of region  1 of source  3                     6  0.55
  Density of region  1 of source  4                     4  0.58
  Density of region  1 of source  5                     5  0.58
  Density of region  1 of source  6                     8  0.35
  ____________________________________________________     _____
  R-SQUARE                                                  0.87
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 15:04:37 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNi63.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   8 -0.21
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     7  0.41
  Density of region  1 of source  2                     3  0.48
  Density of region  1 of source  3                     2  0.49
  Density of region  1 of source  4                     6  0.41
  Density of region  1 of source  5                     5  0.44
  Density of region  1 of source  6                     4  0.44
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 15:28:55 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSr90.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    8 -0.30
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      6  0.39
  Density of region  1 of source  2                      3  0.46
  Density of region  1 of source  3                      2  0.47
  Density of region  1 of source  4                      7  0.38
  Density of region  1 of source  5                      5  0.40
  Density of region  1 of source  6                      4  0.41
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 16:09:57 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNb-94.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    1  0.86
  Building Exchange Rate                                 2 -0.76
  Density of region  1 of source  1                      3  0.64
  Density of region  1 of source  2                      7  0.35
  Density of region  1 of source  3                      5  0.41
  Density of region  1 of source  4                      4  0.46
  Density of region  1 of source  5                      6  0.38
  Density of region  1 of source  6                      8  0.32
  ____________________________________________________     _____
  R-SQUARE                                                  0.85
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 16:30:50 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensTc99.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2  0.60
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      8  0.14
  Density of region  1 of source  2                      4  0.36
  Density of region  1 of source  3                      3  0.38
  Density of region  1 of source  4                      7  0.34
  Density of region  1 of source  5                      6  0.34
  Density of region  1 of source  6                      5  0.35
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/15/05 17:01:49 Page:  29 **
 Title      : CB Demolition DCF Sensitivity - Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAg108m.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    1  0.85
  Building Exchange Rate                                 2 -0.69
  Density of region  1 of source  1                      3  0.56
  Density of region  1 of source  2                      6  0.34
  Density of region  1 of source  3                      5  0.41
  Density of region  1 of source  4                      4  0.42
  Density of region  1 of source  5                      7  0.34
  Density of region  1 of source  6                      8  0.29
  ____________________________________________________     _____
  R-SQUARE                                                  0.83
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 09:34:23 Page:  29 **
 Title      : CB Demolition DCF Sensitivity - Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensSb125.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    1  0.60
  Building Exchange Rate                                 4 -0.42
  Density of region  1 of source  1                      2  0.56
  Density of region  1 of source  2                      7  0.37
  Density of region  1 of source  3                      3  0.42
  Density of region  1 of source  4                      6  0.40
  Density of region  1 of source  5                      5  0.41
  Density of region  1 of source  6                      8  0.35
  ____________________________________________________     _____
  R-SQUARE                                                  0.68
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 10:12:00 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs134.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2  0.61
  Building Exchange Rate                                 7 -0.45
  Density of region  1 of source  1                      1  0.83
  Density of region  1 of source  2                      4  0.55
  Density of region  1 of source  3                      5  0.55
  Density of region  1 of source  4                      6  0.54
  Density of region  1 of source  5                      3  0.58
  Density of region  1 of source  6                      8  0.38
  ____________________________________________________     _____
  R-SQUARE                                                  0.83
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 10:32:54 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCs137.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    1  0.82
  Building Exchange Rate                                 3 -0.61
  Density of region  1 of source  1                      2  0.64
  Density of region  1 of source  2                      6  0.37
  Density of region  1 of source  3                      7  0.36
  Density of region  1 of source  4                      4  0.43
  Density of region  1 of source  5                      5  0.43
  Density of region  1 of source  6                      8  0.28
  ____________________________________________________     _____
  R-SQUARE                                                  0.81
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 11:20:49 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPm147.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2 -0.62
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      6  0.22
  Density of region  1 of source  2                      4  0.25
  Density of region  1 of source  3                      3  0.26
  Density of region  1 of source  4                      5  0.23
  Density of region  1 of source  5                      7  0.21
  Density of region  1 of source  6                      8  0.17
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 12:41:18 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu152.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    1  0.77
  Building Exchange Rate                                 3 -0.71
  Density of region  1 of source  1                      2  0.75
  Density of region  1 of source  2                      7  0.40
  Density of region  1 of source  3                      6  0.42
  Density of region  1 of source  4                      5  0.47
  Density of region  1 of source  5                      4  0.48
  Density of region  1 of source  6                      8  0.30
  ____________________________________________________     _____
  R-SQUARE                                                  0.83
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 14:32:02 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu154.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2  0.75
  Building Exchange Rate                                 3 -0.74
  Density of region  1 of source  1                      1  0.79
  Density of region  1 of source  2                      7  0.45
  Density of region  1 of source  3                      6  0.48
  Density of region  1 of source  4                      5  0.51
  Density of region  1 of source  5                      4  0.52
  Density of region  1 of source  6                      8  0.32
  ____________________________________________________     _____
  R-SQUARE                                                  0.84
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 15:23:28 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensEu155.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    2  0.83
  Building Exchange Rate                                 1 -0.97
  Density of region  1 of source  1                      8  0.00
  Density of region  1 of source  2                      5  0.07
  Density of region  1 of source  3                      3  0.13
  Density of region  1 of source  4                      6  0.07
  Density of region  1 of source  5                      7  0.05
  Density of region  1 of source  6                      4  0.09
  ____________________________________________________     _____
  R-SQUARE                                                  0.95
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/19/05 16:17:38 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensNp237.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                  PRCC
           Repetition  =                                     1
  ____________________________________________________ ___________
  Description of Probabilistic Variable                Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                    8  0.10
  Building Exchange Rate                                 1 -1.00
  Density of region  1 of source  1                      7  0.38
  Density of region  1 of source  2                      4  0.49
  Density of region  1 of source  3                      3  0.51
  Density of region  1 of source  4                      6  0.46
  Density of region  1 of source  5                      5  0.47
  Density of region  1 of source  6                      2  0.53
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 07:37:31 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu238.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   8 -0.32
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     4  0.44
  Density of region  1 of source  2                     6  0.42
  Density of region  1 of source  3                     2  0.48
  Density of region  1 of source  4                     5  0.42
  Density of region  1 of source  5                     3  0.46
  Density of region  1 of source  6                     7  0.41
  Porosity of region  1 of source  1                   11  0.05
  Porosity of region  1 of source  2                   13 -0.03
  Porosity of region  1 of source  3                   10  0.05
  Porosity of region  1 of source  4                   12 -0.04
  Porosity of region  1 of source  5                   14 -0.01
  Porosity of region  1 of source  6                    9  0.09
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 09:37:47 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu239.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   8  0.07
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     7  0.38
  Density of region  1 of source  2                     4  0.48
  Density of region  1 of source  3                     2  0.52
  Density of region  1 of source  4                     6  0.46
  Density of region  1 of source  5                     5  0.46
  Density of region  1 of source  6                     3  0.51
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 11:19:17 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu240.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   9 -0.08
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     6  0.44
  Density of region  1 of source  2                     3  0.47
  Density of region  1 of source  3                     4  0.46
  Density of region  1 of source  4                     5  0.44
  Density of region  1 of source  5                     2  0.48
  Density of region  1 of source  6                     7  0.40
  Porosity of region  1 of source  1                   13 -0.01
  Porosity of region  1 of source  2                   12  0.03
  Porosity of region  1 of source  3                   11  0.04
  Porosity of region  1 of source  4                   10 -0.04
  Porosity of region  1 of source  5                   14  0.01
  Porosity of region  1 of source  6                    8  0.13
  ____________________________________________________     _____
  R-SQUARE                                                 1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 13:29:33 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu241.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   2 -0.57
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     5  0.31
  Density of region  1 of source  2                     3  0.35
  Density of region  1 of source  3                     4  0.35
  Density of region  1 of source  4                     6  0.27
  Density of region  1 of source  5                     7  0.27
  Density of region  1 of source  6                     8  0.25
  ____________________________________________________     _____
  R-SQUARE                                                 1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 14:44:13 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensAm241.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   8 -0.01
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     7  0.39
  Density of region  1 of source  2                     4  0.49
  Density of region  1 of source  3                     2  0.52
  Density of region  1 of source  4                     5  0.47
  Density of region  1 of source  5                     6  0.45
  Density of region  1 of source  6                     3  0.50
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

```
** RESRAD-BUILD Regression and Correlation output 3.3 12/20/05 16:37:29 Page:  29 **
 Title      : CB Demolition DCF Sensitivity for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensPu242.BLD
 ____________________________________________________________________________

  Coefficients for Total     at Time:   1
          Coefficient  =                                PRCC
           Repetition  =                                   1
  ____________________________________________________ ___________
  Description of Probabilistic Variable               Sig Coeff
  ____________________________________________________ ___ _____
  Deposition Velocity                                   9 -0.07
  Building Exchange Rate                                1 -1.00
  Density of region  1 of source  1                     5  0.44
  Density of region  1 of source  2                     3  0.47
  Density of region  1 of source  3                     4  0.46
  Density of region  1 of source  4                     6  0.44
  Density of region  1 of source  5                     2  0.48
  Density of region  1 of source  6                     7  0.41
  Porosity of region  1 of source  1                   14  0.00
  Porosity of region  1 of source  2                   12  0.03
  Porosity of region  1 of source  3                   11  0.04
  Porosity of region  1 of source  4                   10 -0.05
  Porosity of region  1 of source  5                   13  0.01
  Porosity of region  1 of source  6                    8  0.12
  ____________________________________________________     _____
  R-SQUARE                                                  1.00
  ____________________________________________________     _____
 -Rank is set to zero if the dose is zero or the correlation matrix is singular.
 -R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it
 provides a measure of the variation in the dependent variable (Dose) explained
 by regression on the independent variables.
```

Title : CB Demolition DCF Sensitivity for Cm-244
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMSensCm244.BLD

Coefficients for Total at Time: 1

Coefficient =	PRCC
Repetition =	1

Description of Probabilistic Variable	Sig	Coeff
Deposition Velocity	2	-0.56
Building Exchange Rate	1	-1.00
Density of region 1 of source 1	5	0.34
Density of region 1 of source 2	8	0.27
Density of region 1 of source 3	3	0.39
Density of region 1 of source 4	6	0.32
Density of region 1 of source 5	4	0.39
Density of region 1 of source 6	7	0.30
Porosity of region 1 of source 1	9	0.05
Porosity of region 1 of source 2	14	-0.01
Porosity of region 1 of source 3	13	0.03
Porosity of region 1 of source 4	10	-0.04
Porosity of region 1 of source 5	11	0.04
Porosity of region 1 of source 6	12	0.04
R-SQUARE		1.00

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Attachment 8.8

RESRAD-BUILD v3.3 Input Parameters for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.50E+00	0.00E+00	Concrete
1	3	2.50E+00	0.00E+00	Concrete
1	4	2.50E+00	0.00E+00	Concrete
1	5	2.50E+00	0.00E+00	Concrete
1	6	2.50E+00	0.00E+00	Concrete

```
             ========  Building Information  ========


      Building Air Exchange Rate: 8.39E-01 1/hr


   Height[m]         Air Exchanges [m3/hr]
   Area [m2]
                    ******************************
                    *                            *
                    *                            *
                    *                           <=Q01: 4.56E+04
   H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                    *   LAMBDA: 8.39E-01         *
  Area1230.000      *                            *
                    *                            *
                    ******************************


     Deposition velocity: 0.00E+00 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                          Ingestion   Inhalation  Submersion
                [dpm/g]   [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                  (dpm/m3)]
    H-3       1.000E+03  2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 08:36:53  Page:   5 **
 Title : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld


 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     H-3       1.000E+03   2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 08:36:53  Page:   6 **
 Title : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     H-3       1.000E+03   2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 08:36:53  Page:   7 **
 Title : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.80 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     H-3       1.000E+03   2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 08:36:53  Page:   8 **
 Title : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     H-3       1.000E+03   2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 08:36:53  Page:   9 **
 Title : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Tritium Volume Parameters ::
             Total Thickness:          1.000E+00 [cm]
             Dry Thickness:            0.000E+00 [cm]
             Volumetric Water Content: 9.200E-02
             Wall Total Porosity:      1.970E-01
             Volatization Fraction:    8.230E-01
             Wall Density:             2.500E+00 [gm/cm3]
             Humidity:                 8.150E+00 [gm/m3]
             Erosion rate:             4.100E-04 [cm/d]
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     H-3       1.000E+03   2.883E-08   2.883E-08   1.741E-08
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 08:36:53 Page:   2 **
 Title      : CB Demolition DCF for H-3
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld
 ____________________________________________________________________


                   Probabilistic Input

 Number of Sample Runs:  300


 Number  Name                        Distribution             Parameters
 ______  __________________________  _______________________  ________________________________
    1    H3RMVF( 1)                  TRIANGULAR               .5        .75       1
    2    H3RMVF( 2)                  TRIANGULAR               .5        .75       1
    3    H3RMVF( 5)                  TRIANGULAR               .5        .75       1
 ======  ==========================  =======================  ================================
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
             ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

```
 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:23:29  Page:   6 **
 Title : CB Demolition DCF for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMC14DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:23:29  Page:   7 **
 Title : CB Demolition DCF for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMC14DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:23:29  Page:   8 **
 Title : CB Demolition DCF for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMC14DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:23:29  Page:   9 **
 Title : CB Demolition DCF for C-14
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMC14DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     C-14      1.000E+03   9.414E-07   9.414E-07   1.179E-08
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 12:58:44  Page:   4 **
 Title : CB Demolition DCF for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNa22DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 12:58:44  Page:   5 **
 Title : CB Demolition DCF for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNa22DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 12:58:44  Page:   6 **
 Title : CB Demolition DCF for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNa22DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 12:58:44  Page:   7 **
 Title : CB Demolition DCF for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNa22DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NA-22     1.000E+03   5.180E-06   3.450E-06   5.682E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   4 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   5 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   6 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   7 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   8 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00


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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:   9 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     FE-55     1.000E+03   2.734E-07   1.212E-06   0.000E+00
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

```
==========  Receptor Information  ==========
```

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

```
===  Receptor-Source Shielding Relationship  ===
```

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
========  Building Information  ========

Building Air Exchange Rate: 8.39E-01 1/hr

Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************

Deposition velocity: 1.00E-02 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   4 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   5 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.60  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   6 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.60 y:  39.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00


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** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   7 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.80 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   8 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:11:59  Page:   9 **
 Title : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-59     1.000E+03   9.459E-08   1.216E-06   0.000E+00
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	UD	LOGUNIFORM	.0000027 .0027

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   4 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03


-----------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   5 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   6 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   7 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   8 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:   9 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CO-60     1.000E+03   1.212E-05   9.865E-05   6.629E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *          Room  1           *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:19:12  Page:   4 **
 Title : CB Demolition DCF for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi63DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:19:12  Page:   5 **
 Title : CB Demolition DCF for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi63DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:19:12  Page:   6 **
 Title : CB Demolition DCF for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi63DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/g]      [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:19:12  Page:   7 **
 Title : CB Demolition DCF for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi63DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                [dpm/g]      [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NI-63     1.000E+03   2.599E-07   2.833E-06   0.000E+00
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *          Room  1           *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   4 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   5 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   6 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   7 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   8 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:   9 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SR-90     1.000E+03   6.883E-05   5.894E-04   1.039E-05
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   4 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   5 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  17.50  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   6 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


 Source:  3
        Location::  Room :  1  x:  17.50 y:  35.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03


-------------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   7 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


 Source:  4
        Location::  Room :  1  x:  35.00 y:  17.50  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   8 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


 Source:  5
        Location::  Room :  1  x:  17.50 y:  17.50  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03


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** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:   9 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NB-94     1.000E+03   3.216E-06   1.865E-04   4.051E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   4 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   5 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   6 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   7 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   8 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08


-----------------------------------------------------------------------------------------------------


** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:   9 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     TC-99     1.000E+03   6.577E-07   3.748E-06   8.523E-08
```

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   4 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   5 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  17.50  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   6 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


 Source:  3
        Location::  Room :  1  x:  17.50 y:  35.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   7 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


 Source:  4
        Location::  Room :  1  x:  35.00 y:  17.50  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   8 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


 Source:  5
        Location::  Room :  1  x:  17.50 y:  17.50  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:   9 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     AG-108M   1.000E+03   3.432E-06   1.275E-04   4.108E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   4 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   5 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   6 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   7 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   8 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:   9 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     SB-125    1.000E+03   1.266E-06   5.495E-06   1.063E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   4 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   5 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   6 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   7 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   8 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:   9 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-134    1.000E+03   3.302E-05   2.081E-05   3.983E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

```
==========  Receptor Information  ==========
```

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

```
===  Receptor-Source Shielding Relationship  ===
```

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
========  Building Information  ========

Building Air Exchange Rate: 8.39E-01 1/hr

Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   4 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   5 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   6 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   7 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   8 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:   9 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     CS-137    1.000E+03   2.252E-05   1.437E-05   1.434E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

```
==========  Receptor Information  ==========
```

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

```
===  Receptor-Source Shielding Relationship  ===
```

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

```
========  Building Information  ========

Building Air Exchange Rate: 8.39E-01 1/hr

 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************

Deposition velocity: 1.52E-05 [m/s]   Resuspension Rate: 1.33E-09 [1/s]
```

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
    PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
    PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:30:48  Page:   6 **
 Title : CB Demolition DCF for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPm147DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
     PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:30:48  Page:   7 **
 Title : CB Demolition DCF for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPm147DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
     PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
     PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     SM-147    0.000E+00   8.333E-05   3.365E-02   0.000E+00
     PM-147    1.000E+03   4.730E-07   1.766E-05   3.646E-08
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
    EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ___________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
    EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:14:27  Page:   6 **
 Title : CB Demolition DCF for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu152DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
     EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:14:27  Page:   7 **
 Title : CB Demolition DCF for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu152DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
     EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
     EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     GD-152    0.000E+00   7.252E-05   1.095E-01   0.000E+00
     EU-152    1.000E+03   2.919E-06   9.955E-05   2.973E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   4 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   5 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   6 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   7 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   8 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:   9 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ___________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-154    1.000E+03   4.302E-06   1.288E-04   3.230E-03
```

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

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

```
             ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

```
 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:56:01  Page:   6 **
 Title : CB Demolition DCF for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu155DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:56:01  Page:   7 **
 Title : CB Demolition DCF for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu155DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:56:01  Page:   8 **
 Title : CB Demolition DCF for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu155DCF.bld


 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:56:01  Page:   9 **
 Title : CB Demolition DCF for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu155DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.40E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     EU-155    1.000E+03   6.892E-07   1.865E-05   1.310E-04
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters	
1	DENSI0(1, 1)	UNIFORM	2.2	2.6
2	DENSI0(2, 1)	UNIFORM	2.2	2.6
3	DENSI0(4, 1)	UNIFORM	2.2	2.6
4	DENSI0(5, 1)	UNIFORM	2.2	2.6
5	DENSI0(6, 1)	UNIFORM	2.2	2.6

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
             ========  Source Information  ========


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                             Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                              Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _______________  ________________________________
                              Ingestion   Inhalation  Submersion
                 [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                     (dpm/m3)]
     NP-237    1.000E+03   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	UD	LOGUNIFORM	.0000027 .0027

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 08:38:23  Page:   4 **
 Title : CB Demolition DCF for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu238DCF.bld


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

 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
     U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
     TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
     RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
     PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 08:38:23  Page:   5 **
 Title : CB Demolition DCF for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu238DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01

         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
     U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
     TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
     RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
     PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
-------------------------------------------------------------------------------------------------------
```



```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
-----------------------------------------------------------------------------------------------------
```



```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-238    1.000E+03   1.441E-03   1.766E-01   2.567E-07
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters	
1	POROS0(1, 1)	UNIFORM	.04	.25
2	POROS0(2, 1)	UNIFORM	.04	.25
3	POROS0(3, 1)	UNIFORM	.04	.25
4	POROS0(4, 1)	UNIFORM	.04	.25
5	POROS0(5, 1)	UNIFORM	.04	.25
6	POROS0(6, 1)	UNIFORM	.04	.25

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

Number of Sources : 6
Number of Receptors: 1
Total Time   : 1.790000E+02 days
Fraction Inside   : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 10:30:40  Page:   4 **
 Title : CB Demolition DCF for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu239DCF.bld


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


 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 10:30:40  Page:   5 **
 Title : CB Demolition DCF for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu239DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01



         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-239    1.000E+03   1.595E-03   1.932E-01   2.231E-07
     U-235     0.000E+00   1.204E-04   5.541E-02   4.063E-04
     PA-231    0.000E+00   4.775E-03   5.766E-01   9.049E-05
     AC-227    0.000E+00   6.665E-03   3.029E+00   9.734E-04
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	UD	LOGUNIFORM	.0000027 .0027

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   4 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld


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

Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
     U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
     TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
     TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
     RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   5 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld

Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
     U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
     TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
     TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
     RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   6 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld

 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   7 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   8 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld

 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 12:27:50  Page:   9 **
 Title : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld


 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.97E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-240    1.000E+03   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters	
1	UD	LOGUNIFORM	.0000027	.0027
2	POROS0(1, 1)	UNIFORM	.04	.25
3	POROS0(2, 1)	UNIFORM	.04	.25
4	POROS0(3, 1)	UNIFORM	.04	.25
5	POROS0(4, 1)	UNIFORM	.04	.25
6	POROS0(5, 1)	UNIFORM	.04	.25

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
              ========  Source Information  ========

Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-241    1.000E+03   3.081E-05   3.716E-03   1.151E-08
     AM-241    0.000E+00   1.640E-03   2.000E-01   4.304E-05
     NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
-------------------------------------------------------------------------------------------------------
```



```
 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04


    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-241    1.000E+03   3.081E-05   3.716E-03   1.151E-08
     AM-241    0.000E+00   1.640E-03   2.000E-01   4.304E-05
     NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:33:39  Page:   6 **
 Title : CB Demolition DCF for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu241DCF.bld


 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-241    1.000E+03   3.081E-05   3.716E-03   1.151E-08
    AM-241    0.000E+00   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
-----------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:33:39  Page:   7 **
 Title : CB Demolition DCF for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu241DCF.bld


 Source:  4
        Location::  Room :  1  x:  39.80 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04



   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ___________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-241    1.000E+03   3.081E-05   3.716E-03   1.151E-08
    AM-241    0.000E+00   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

Source: 5
Location:: Room : 1 x: 19.80 y: 0.00 z: 22.10[m]
Geometry:: Type: Volume Area:1.38E+03 [m2] Direction: y
Pathway ::
Direct Ingestion Rate: 5.200E-02 [gm/hr]
Fraction released to air: 1.000E-01

Containment :: Number of Regions: 1 Contaminated Region: 1
Region : 1
Thickness [cm] :1.50E+01
Density [g/cm3] :2.50E+00
Material :Concrete
Erosion Rate [cm/day] :4.10E-04

Contamination::

Nuclide	Concentration [dpm/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+03	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

Source: 6
Location:: Room : 1 x: 19.80 y: 19.80 z: 44.20[m]
Geometry:: Type: Volume Area:1.23E+03 [m2] Direction: z
Pathway ::
Direct Ingestion Rate: 5.200E-02 [gm/hr]
Fraction released to air: 1.000E-01

Containment :: Number of Regions: 1 Contaminated Region: 1
Region : 1
Thickness [cm] :1.50E+01
Density [g/cm3] :2.50E+00
Material :Concrete
Erosion Rate [cm/day] :4.10E-04

Contamination::

Nuclide	Concentration [dpm/g]	Dose Conversion Factor (Library: FGR 13 Morbidity Ingestion [mrem/dpm]	Inhalation [mrem/dpm]	Submersion [mrem/yr/ (dpm/m3)]
PU-241	1.000E+03	3.081E-05	3.716E-03	1.151E-08
AM-241	0.000E+00	1.640E-03	2.000E-01	4.304E-05
NP-237	0.000E+00	2.002E-03	2.432E-01	5.461E-04
U-233	0.000E+00	1.302E-04	6.081E-02	8.576E-07
TH-229	0.000E+00	1.814E-03	9.768E-01	7.842E-04

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
             ========  Source Information  ========


 Source:  1
        Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
     NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  2
        Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01



        Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04



    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
     NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
     U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
     TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    AM-241    1.000E+03   1.640E-03   2.000E-01   4.304E-05
    NP-237    0.000E+00   2.002E-03   2.432E-01   5.461E-04
    U-233     0.000E+00   1.302E-04   6.081E-02   8.576E-07
    TH-229    0.000E+00   1.814E-03   9.768E-01   7.842E-04
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters
1	UD	LOGUNIFORM	.0000027 .0027

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

```
Number of Sources  :   6
Number of Receptors:   1
Total Time         :  1.790000E+02 days
Fraction Inside    :  3.510000E-01
```

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
Height[m]         Air Exchanges [m3/hr]
Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
H1:  44.200       *          Room  1           *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 17:48:07  Page:   4 **
 Title : CB Demolition DCF for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu242DCF.bld


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

 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
     U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
     U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
     TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
     RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
     PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 17:48:07  Page:   5 **
 Title : CB Demolition DCF for Pu-242
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu242DCF.bld


 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01

         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                        (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
     U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
     U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
     TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
     RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
     PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
    U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
    U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01

        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01

   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
    U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

```
 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
   _______ _____________  ________________________________
                           Ingestion   Inhalation  Submersion
                [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                   (dpm/m3)]
    PU-242    1.000E+03   1.514E-03   1.851E-01   2.110E-07
    U-238     0.000E+00   1.210E-04   5.317E-02   7.191E-05
    U-234     0.000E+00   1.275E-04   5.946E-02   4.014E-07
    TH-230    0.000E+00   2.468E-04   1.468E-01   9.155E-07
    RA-226    0.000E+00   5.950E-04   3.871E-03   4.663E-03
    PB-210    0.000E+00   2.422E-03   6.214E-03   4.698E-06
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters	
1	UD	LOGUNIFORM	.0000027	.0027
2	POROS0(1, 1)	UNIFORM	.04	.25
3	POROS0(2, 1)	UNIFORM	.04	.25
4	POROS0(3, 1)	UNIFORM	.04	.25
5	POROS0(4, 1)	UNIFORM	.04	.25
6	POROS0(5, 1)	UNIFORM	.04	.25

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

Number of Sources : 6
Number of Receptors: 1
Total Time : 1.790000E+02 days
Fraction Inside : 3.510000E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	19.800	19.800	1.000	1.000	3.84E+01	0.00E+00

=== Receptor-Source Shielding Relationship ===

Receptor	Source	Density [g/cm3]	Thickness [cm]	Material
1	1	2.40E+00	0.00E+00	Concrete
1	2	2.40E+00	0.00E+00	Concrete
1	3	2.40E+00	0.00E+00	Concrete
1	4	2.40E+00	0.00E+00	Concrete
1	5	2.40E+00	0.00E+00	Concrete
1	6	2.40E+00	0.00E+00	Concrete

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

Building Air Exchange Rate: 8.39E-01 1/hr

```
 Height[m]         Air Exchanges [m3/hr]
 Area [m2]
                  ******************************
                  *                            *
                  *                            *
                  *                           <=Q01: 4.56E+04
 H1:  44.200      *           Room  1          *      Q10 :  4.56E+04
                  *   LAMBDA: 8.39E-01         *
Area1230.000      *                            *
                  *                            *
                  ******************************
```

Deposition velocity: 1.52E-05 [m/s] Resuspension Rate: 1.33E-09 [1/s]

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   4 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld


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

 Source:  1
         Location::  Room :  1  x:  19.80 y:  19.80  z:   0.00[m]
         Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                         (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
     PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
     U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
     TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
     TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
     RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   5 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld

 Source:  2
         Location::  Room :  1  x:   0.00 y:  19.80  z:  22.10[m]
         Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
         Pathway ::
              Direct Ingestion Rate:    5.200E-02 [gm/hr]
              Fraction released to air: 1.000E-01


         Containment ::   Number of Regions:  1 Contaminated Region:  1
     Region                :    1
     Thickness [cm]        :1.50E+01
     Density [g/cm3]       :2.50E+00
     Material              :Concrete
     Erosion Rate [cm/day] :4.10E-04
     Porosity              :1.00E-01
     Eff. Diffusion [m2/s] :2.00E-05
     Emanation Fractions(1):2.00E-01
                         (2):2.00E-01

    Contamination::
     Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                 [dpm/g]    [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
     CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
     PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
     U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
     TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
     TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
     RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   6 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld

 Source:  3
        Location::  Room :  1  x:  19.80 y:  39.60  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
    PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   7 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld

 Source:  4
        Location::  Room :  1  x:  39.60 y:  19.80  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: x
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
    PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   8 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld

 Source:  5
        Location::  Room :  1  x:  19.80 y:   0.00  z:  22.10[m]
        Geometry::  Type: Volume      Area:1.38E+03 [m2]  Direction: y
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
    PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
-------------------------------------------------------------------------------------------------------

** RESRAD-BUILD Dose Program Output, Version 3.3 12/21/05 07:58:32  Page:   9 **
 Title : CB Demolition DCF for Cm-244
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld

 Source:  6
        Location::  Room :  1  x:  19.80 y:  19.80  z:  44.20[m]
        Geometry::  Type: Volume      Area:1.23E+03 [m2]  Direction: z
        Pathway ::
             Direct Ingestion Rate:    5.200E-02 [gm/hr]
             Fraction released to air: 1.000E-01


        Containment ::   Number of Regions:  1 Contaminated Region:  1
    Region                :    1
    Thickness [cm]        :1.50E+01
    Density [g/cm3]       :2.50E+00
    Material              :Concrete
    Erosion Rate [cm/day] :4.10E-04
    Porosity              :1.00E-01
    Eff. Diffusion [m2/s] :2.00E-05
    Emanation Fractions(1):2.00E-01
                       (2):2.00E-01


   Contamination::
    Nuclide Concentration       Dose Conversion Factor (Library: FGR 13 Morbidity
    _______ _____________  ________________________________
                            Ingestion   Inhalation  Submersion
                [dpm/g]     [mrem/dpm]  [mrem/dpm]  [mrem/yr/
                                                    (dpm/m3)]
    CM-244    1.000E+03   9.099E-04   1.117E-01   2.583E-07
    PU-240    0.000E+00   1.595E-03   1.932E-01   2.499E-07
    U-236     0.000E+00   1.212E-04   5.631E-02   2.636E-07
    TH-232    0.000E+00   1.230E-03   7.387E-01   4.588E-07
    TH-228    0.000E+00   3.642E-04   1.556E-01   4.224E-03
    RA-228    0.000E+00   6.496E-04   2.287E-03   2.515E-03
```

Probabilistic Input

Number of Sample Runs: 300

Number	Name	Distribution	Parameters	
1	POROS0(1, 1)	UNIFORM	.04	.25
2	POROS0(2, 1)	UNIFORM	.04	.25
3	POROS0(3, 1)	UNIFORM	.04	.25
4	POROS0(4, 1)	UNIFORM	.04	.25
5	POROS0(5, 1)	UNIFORM	.04	.25
6	POROS0(6, 1)	UNIFORM	.04	.25

Attachment 8.9

RESRAD-BUILD v3.3 Output Report Nuclide Specific Results for Derivation of Containment Building Renovation/Demolition Single Nuclide DCFs

** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 08:36:53 Page: 3 **
Title : CB Demolition DCF for H-3
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemH3DCF.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	Source 1	2	3	4	5	6	Total
*** 1***							
Minimum	8.67E-03	9.46E-03	1.38E-02	1.38E-02	9.50E-03	1.24E-02	6.86E-02
Maximum	1.43E-02	1.61E-02	1.38E-02	1.38E-02	1.61E-02	1.24E-02	8.31E-02
Average	1.15E-02	1.28E-02	1.38E-02	1.38E-02	1.28E-02	1.24E-02	7.72E-02
Std.Dev	1.24E-03	1.42E-03	0.00E+00	0.00E+00	1.42E-03	0.00E+00	2.35E-03
* Total *							
Minimum	8.67E-03	9.46E-03	1.38E-02	1.38E-02	9.50E-03	1.24E-02	6.86E-02
Maximum	1.43E-02	1.61E-02	1.38E-02	1.38E-02	1.61E-02	1.24E-02	8.31E-02
Average	1.15E-02	1.28E-02	1.38E-02	1.38E-02	1.28E-02	1.24E-02	7.72E-02
Std.Dev	1.24E-03	1.42E-03	0.00E+00	0.00E+00	1.42E-03	0.00E+00	2.35E-03

** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 09:23:29 Page: 14 **
Title : CB Demolition DCF for C-14
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDMC14DCF.bld
Evaluation Time: 0.00000000E+00 years

```
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==================================================
===                                            ===
===        RESRAD-BUILDDose Tables           ===
===                                            ===
==================================================
==================================================
```

Source Contributions to Receptor Doses
[mrem]

	Source 1	Source 2	Source 3	Source 4	Source 5	Source 6	Total
Receptor 1	7.72E-02	7.69E-02	7.69E-02	7.69E-02	7.69E-02	7.65E-02	4.61E-01
Total	7.72E-02	7.69E-02	7.69E-02	7.69E-02	7.69E-02	7.65E-02	4.61E-01

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 12:58:44  Page:  14 **
 Title : CB Demolition DCF for Na-22
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNa22DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
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              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    9.61E+02 1.62E+02 1.62E+02 1.62E+02 1.62E+02 6.88E+01 1.68E+03
 Total          9.61E+02 1.62E+02 1.62E+02 1.62E+02 1.62E+02 6.88E+01 1.68E+03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 13:44:11  Page:  14 **
 Title : CB Demolition DCF for Fe-55
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemFe55DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
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              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    2.48E-02 2.52E-02 2.52E-02 2.52E-02 2.52E-02 2.48E-02 1.50E-01
 Total          2.48E-02 2.52E-02 2.52E-02 2.52E-02 2.52E-02 2.48E-02 1.50E-01
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/15/05 14:11:59 Page:   3 **
 Title      : CB Demolition DCF for Ni-59
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi59DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Maximum   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Average   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Std.Dev   4.43E-08   4.97E-08   4.97E-08   4.97E-08   4.97E-08   4.43E-08   2.88E-07

 ____________________________________________________________________________________
 * Total *
 Minimum   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Maximum   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Average   1.08E-02   1.12E-02   1.12E-02   1.12E-02   1.12E-02   1.08E-02   6.64E-02

 Std.Dev   4.43E-08   4.97E-08   4.97E-08   4.97E-08   4.97E-08   4.43E-08   2.87E-07
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 14:50:25  Page:  14 **
 Title : CB Demolition DCF for Co-60
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCo60DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                  [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    1.13E+03 1.89E+02 1.89E+02 1.89E+02 1.89E+02 8.02E+01 1.96E+03
 Total          1.13E+03 1.89E+02 1.89E+02 1.89E+02 1.89E+02 8.02E+01 1.96E+03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:19:12  Page:  14 **
 Title : CB Demolition DCF for Ni-63
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNi63DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    2.83E-02 2.92E-02 2.92E-02 2.92E-02 2.92E-02 2.83E-02 1.73E-01
 Total          2.83E-02 2.92E-02 2.92E-02 2.92E-02 2.92E-02 2.83E-02 1.73E-01
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 15:58:30  Page:  14 **
 Title : CB Demolition DCF for Sr-90
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSr90DCF.bld
 Evaluation Time:  0.00000000E+00  years


              ================================================
              ================================================
              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    8.80E+00 7.53E+00 7.53E+00 7.53E+00 7.53E+00 7.16E+00 4.61E+01
 Total          8.80E+00 7.53E+00 7.53E+00 7.53E+00 7.53E+00 7.16E+00 4.61E+01
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 15:36:11  Page:  14 **
 Title : CB Demolition DCF for Nb-94
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNb-94DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ================================================
              ===                                          ===
              ===        RESRAD-BUILDDose Tables           ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    6.79E+02 1.18E+02 1.46E+02 1.46E+02 2.81E+02 5.22E+01 1.42E+03
 Total          6.79E+02 1.18E+02 1.46E+02 1.46E+02 2.81E+02 5.22E+01 1.42E+03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/15/05 16:50:09  Page:  14 **
 Title : CB Demolition DCF for Tc-99
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemTc99DCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===                                          ===
              ===        RESRAD-BUILDDose Tables           ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    6.96E-02 6.47E-02 6.47E-02 6.47E-02 6.47E-02 6.27E-02 3.91E-01
 Total          6.96E-02 6.47E-02 6.47E-02 6.47E-02 6.47E-02 6.27E-02 3.91E-01
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 11/29/05 16:36:39  Page:  14 **
 Title : CB Demolition DCF for Ag-108m
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAg108mDCF.bld
 Evaluation Time:  0.00000000E+00  years


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              ===                                          ===
              ===        RESRAD-BUILDDose Tables          ===
              ===                                          ===
              ================================================
              ================================================


                   Source Contributions to Receptor Doses
                    ======================================
                                   [mrem]

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    6.83E+02 1.20E+02 1.48E+02 1.48E+02 2.83E+02 5.32E+01 1.44E+03
 Total          6.83E+02 1.20E+02 1.48E+02 1.48E+02 2.83E+02 5.32E+01 1.44E+03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 09:59:49  Page:  14 **
 Title : CB Demolition DCF for Sb-125
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemSb125DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    1.71E+02 2.94E+01 2.94E+01 2.94E+01 2.94E+01 1.27E+01 3.01E+02
 Total          1.71E+02 2.94E+01 2.94E+01 2.94E+01 2.94E+01 1.27E+01 3.01E+02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 11:08:54  Page:  14 **
 Title : CB Demolition DCF for Cs-134
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs134DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    6.69E+02 1.16E+02 1.16E+02 1.16E+02 1.16E+02 5.11E+01 1.19E+03
 Total          6.69E+02 1.16E+02 1.16E+02 1.16E+02 1.16E+02 5.11E+01 1.19E+03
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 10:56:40  Page:  14 **
 Title : CB Demolition DCF for Cs-137
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCs137DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    2.43E+02 4.37E+01 4.37E+01 4.37E+01 4.37E+01 2.00E+01 4.38E+02
 Total          2.43E+02 4.37E+01 4.37E+01 4.37E+01 4.37E+01 2.00E+01 4.38E+02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 12:30:48  Page:  14 **
 Title : CB Demolition DCF for Pm-147
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPm147DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    8.90E-02 9.25E-02 9.25E-02 9.25E-02 9.25E-02 8.63E-02 5.45E-01
 Total          8.90E-02 9.25E-02 9.25E-02 9.25E-02 9.25E-02 8.63E-02 5.45E-01
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 14:14:27  Page:  14 **
 Title : CB Demolition DCF for Eu-152
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu152DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                Source   Source   Source   Source   Source   Source   Total
                   1        2        3        4        5        6
 Receptor  1    4.89E+02 8.35E+01 8.35E+01 8.35E+01 8.35E+01 3.60E+01 8.59E+02
 Total          4.89E+02 8.35E+01 8.35E+01 8.35E+01 8.35E+01 3.60E+01 8.59E+02
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/19/05 15:12:19  Page:  14 **
 Title : CB Demolition DCF for Eu-154
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu154DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    5.36E+02 9.11E+01 9.11E+01 9.11E+01 9.11E+01 3.91E+01 9.40E+02
 Total          5.36E+02 9.11E+01 9.11E+01 9.11E+01 9.11E+01 3.91E+01 9.40E+02
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/19/05 15:56:01 Page:   3 **
 Title      : CB Demolition DCF for Eu-155
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemEu155DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                       Source
  Receptor      1          2          3          4          5          6        Total
*** 1***
 Minimum   1.03E+01   1.72E+00   1.73E+00   1.72E+00   1.72E+00   7.41E-01   1.80E+01

 Maximum   1.04E+01   1.73E+00   1.73E+00   1.73E+00   1.73E+00   7.55E-01   1.80E+01

 Average   1.03E+01   1.72E+00   1.73E+00   1.72E+00   1.72E+00   7.48E-01   1.80E+01

 Std.Dev   6.59E-03   4.75E-03   0.00E+00   4.75E-03   4.75E-03   4.03E-03   1.13E-02

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 * Total *
 Minimum   1.03E+01   1.72E+00   1.73E+00   1.72E+00   1.72E+00   7.41E-01   1.80E+01

 Maximum   1.04E+01   1.73E+00   1.73E+00   1.73E+00   1.73E+00   7.55E-01   1.80E+01

 Average   1.03E+01   1.72E+00   1.73E+00   1.72E+00   1.72E+00   7.48E-01   1.80E+01

 Std.Dev   6.59E-03   4.75E-03   0.00E+00   4.75E-03   4.75E-03   4.03E-03   1.13E-02
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 06:42:43 Page:   3 **
 Title      : CB Demolition DCF for Np-237
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemNp237DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   9.07E+02   9.28E+02   9.28E+02   9.28E+02   9.28E+02   8.38E+02   5.46E+03

 Maximum   9.10E+02   9.31E+02   9.31E+02   9.31E+02   9.31E+02   8.41E+02   5.48E+03

 Average   9.08E+02   9.28E+02   9.28E+02   9.28E+02   9.28E+02   8.39E+02   5.46E+03

 Std.Dev   6.44E-01   7.23E-01   7.23E-01   7.23E-01   7.23E-01   6.44E-01   4.18E+00

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 * Total *
 Minimum   9.07E+02   9.28E+02   9.28E+02   9.28E+02   9.28E+02   8.38E+02   5.46E+03

 Maximum   9.10E+02   9.31E+02   9.31E+02   9.31E+02   9.31E+02   8.41E+02   5.48E+03

 Average   9.08E+02   9.28E+02   9.28E+02   9.28E+02   9.28E+02   8.39E+02   5.46E+03

 Std.Dev   6.44E-01   7.23E-01   7.23E-01   7.23E-01   7.23E-01   6.44E-01   4.18E+00
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 08:38:23 Page:   3 **
 Title      : CB Demolition DCF for Pu-238
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu238DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Maximum   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Average   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Std.Dev   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00

 ____________________________________________________________________________________
 * Total *
 Minimum   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Maximum   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Average   6.04E+02   6.63E+02   6.63E+02   6.63E+02   6.63E+02   6.04E+02   3.86E+03

 Std.Dev   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 10:30:40 Page:   3 **
 Title      : CB Demolition DCF for Pu-239
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu239DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Maximum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Average   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Std.Dev   2.01E-02   2.25E-02   2.25E-02   2.25E-02   2.25E-02   2.01E-02   1.30E-01

 ____________________________________________________________________________________
 * Total *
 Minimum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Maximum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Average   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Std.Dev   2.01E-02   2.25E-02   2.25E-02   2.25E-02   2.25E-02   2.01E-02   1.30E-01
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 12:27:50 Page:   3 **
 Title      : CB Demolition DCF for Pu-240
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu240DCF.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Maximum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Average   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Std.Dev   7.65E-02   8.58E-02   8.58E-02   8.58E-02   8.58E-02   7.65E-02   4.96E-01

 ____________________________________________________________________________________
 * Total *
 Minimum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Maximum   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Average   6.62E+02   7.27E+02   7.27E+02   7.27E+02   7.27E+02   6.62E+02   4.23E+03

 Std.Dev   7.65E-02   8.58E-02   8.58E-02   8.58E-02   8.58E-02   7.65E-02   4.96E-01
```

```
** RESRAD-BUILD Dose Program Output, Version 3.3 12/20/05 14:33:39  Page:  16 **
 Title : CB Demolition DCF for Pu-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu241DCF.bld
 Evaluation Time:  0.00000000E+00  years


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

                 Source   Source   Source   Source   Source   Source   Total
                    1        2        3        4        5        6
 Receptor  1    1.27E+01 1.40E+01 1.40E+01 1.40E+01 1.40E+01 1.27E+01 8.14E+01
 Total          1.27E+01 1.40E+01 1.40E+01 1.40E+01 1.40E+01 1.27E+01 8.14E+01
```

```
** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 15:41:47 Page:   3 **
 Title      : CB Demolition DCF for Am-241
 Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemAm241SUM.bld
 Evaluation Time:  0.00000000E+00  years
 ____________________________________________________________________

     Statistics for Dose (mrem) for Time:  1

                        Source
  Receptor      1          2          3          4          5          6       Total
*** 1***
 Minimum   6.82E+02   7.47E+02   7.47E+02   7.47E+02   7.47E+02   6.80E+02   4.35E+03

 Maximum   6.87E+02   7.52E+02   7.52E+02   7.52E+02   7.52E+02   6.84E+02   4.38E+03

 Average   6.86E+02   7.52E+02   7.52E+02   7.52E+02   7.52E+02   6.84E+02   4.38E+03

 Std.Dev   1.10E+00   1.24E+00   1.24E+00   1.24E+00   1.24E+00   1.10E+00   7.17E+00

 ____________________________________________________________________________________
 * Total *
 Minimum   6.82E+02   7.47E+02   7.47E+02   7.47E+02   7.47E+02   6.80E+02   4.35E+03

 Maximum   6.87E+02   7.52E+02   7.52E+02   7.52E+02   7.52E+02   6.84E+02   4.38E+03

 Average   6.86E+02   7.52E+02   7.52E+02   7.52E+02   7.52E+02   6.84E+02   4.38E+03

 Std.Dev   1.10E+00   1.24E+00   1.24E+00   1.24E+00   1.24E+00   1.10E+00   7.17E+00
```

** RESRAD-BUILD Probabilistic Output 3.3 12/20/05 17:48:07 Page: 3 **
Title : CB Demolition DCF for Pu-242
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemPu242DCF.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	Source 1	2	3	4	5	6	Total
*** 1***							
Minimum	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Maximum	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Average	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Std.Dev	1.95E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	1.95E-03	1.26E-02
* Total *							
Minimum	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Maximum	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Average	6.33E+02	6.96E+02	6.96E+02	6.96E+02	6.96E+02	6.33E+02	4.05E+03
Std.Dev	1.95E-03	2.18E-03	2.18E-03	2.18E-03	2.18E-03	1.95E-03	1.27E-02

** RESRAD-BUILD Probabilistic Output 3.3 12/21/05 07:58:32 Page: 3 **
Title : CB Demolition DCF for Cm-244
Input File : C:\Program Files\RESRAD_Family\BUILD\CBDemCm244DCF.bld
Evaluation Time: 0.00000000E+00 years

Statistics for Dose (mrem) for Time: 1

Receptor	Source 1	2	3	4	5	6	Total
*** 1***							
Minimum	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Maximum	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Average	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Std.Dev	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
* Total *							
Minimum	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Maximum	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Average	3.82E+02	4.19E+02	4.19E+02	4.19E+02	4.19E+02	3.82E+02	2.44E+03
Std.Dev	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00