CALCULATION TITLE PAGE

Building Surface Area Factors

Title

YA-CALC-00-005-03

Calculation Number

Executive Summary

NUREGs-1727 and 1757 discuss the scaling up of the $DCGL_w$ through the use of area factors to obtain a DCGL that will represent the same dose from residual contamination contained in a smaller area of the survey unit. The resultant, scaled up value, is referred to as the $DCGL_{emc}$ or elevated measurement comparison DCGL. The building occupancy scenario and RESRAD-BUILD v3.21 were used to calculate the annual dose from $1pCi/m^2$ for various size sources starting with a base case area of $19.7m^2$ and decreasing to $1m^2$. $DCGL_{w1}$ values corresponding to the base case area are calculated and Area Factors to be used in conjunction with the $DCGL_{w1}$ have been determined.

Approvals	(Print & Sign Name)	
Preparer: Cynthia Harrington	Cynthia L Harrington	Date: 12/27/03
Preparer: Estella Keefer		Date:
Reviewer: Peter Littlefield		Date:
Approver (Cognizant Manager):	Jim Baldwin	Date: 1/19/04

SIGNATURES:
PAGE 1 OF 3

CALCULATION TITLE PAGE

Building Surface Area Factors

Title

YA-CALC-00-005-03

Calculation Number

Executive Summary

NUREGs-1727 and 1757 discuss the scaling up of the $DCGL_w$ through the use of area factors to obtain a DCGL that will represent the same dose from residual contamination contained in a smaller area of the survey unit. The resultant, scaled up value, is referred to as the $DCGL_{emc}$ or elevated measurement comparison DCGL. The building occupancy scenario and RESRAD-BUILD v3.21 were used to calculate the annual dose from 1pCi/m^2 for various size sources starting with a base case area of 19.7m^2 and decreasing to 1m^2. $DCGL_{w1}$ values corresponding to the base case area are calculated and Area Factors to be used in conjunction with the $DCGL_{w1}$ have been determined.

Approvals	(Print & Sign Name)	
Preparer: Cynthia Harrington		Date:
Preparer: Estella Keefer	Estella Keefer	Date: 12/26/03
Reviewer: Peter Littlefield		Date:
Approver (Cognizant Manager):		Date:

CALCULATION TITLE PAGE

Building Surface Area Factors

Title

YA-CALC-00-005-03

Calculation Number

Executive Summary

NUREGs-1727 and 1757 discuss the scaling up of the $DCGL_w$ through the use of area factors to obtain a DCGL that will represent the same dose from residual contamination contained in a smaller area of the survey unit. The resultant, scaled up value, is referred to as the $DCGL_{emc}$ or elevated measurement comparison DCGL. The building occupancy scenario and RESRAD-BUILD v3.21 were used to calculate the annual dose from $1pCi/m^2$ for various size sources starting with a base case area of $19.7m^2$ and decreasing to $1m^2$. $DCGL_{w1}$ values corresponding to the base case area are calculated and Area Factors to be used in conjunction with the $DCGL_{w1}$ have been determined.

Approvals	(Print & Sign Name)	
Preparer: Cynthia Harrington		Date:
Preparer: Estella Keefer		Date:
Reviewer: Peter Littlefield	P S Littlefield	Date: 12/26/03
Approver (Cognizant Manager):		Date:

TABLE OF CONTENTS

TABLES

FIGURES

ATTACHMENTS

PURPOSE

YA-CALC-00-004-03 (Ref 1), describes the process for determining $DCGL_w$ values for the building occupancy scenario using the RESRAD-BUILD v3.21 computer code. That calculation assumed the uniform contamination of the entire floor and four walls. The purpose of this calculation is to determine new nuclide specific DCGL values, designated as $DCGL_{w1}$, for a source area smaller than the entire room area. This calculation also determines Area Factors to be applied to this $DCGL_{w1}$ to obtain acceptable concentration guidelines levels for increasingly smaller areas of building surface contamination. The use of the $DCGL_{w1}$ and Area Factors determined here will result in a dose to a building occupant that will not exceed the regulatory limit of 25 mrem/yr.

SUMMARY OF RESULTS

The RESRAD-BUILD v3.21computer code and the building occupancy scenario used in Reference 1 were used in this calculation to determine the annual dose from 1pCi/m2 for various size sources. One modification of the input assumptions occurred in that only a specified area of the floor is considered to be contaminated. The size of this area is varied from the entire floor (19.7 m^2) to an area as small as 1 m^2. The entire floor being contaminated is considered the base case and a new derived concentration guideline is defined for this case. This new DCGL will be designated $DCGL_{w1}$ to differentiate it from the $DCGL_w$ determined in Reference 1 for the entire room.

The $DCGL_{w1}$ values for each radionuclide previously determined to be important for decommissioning (Ref 1) are presented in Table 1. These are derived from the doses presented in Table 2 for the 19.7 m^2 area by dividing 25mrem/yr by the annual dose for 1 pCi/m^2. Table 1 also provides the $DCGL_w$ values determined by Ref 1 for comparison.

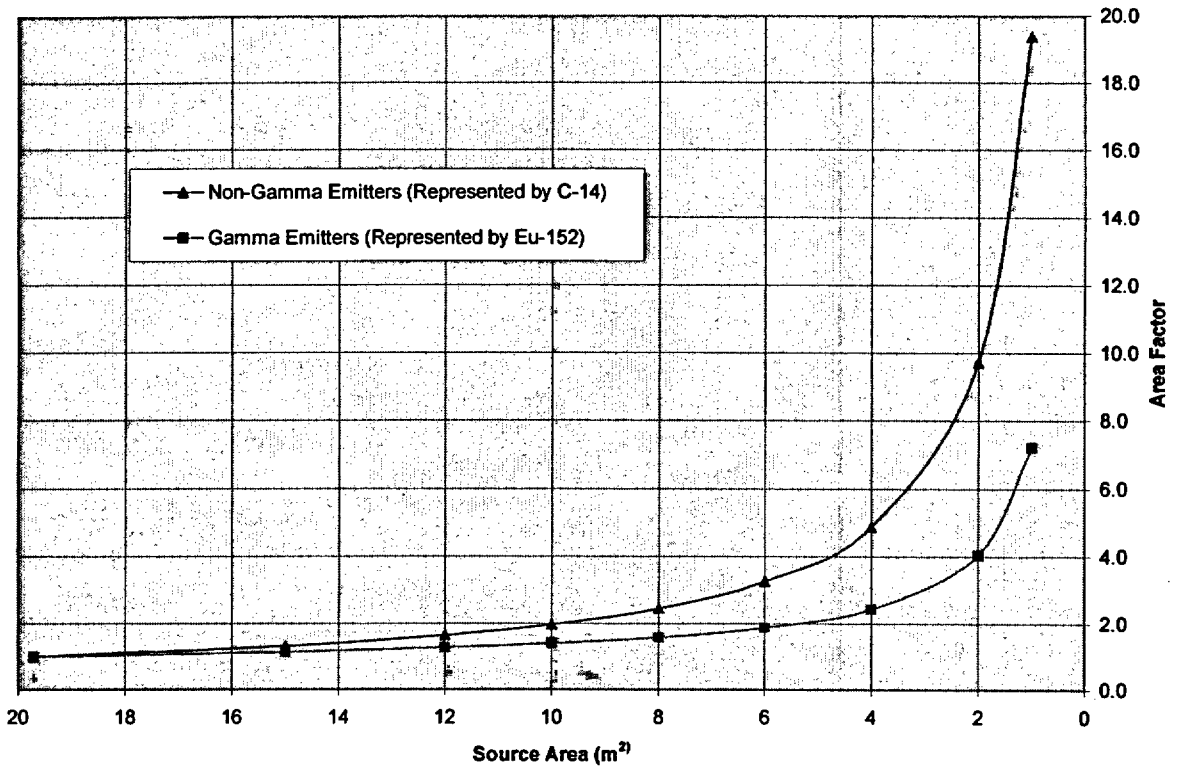
The Area Factors in Table 1 are applicable for use with contaminated areas smaller than the 19.7 m^2 floor area. These have been determined from the data in Table 3 by taking the inverse of the relative dose values for each radionuclide. The $DCGL_{w1}$ values should be multiplied by these Area Factors to determine the appropriate contamination limit for the smaller area. The result is appropriate to use for either contaminated floor or wall areas.

Figure 1 presents the Area Factors in graphical format. The upper curve represents the non-gamma emitters and the lower curve represents the gamma emitters (as shown in Figure 3). The most conservative radionuclide (C-14 and Eu-152) was chosen to represent each group. The curves may be used to determine the Area Factor for an area not presented in Table 1. For areas less than 1 m^2, the 1 m^2 Area Factor should be used. Conversely, for areas larger than 20 m^2, the $DGCL_w$ should be used.

Table 1–Building Occupancy Scenario – Room and Floor Area DCGL Values and Building Surface Area Factor by Nuclide

	Area of Source (m^2)										
	DCGL pCi/m^2		Area Factor for Source Areas less than 19.7m^2								
Nuclide	DCGL w based on 82. m^2	DCGLw1 based on 19.7 m^2	19.7	15	12	10	8	6	4	2	1
H-3	1.52E+10	6.35E+10	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.9	19.7
C-14	4.64E+08	1.92E+09	1.0	1.3	1.6	2.0	2.4	3.3	4.9	9.7	19.4
Fe-55	1.81E+09	7.55E+09	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.9	19.7
Co-60	8.14E+05	1.92E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.1	7.3
Ni-63	1.68E+09	6.98E+09	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.9	19.7
Sr-90	6.28E+06	2.57E+07	1.0	1.3	1.6	1.9	2.4	3.2	4.8	9.4	18.6
Nb-94	1.17E+06	2.75E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.0	7.2
Tc-99	6.48E+08	2.64E+09	1.0	1.3	1.6	1.9	2.4	3.2	4.7	9.2	18.2
Ag-108m	1.13E+06	2.64E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.0	7.2
Sb-125	4.54E+06	1.07E+07	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.1	7.2
Cs-134	1.29E+06	3.14E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.5	4.2	7.4
Cs-137	2.83E+06	7.08E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.5	4.2	7.6
Eu-152	1.66E+06	3.89E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.0	7.2
Eu-154	1.55E+06	3.67E+06	1.0	1.1	1.3	1.4	1.6	1.9	2.4	4.0	7.2
Eu-155	2.94E+07	7.12E+07	1.0	1.1	1.3	1.4	1.6	1.9	2.5	4.1	7.4
Pu-238	2.57E+05	1.07E+06	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.9	19.7
Pu-239	2.31E+05	9.65E+05	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.8	19.8
Pu-241	1.11E+07	4.59E+07	1.0	1.3	1.6	2.0	2.5	3.3	4.9	9.8	19.5
Am-241	2.25E+05	9.29E+05	1.0	1.3	1.6	2.0	2.4	3.3	4.9	9.7	19.5
Cm-243	3.23E+05	1.32E+06	1.0	1.3	1.6	1.9	2.4	3.2	4.7	9.3	18.5

Figure 1 - Area Factors for Variable Source Areas - Most Restrictive Nuclides



REFERENCES

1. YA-CALC-00-004-03, "RESRAD-BUILD v3.21 Building Surface Derived Concentration Guideline Levels," January 2004

2. NUREG-1727. "NMSS Decommissioning Standard Review Plan," September 2000.

3. NUREG-1757. "Consolidated NMSS Decommissioning Guidance," Volume 2: Characterization, Survey and Determination of Radiological Criteria," September 2003.

4. YA-CALC-00-003-03, "RESRAD-BUILD v3.21 Sensitivity Analysis for Building Occupancy," November 2003

ASSUMPTIONS

The comprehensive demolition and dismantling strategy defined for the YNPS site will result in structures remaining on site at the time of license termination. These structures will be parts of buildings and will generally consist of support walls, tank rooms and floor slabs. All existing ceilings will be replaced with new uncontaminated materials. The dimensions of an average room that might remain on site were determined by considering the demolition plans and the identification of walls/rooms to remain intact and are discussed in Ref. 1.

$DCGL_w$ values, based on the total surface area of the contaminated surfaces in the room ($82m^2$), are presented in Ref. 1. The approach to calculating area factors for the design and implementation of surveys of building surfaces is to modify the base case DCGL to reflect the largest likely survey area as the largest room surface area of $19.7m^2$ (room floor area). NUREGs-1727 and 1757 discuss the scaling up of the $DCGL_w$ through the use of area factors to obtain a DCGL that will represent the same dose from residual contamination contained in a smaller area of the survey unit. The resultant, scaled up value, is referred to as the $DCGL_{emc}$ or elevated measurement comparison DCGL.

A new DCGL is defined for the purpose of this calculation which represents the contamination level for the entire 19.7 m^2 floor area that would result in a dose of 25 mrem/yr to the building occupant. This guideline level is designated $DCGL_{w1}$ to differentiate it from the guideline level for the entire room ($DCGL_w$).

$$\text{Area Factor} = \frac{\text{DCGLemc}}{\text{DCGLw}} \qquad \text{Equation 1}$$

METHOD / BODY OF CALCULATION

The nuclide specific total dose for contaminated areas equal to and less than $19.7m^2$ were calculated using RESRAD-BUILD V 3.21 as discussed in Ref. 1 and Ref. 4. The model is the same as that used to calculate the $DCGL_w$ based on the total room area contamination, with the exception that only one contaminated source is modeled (floor) versus the five sources considered in the determination of $DCGL_w$ in Reference 1.

The receptor and source locations remain in the center of the room. The area of the source is varied from $19.7m^2$ to $1m^2$. The dose for each size source is normalized to the dose at $19.7m^2$. Table 2 presents the dose in mrem/yr for a 1 pCi/m^2 source of a specified area. Table 3 presents the same information for each area as a relative dose (relative to the dose for the $19.7m^2$ floor area). The area factors shown in Table 1 are the reciprocal of the relative dose. Figures 2 and 3 show the relative dose and the area factors for all nuclides as a function of source area.

Table 2 - Total Annual Dose from 1pCi/m^2 Source of Various Sizes

	Area of Source (m^2)								
Nuclide	19.7	15	12	10	8	6	4	2	1
H-3	3.94E-10	3.00E-10	2.40E-10	2.00E-10	1.60E-10	1.20E-10	8.00E-11	4.00E-11	2.00E-11
C-14	1.30E-08	9.91E-09	7.94E-09	6.63E-09	5.31E-09	3.99E-09	2.67E-09	1.34E-09	6.71E-10
Fe-55	3.31E-09	2.52E-09	2.01E-09	1.68E-09	1.34E-09	1.01E-09	6.71E-10	3.36E-10	1.68E-10
Co-60	1.30E-05	1.14E-05	1.03E-05	9.32E-06	8.24E-06	6.95E-06	5.34E-06	3.20E-06	1.79E-06
Ni-63	3.58E-09	2.72E-09	2.18E-09	1.82E-09	1.45E-09	1.09E-09	7.27E-10	3.63E-10	1.82E-10
Sr-90	9.71E-07	7.43E-07	5.97E-07	4.99E-07	4.02E-07	3.03E-07	2.04E-07	1.03E-07	5.21E-08
Nb-94	9.09E-06	8.02E-06	7.19E-06	6.54E-06	5.79E-06	4.88E-06	3.75E-06	2.25E-06	1.26E-06
Tc-99	9.47E-09	7.26E-09	5.85E-09	4.90E-09	3.95E-09	2.99E-09	2.02E-09	1.03E-09	5.20E-10
Ag-108m	9.46E-06	8.35E-06	7.49E-06	6.81E-06	6.02E-06	5.08E-06	3.91E-06	2.34E-06	1.31E-06
Sb-125	2.34E-06	2.06E-06	1.85E-06	1.68E-06	1.49E-06	1.25E-06	9.62E-07	5.77E-07	3.23E-07
Cs-134	7.97E-06	7.00E-06	6.25E-06	5.67E-06	5.00E-06	4.20E-06	3.22E-06	1.92E-06	1.08E-06
Cs-137	3.53E-06	3.08E-06	2.74E-06	2.48E-06	2.18E-06	1.83E-06	1.40E-06	8.31E-07	4.64E-07
Eu-152	6.43E-06	5.68E-06	5.09E-06	4.63E-06	4.09E-06	3.45E-06	2.65E-06	1.59E-06	8.92E-07
Eu-154	6.82E-06	6.02E-06	5.39E-06	4.91E-06	4.34E-06	3.66E-06	2.81E-06	1.69E-06	9.45E-07
Eu-155	3.51E-07	3.08E-07	2.75E-07	2.49E-07	2.20E-07	1.85E-07	1.42E-07	8.46E-08	4.73E-08
Pu-238	2.34E-05	1.78E-05	1.42E-05	1.19E-05	9.48E-06	7.11E-06	4.74E-06	2.37E-06	1.19E-06
Pu-239	2.59E-05	1.97E-05	1.58E-05	1.31E-05	1.05E-05	7.88E-06	5.26E-06	2.63E-06	1.31E-06
Pu-241	5.45E-07	4.15E-07	3.32E-07	2.77E-07	2.22E-07	1.67E-07	1.11E-07	5.57E-08	2.79E-08
Am-241	2.69E-05	2.05E-05	1.64E-05	1.37E-05	1.10E-05	8.23E-06	5.50E-06	2.76E-06	1.38E-06
Cm-243	1.89E-05	1.45E-05	1.16E-05	9.75E-06	7.84E-06	5.93E-06	3.99E-06	2.03E-06	1.02E-06

Table 3 - Dose for Various Area Sources Relative to Entire Floor Area

Nuclide	19.7	15	12	10	8	6	4	2	1
H-3	1.00	0.76	0.61	0.51	0.41	0.30	0.20	0.10	0.05
C-14	1.00	0.76	0.61	0.51	0.41	0.31	0.21	0.10	0.05
Fe-55	1.00	0.76	0.61	0.51	0.40	0.31	0.20	0.10	0.05
Co-60	1.00	0.88	0.79	0.72	0.63	0.53	0.41	0.25	0.14
Ni-63	1.00	0.76	0.61	0.51	0.41	0.30	0.20	0.10	0.05
Sr-90	1.00	0.77	0.61	0.51	0.41	0.31	0.21	0.11	0.05
Nb-94	1.00	0.88	0.79	0.72	0.64	0.54	0.41	0.25	0.14
Tc-99	1.00	0.77	0.62	0.52	0.42	0.32	0.21	0.11	0.05
Ag-108m	1.00	0.88	0.79	0.72	0.64	0.54	0.41	0.25	0.14
Sb-125	1.00	0.88	0.79	0.72	0.64	0.53	0.41	0.25	0.14
Cs-134	1.00	0.88	0.78	0.71	0.63	0.53	0.40	0.24	0.14
Cs-137	1.00	0.87	0.78	0.70	0.62	0.52	0.40	0.24	0.13
Eu-152	1.00	0.88	0.79	0.72	0.64	0.54	0.41	0.25	0.14
Eu-154	1.00	0.88	0.79	0.72	0.64	0.54	0.41	0.25	0.14
Eu-155	1.00	0.88	0.78	0.71	0.63	0.53	0.40	0.24	0.13
Pu-238	1.00	0.76	0.61	0.51	0.41	0.30	0.20	0.10	0.05
Pu-239	1.00	0.76	0.61	0.51	0.41	0.30	0.20	0.10	0.05
Pu-241	1.00	0.76	0.61	0.51	0.41	0.31	0.20	0.10	0.05
Am-241	1.00	0.76	0.61	0.51	0.41	0.31	0.20	0.10	0.05
Cm-243	1.00	0.77	0.61	0.52	0.41	0.31	0.21	0.11	0.05

Figure 2- Relative Dose for Various Area Sizes

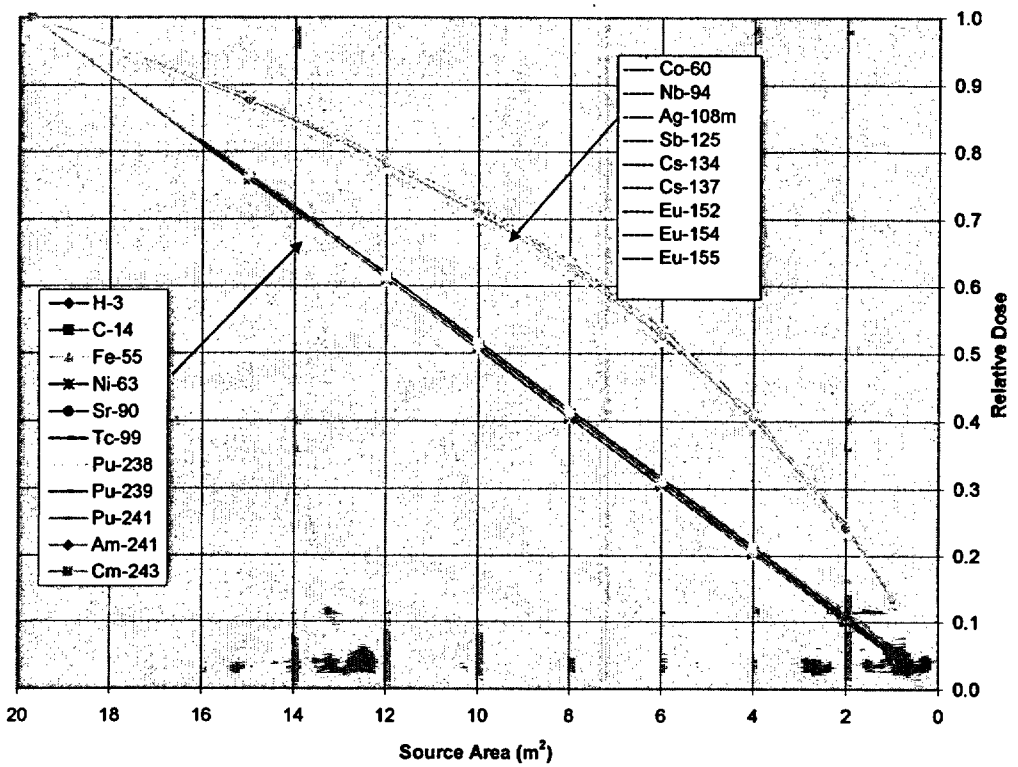
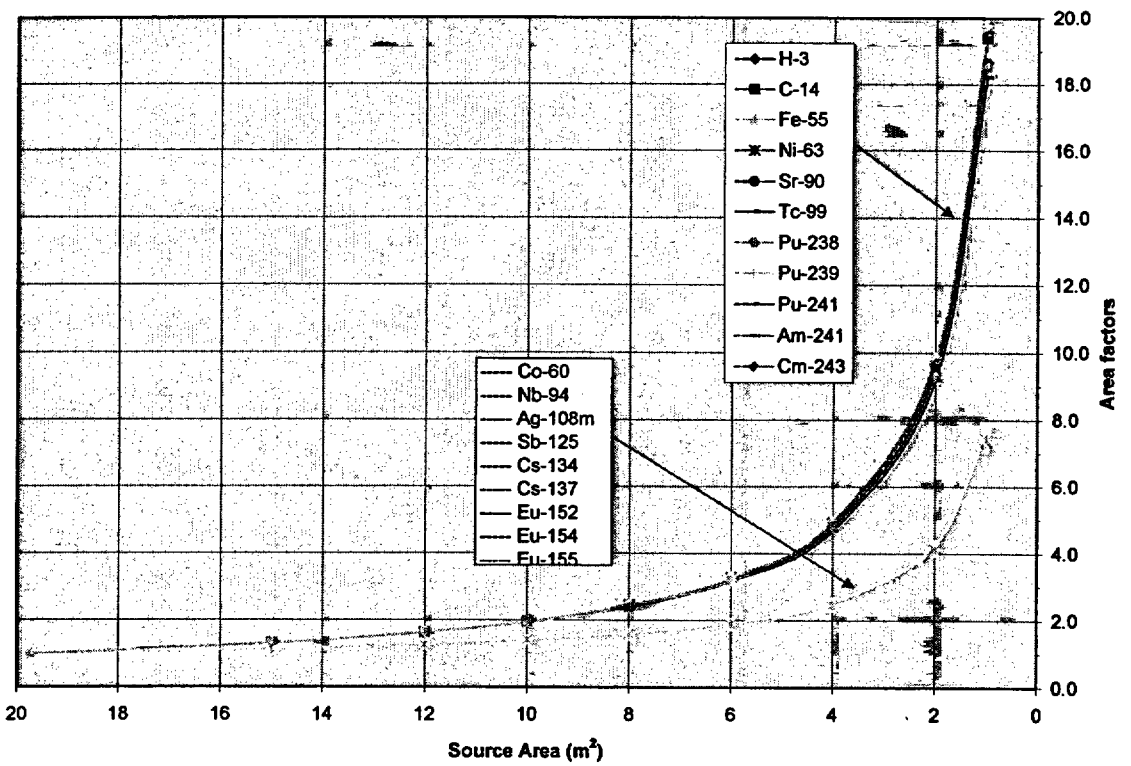


Figure 3 - Area Factors by Nuclide and Varying Source Area



Attachment 1

RESRAD-BUILD v3.21
Input Parameters to Area Factor Runs
Using the Building Occupancy Scenario

Table 1-1 RESRAD-BUILD v3.21 Input Parameters for Area Factor Run using the Building Occupancy Scenario

Parameter (unit)	Type[a]	Nuclide[b]	Treatment[c]	Value/[d] Distribution	Basis	Distribution's Statistical Parameters				
						1	2	3	4	Median
Exposure Duration (days)	B	All	D	365.25	NUREG/CR-5512, Vol.3, 5.2.1	NR	NR	NR	NR	NR
Indoor Fraction	B	All		0.267	NUREG/CR-5512, Vol. 3, 5.2.2	NR	NR	NR	NR	NR
Evaluation Time (year)	P	All	D	0	t=0 corresponds maximum dose over the first year (year 9 for Pu-241)	NR	NR	NR	NR	NR
Number of Rooms	P	All	D	1	NUREG/CR-5512	NR	NR	NR	NR	NR
Deposition Velocity (m/sec)	P	H-3	D	1.51E-05	25th percentile value	NR	NR	-	-	-
	P	Fe-55	D	1.51E-05	25th percentile value	NR	NR	-	-	-
	P	Co-60	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Sr-90	D	1.51E-05	25th percentile value	NR	NR	-	-	-
	P	Nb-94	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Ag-108m	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Sb-125	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Cs-134	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Cs-137	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Eu-154	D	4.79E-04	75th percentile value	NR	NR	-	-	-
	P	Pu-241	D	1.51E-05	25th percentile value	NR	NR	-	-	-
	P	Cm-243	D	1.51E-05	25th percentile value	NR	NR	-	-	-
	P	All others	S	Loguniform	NUREG/CR-6755, 3.3	2.70E-06	2.70E-03	-	-	8.53E-05
Resuspension Rate (sec^{-1})	P	H-3	D	1.02E-06	Mean value	NR	NR	-	-	-
	P	Fe-55	D	1.02E-06	Mean value	NR	NR			
	P	Co-60	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Ni-63	D	1.02E-06	Mean value	NR	NR	-	-	-
	P	Sr-90	D	1.02E-06	Mean value	NR	NR	-	-	-
	P	Nb-94	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Ag-108	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Sb-125	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Cs-134	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Cs-137	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Eu-154	D	6.75E-10	25th percentile value	NR	NR	-	-	-
	P	Pu-238	D	1.02E-06	Mean value	NR	NR	-	-	-

Table 1-1 RESRAD-BUILD v3.21 Input Parameters for Area Factor Run using the Building Occupancy Scenario

Parameter (unit)	Type[a]	Nuclide[b]	Treatment[c]	Value/[d] Distribution	Basis	Distribution's Statistical Parameters				
						1	2	3	4	Median
	P	Pu-241	D	1.02E-06	Mean value	NR	NR	-	-	-
	P	Cm-243	D	1.02E-06	Mean value	NR	NR	-	-	-
	P	All others	S	Loguniform	NUREG/CR-6755, 3.1	2.5E-11	1.3E-5	-	-	1.83E-08
Air exchange rate for room (1/ h)	B	All	D	1.52	NUREG/CR-6697, Att.C, 7.4 and NUREG/CR-6755, 3.2	NR	NR	NR	NR	NR
Room area (m^2)	P	All	D	19.71	Site-specific model, Ref. 4	NR	NR	NR	NR	NR
Room height (m)	P	All	D	3.51	Site-specific model, Ref. 4	NR	NR	NR	NR	NR
Time fraction	B	All	D	1	NUREG/CR-5512	NR	NR	NR	NR	NR
Breathing rate (m^3/day)	B	All	D	33.6	NUREG/CR-5512 Vol. 3 5.3	NR	NR	NR	NR	NR
Indirect ingestion rate (m^2/hr)	B	All	D	0	NUREG/CR-5512 Vol. 3 5.2.3 Indirect ingestion is not modeled	NR	NR	NR	NR	NR
Receptor location: x,y,z (m)	B	All	D	2.22, 2.22, 1	NUREG/CR-5512	NR	NR	NR	NR	NR
Shielding thickness (cm)	P	All	D	0	Site-specific model- No Shielding assumed	NR	NR	NR	NR	NR
Shielding density (g/cc)	P	All	D	0	Site-specific model - No shielding assumed	NR	NR	NR	NR	NR
Shielding material	P	All	D	None	Site-specific model - No shielding assumed	NR	NR	NR	NR	NR
Number of sources	P	All	D	5	Site-specific model, Ref. 4	NR	NR	NR	NR	NR
External dose conversion factor ((mrem/yr)/(dpm/m^2))	M	All	D	RESRAD-BUILD default	FGR 12	NR	NR	NR	NR	NR
Air submersion dose conversion factor ((mrem/yr)/(pCi/m^3))	M	All	D	RESRAD-BUILD default	FGR 12	NR	NR	NR	NR	NR
Inhalation dose conversion factor (mrem/pCi/g)	M	All	D	RESRAD-BUILD default	FGR 11	NR	NR	NR	NR	NR
Ingestion dose conversion factor (mrem/pCi/g)	M	All	D	RESRAD-BUILD default	FGR 11	NR	NR	NR	NR	NR
Source 1. Floor										
Type	P	All	D	Area	NUREG/CR-5512	NR	NR	NR	NR	NR
Direction	P	All	D	Z	NUREG/CR-5512	NR	NR	NR	NR	NR
Location of center of source: x,y,z (m)	P	All	D	2.22, 2.22, 0	Site-specific model, Ref. 4	NR	NR	NR	NR	NR
Area (m2)	P	All	D	19.71, 15, 12,10, 8, 6, 4, 2, 1	Site-specific model, Ref. 4	NR	NR	NR	NR	NR

Table 1-1 RESRAD-BUILD v3.21 Input Parameters for Area Factor Run using the Building Occupancy Scenario

Parameter (unit)	Type[a]	Nuclide[b]	Treatment[c]	Value/[d] Distribution	Basis	Distribution's Statistical Parameters				
						1	2	3	4	Median
Air fraction for H-3	B	All	D	1	NUREG/CR-6697, Att. C, 8.6	NR	NR	NR	NR	NR
Air fraction (for all nuclides except H-3)	B	All	D	0.07	NUREG/CR-6697, Att. C, 8.6	NR	NR	NR	NR	NR
Direct ingestion (hr-1)	B	All	D	1.34E-6	NUREG/CR-5512, Vol. 3, 5.2.3 1.1E-04m^2/h / 82.03 m^2	NR	NR	NR	NR	NR
Removable fraction	P	All	D	0.1	NUREG-1727 Table C 7.1 / NUREG/CR-6755, 3.5	NR	NR	NR	NR	NR
Time for source removal (days)	P	H-3	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	C-14	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Fe-55	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Co-60	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Ni-63	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Sr-90	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Nb-94	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Tc-99	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Ag-108m	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Sb-125	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Cs-134	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Cs-137	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Eu-152	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Eu-154	D	52777	75th percentile value	NR	NR	NR	NR	NR
	P	Eu-155	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Pu-238	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Pu-239	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Pu-241	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Am-241	D	18240	25th percentile value	NR	NR	NR	NR	NR
	P	Cm-243	D	18240	25th percentile value	NR	NR	NR	NR	NR
Radionuclide concentration (pCi/m^2)	P	All	D	1	Allows for proportional DCGL calculation	NR	NR	NR	NR	NR

NOTES
[a] P = physical, B = behavioral, M = Metabolic (NUREG/CR-6697 Att B, Table 4.3)
[b] 1 = high priority parameter, 2 = medium priority parameter, 3 = low priority parameter (NUREG/CR-6697 Att B, Table 4.3)
[c] D = deterministic, S = stochastic (Figure 1)
[d] Statistical Parameters
Loguniform 1 = minimum, 2 = maximum
NR - None Required
Input Correlations used only if both distributions used as inputs:
Resuspension Rate and Deposition Velocity = 0.9
Run Specifications: Random Seed = 1000
Number of Observations = 300
Number of Repetitions = 1
Dose Integrations = 5