

The DCGLs selected for this project are those listed in 10 CFR 835 Appendix D (U.S. Department of Energy; refer to Table 2-1, Surface Activity DCGLs). During the course of remediation at the Site, NUSTL acquired an NRC license; as such, the Class 1 survey unit rooms with the highest residual concentrations of radioactivity above background but below the DCGLs are being evaluated using NUREG-1757 (NRC, 2003a) guidance to ensure that these survey units meet the NRC limit of 25 mrem/yr for unrestricted release. To ensure compliance with this dose limit, the following survey units were modeled using RESRAD-BUILD version 3.5:

1. 5th Floor Room 544
2. Basement Room B-8

Each room was modeled according to the actual length, width, and height measurements. Surface activity was modeled for the floor and each of the four walls within each room assuming that surface radioactivity extended from the floor to a height of six feet on each wall (this was the maximum height of systematic measurements performed on the walls). Surface activity concentration values are based on the average alpha surface activity concentrations of systematic measurements taken from each room. Alpha surface activity concentrations were applied here instead of beta because the critical population (P_{crit}) 0.90 activity concentrations contained in Table 5.19 of NUREG/CR-5512 (NRC, 1999) for beta-emitting radioisotopes are all higher and less restrictive than the beta/gamma surface activity DCGLs applied during FSS operations (refer to Section 2.0). These values are converted to picocuries per square meter for use with RESRAD-BUILD version 3.5 and are shown in Attachment 1.

Room 544

Process knowledge from NUSTL personnel indicates that residual surface alpha radioactivity within Room 544 is most likely americium-241, as there was a documented spill in the southeast corner of the room (on the floor below the former location of the fume hood), which also coincides with the highest surface activity concentrations encountered on the floor. However, there were numerous other radionuclides utilized in this room in liquid form; per the P_{crit} 0.90 activity concentrations contained in Table 5.19 of NUREG/CR-5512 (NRC, 1999), the most restrictive of these radionuclides known to have been used in this room was actinium-227. The residual surface activity in this room was therefore modeled twice, once assuming that all residual surface alpha radioactivity was americium-241 and a second time assuming actinium-227 for conservatism.

Room B-8

Process knowledge from NUSTL personnel indicates that residual surface alpha radioactivity within Room B-8 is most likely plutonium. The P_{crit} 0.90 activity concentrations contained in Table 5.19 of NUREG/CR-5512 (NRC, 1999) show that both plutonium-239 and plutonium-240 are equally the most restrictive plutonium radioisotopes. The residual surface activity in this room was therefore modeled assuming that all residual surface alpha radioactivity was plutonium-239 for conservatism.

RESRAD-BUILD Modeling

Modeling was performed using mostly default parameter values as set in RESRAD-BUILD version 3.5. The use of custom values are explained for each parameter value where the default value was not used in each of the two rooms in Table H-1.

Table H-1: RESRAD-BUILD Custom Parameters Summary

Parameter	Room 544 Value	Room B-8 Value	Default Value
Time Parameters			
Indoor fraction	0.23	0.0046	0.5
Building Parameters			
Building Exchange Rate	0.3	0.3	0.8
Source Parameters			
Details for Source #1 (Wall 1)			
Source Lifetime	10,000	10,000	365
Details for Source #2 (Wall 2)			
Source Lifetime	10,000	10,000	365
Details for Source #3 (Wall 3)			
Source Lifetime	10,000	10,000	365
Details for Source #4 (Wall 4)			
Source Lifetime	10,000	10,000	365
Details for Source #5 (Floor)			
Source Lifetime	10,000	10,000	365

Indoor Fraction

Per the ANL User's Manual for RESRAD-BUILD Version 3 (ANL-EAD-03-1, DOE, 2003), an office worker may be assumed to spend 2,000 hours per year working inside the building (and therefore in an office such as Room 544), with these hours distributed uniformly throughout the year. The resulting indoor fraction is the ratio of 2,000 hours to 8,760 hours in one year (365 days \times 24 hours/day, i.e., 2,000 hours \div 8,760 hours), or 0.23. The maximum amount of time any individual would spend inside a storage room such as Room B-8 in a single year is projected to be 40 hours (40 hours \div 8,760 hours), yielding an indoor fraction of 0.0046.

Building Exchange Rate

Per the EPA Exposure Factors Handbook Table 19-27 (EPA, 2011), the minimum air exchange rate for various spaces within commercial buildings is 0.3. This number was applied as a conservative assumption in each of the two rooms being modeled here; this value is also conservative relative to Table 1 of the 1999 ASHRAE Handbook – Applications (ASHRAE, 1999) for example specifies that offices should have minimum ventilation rate of approximately 1.3 circulation air changes per hour (ACH) for a space with a ceiling height of nine feet and would presumably apply to a future use scenario in Room 544.

Source Lifetime (also Time for Source Removal)

Per the (ANL-EAD-03-1), the most likely value is 10,000 days (i.e., 27. years) despite the fact that the default value is 365 days. Based on the relatively low amount of foot traffic and other activities that would result in removal of the source term from floor and wall surfaces, this represents a conservative value.

Receptor Dose Received for the Exposure Duration

The resultant annual Receptor Dose Received for the Exposure Duration for each analysis is provided in Table H-2. The receptor doses calculated using RESRAD-BUILD confirm that these rooms meet the NRC LTR limit of 25 millirem/year for unrestricted release; because Room 544 is the most heavily impacted room on the 5th floor, it is safe to conclude that all survey units on the 5th floor meet the NRC LTR limit of 25 millirem/year for unrestricted release. The RESRAD-BUILD version 3.5 export files are provided as Attachment 2.

Table H-2: RESRAD-BUILD Modeled Receptor Doses

Room Number	Modeled Radionuclide	Receptor Dose Received (millirem/year)
544	Actinium-227	15.1
544	Americium-241	1.1
B-8	Plutonium-239	0.00442

Attachments

Attachment 1: Residual Surface Alpha Radioactivity Concentrations and Room Dimensions

Attachment 2: RESRAD-BUILD Export Files

**Attachment 1: Residual Surface Alpha Radioactivity Concentrations and
Room Dimensions**

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Room 544		Alpha Surface Activity	
Source Number	Sample Location	dpm/100 cm ²	pCi/m ²
Source 5	FLOOR	-5.5	-247.7
Source 5	FLOOR	199.8	9,000.0
Source 5	FLOOR	49.3	2,220.7
Source 5	FLOOR	62.9	2,833.3
Source 5	FLOOR	8.2	369.4
Source 5	FLOOR	90.3	4,067.6
Source 5	FLOOR	49.3	2,220.7
Source 5	FLOOR	-5.5	-247.7
Source 4	WALL 4	49.3	2,220.7
Source 4	WALL 4	76.6	3,450.5
Source 3	WALL 3	254.5	11,464.0
Source 3	WALL 3	49.3	2,220.7
Source 3	WALL 3	8.2	369.4
Source 2	WALL 2	21.9	986.5
Source 1	WALL 1	35.6	1,603.6
Source 1	WALL 1	21.9	986.5
Source 1	WALL 1	35.6	1,603.6

Mean Surface Activity (pCi/m ²)				
Source 5	Source 4	Source 3	Source 2	Source 1
2,527.0	2,835.6	4,684.7	986.5	1,397.9

	y	x	z
	Length	Width	Height
(ft)	18.23	9.90	6.00
(m)	5.56	3.02	1.83
	y	x	z
	Location	Location	Location
(m)	2.78	1.51	0.91

Room B-8		Alpha Surface Activity	
Source Number	Sample Location	dpm/100 cm ²	pCi/m ²
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	49.3	2,219.0
Source 5	FLOOR	446.1	20,094.0
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	35.6	1,602.6
Source 5	FLOOR	104.0	4,684.5
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	49.3	2,219.0
Source 5	FLOOR	90.3	4,068.1
Source 5	FLOOR	35.6	1,602.6
Source 5	FLOOR	76.6	3,451.7
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	158.7	7,150.0
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	-19.2	-862.9
Source 5	FLOOR	-19.2	-862.9
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	21.9	986.2
Source 5	FLOOR	35.6	1,602.6
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	76.6	3,451.7
Source 5	FLOOR	-19.2	-862.9
Source 5	FLOOR	21.9	986.2
Source 5	FLOOR	21.9	986.2

Mean Alpha Surface Activity (pCi/m ²)				
Source 5	Source 4	Source 3	Source 2	Source 1
1,584.5	61.6	369.8	369.8	123.3

	y	x	z
	Length	Width	Height
(ft)	45.00	30.00	12.00
(m)	13.72	9.14	3.66
	y	x	z
	Location	Location	Location
(m)	6.86	4.57	1.83

Room B-8		Alpha Surface Activity	
Source Number	Sample Location	dpm/100 cm ²	pCi/m ²
Source 5	FLOOR	-5.5	-246.6
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	8.2	369.8
Source 5	FLOOR	-5.5	-246.6
Source 4	WALL 4	8.2	369.8
Source 4	WALL 4	-5.5	-246.6
Source 4	WALL 4	-5.5	-246.6
Source 4	WALL 4	8.2	369.8
Source 3	WALL 3	8.2	369.8
Source 3	WALL 3	8.2	369.8
Source 3	WALL 3	-5.5	-246.6
Source 3	WALL 3	-5.5	-246.6
Source 3	WALL 3	35.6	1,602.6
Source 2	WALL 2	8.2	369.8
Source 2	WALL 2	8.2	369.8
Source 2	WALL 2	8.2	369.8
Source 1	WALL 1	21.9	986.2
Source 1	WALL 1	-5.5	-246.6
Source 1	WALL 1	-5.5	-246.6
Source 1	WALL 1	8.2	369.8
Source 1	WALL 1	-5.5	-246.6

Mean Alpha Surface Activity (pCi/m ²)				
Source 5	Source 4	Source 3	Source 2	Source 1
1,584.5	61.6	369.8	369.8	123.3

Attachment 2: RESRAD-BUILD Export Files

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Room 544 Americium-241

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

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Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

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RESRAD-BUILD Input Parameters

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Number of Sources : 5
Number of Receptors: 1
Total Time : 3.650000E+02 days
Fraction Inside : 2.283105E-01

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

Receptor	Room	x	y	z	FracTime	Inhalation	Ingestion(Dust)
		[m]	[m]	[m]		[m3/day]	[m2/hr]
1	1	1.510	2.780	0.910	1.000	1.80E+01	1.00E-04

===== Receptor-Source Shielding Relationship =====

Receptor	Source	Density	Thickness	Material
		[g/cm3]	[cm]	
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

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

==== Building Information ====

Building Air Exchange Rate: 3.00E-01 1/hr

Height [m]	Air Exchanges [m3/hr]	
Area [m2]	*****	
	*	*
	*	*
	*	<=Q01: 1.76E+01
H1: 3.500	* Room 1	* Q10 : 1.76E+01
	* LAMBDA: 3.00E-01	*
Area 16.770	*	*
	*	*

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91[m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AM-241	1.400E+03	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: 1.51 y: 5.56 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AM-241	9.870E+02	3.640E-03	4.440E-01	9.554E-05
NP-237	0.000E+00	4.444E-03	5.400E-01	1.212E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

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: 3.02 y: 2.78 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 5.000E-01
 Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

	[pCi/m2]	Dose Conversion Factor (Library: FGR 11)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/(pCi/m3)]
AM-241	4.680E+03	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: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 5.000E-01
 Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

	[pCi/m2]	Dose Conversion Factor (Library: FGR 11)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/(pCi/m3)]
AM-241	2.840E+03	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

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

TH-229 0.000E+00 4.027E-03 2.169E+00 1.741E-03

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00[m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AM-241	2.530E+03	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

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

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Assessment for Time: 1

Time =0.00E+00 yr

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

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	1.400E+03
	NP-237	0.000E+00
	U-233	0.000E+00
	TH-229	0.000E+00

Source: 2

Location:: Room : 1 x: 1.51 y: 5.56 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	9.870E+02
	NP-237	0.000E+00
	U-233	0.000E+00
	TH-229	0.000E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 3

Location:: Room : 1 x: 3.02 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	4.680E+03
	NP-237	0.000E+00
	U-233	0.000E+00
	TH-229	0.000E+00

Source: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	2.840E+03
	NP-237	0.000E+00
	U-233	0.000E+00
	TH-229	0.000E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	2.530E+03
	NP-237	0.000E+00
	U-233	0.000E+00
	TH-229	0.000E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	6.21E-02	8.05E-02	3.82E-01	2.32E-01	3.41E-01	1.10E+00
Total	6.21E-02	8.05E-02	3.82E-01	2.32E-01	3.41E-01	1.10E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.05E-05	5.71E-07	1.99E-09	6.07E-02	0.00E+00	1.33E-03
Total	8.05E-05	5.71E-07	1.99E-09	6.07E-02	0.00E+00	1.33E-03

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.20E-05	7.41E-07	2.58E-09	7.88E-02	0.00E+00	1.72E-03
Total	3.20E-05	7.41E-07	2.58E-09	7.88E-02	0.00E+00	1.72E-03

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.70E-04	3.51E-06	1.23E-08	3.74E-01	0.00E+00	8.17E-03
Total	3.70E-04	3.51E-06	1.23E-08	3.74E-01	0.00E+00	8.17E-03

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.21E-05	2.13E-06	7.43E-09	2.27E-01	0.00E+00	4.96E-03
Total	9.21E-05	2.13E-06	7.43E-09	2.27E-01	0.00E+00	4.96E-03

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	5.01E-04	3.13E-06	1.09E-08	3.33E-01	0.00E+00	7.29E-03
Total	5.01E-04	3.13E-06	1.09E-08	3.33E-01	0.00E+00	7.29E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241	6.21E-02	6.21E-02
NP-237	1.23E-08	1.23E-08
U-233	4.39E-15	4.39E-15
TH-229	1.66E-18	1.66E-18

Source: 2

Nuclide	Receptor	Total
	1	
AM-241	8.05E-02	8.05E-02
NP-237	1.60E-08	1.60E-08
U-233	5.69E-15	5.69E-15
TH-229	2.16E-18	2.16E-18

Source: 3

Nuclide	Receptor	Total
	1	
AM-241	3.82E-01	3.82E-01
NP-237	7.58E-08	7.58E-08
U-233	2.70E-14	2.70E-14
TH-229	1.02E-17	1.02E-17

Source: 4

Nuclide	Receptor	Total
	1	
AM-241	2.32E-01	2.32E-01

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 0.0000000E+00 years

NP-237	4.59E-08	4.59E-08
U-233	1.64E-14	1.64E-14
TH-229	6.21E-18	6.21E-18

Source: 5

Nuclide	Receptor	Total
	1	
AM-241	3.41E-01	3.41E-01
NP-237	6.78E-08	6.78E-08
U-233	2.41E-14	2.41E-14
TH-229	9.14E-18	9.14E-18

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

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Assessment for Time: 2
Time =1.00E+00 yr

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

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	AM-241	1.372E+03
	NP-237	4.448E-04
	U-233	9.698E-10
	TH-229	3.053E-14

Source: 2

Location:: Room : 1 x: 1.51 y: 5.56 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration [pCi/m2]
	AM-241	9.674E+02
	NP-237	3.136E-04
	U-233	6.837E-10
	TH-229	2.153E-14

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 3

Location:: Room : 1 x: 3.02 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	4.587E+03
	NP-237	1.487E-03
	U-233	3.242E-09
	TH-229	1.021E-13

Source: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	2.784E+03
	NP-237	9.024E-04
	U-233	1.967E-09
	TH-229	6.194E-14

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AM-241	2.480E+03
	NP-237	8.039E-04
	U-233	1.753E-09
	TH-229	5.518E-14

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	6.20E-02	8.04E-02	3.82E-01	2.31E-01	3.41E-01	1.10E+00
Total	6.20E-02	8.04E-02	3.82E-01	2.31E-01	3.41E-01	1.10E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.89E-05	5.70E-07	1.99E-09	6.06E-02	0.00E+00	1.32E-03
Total	7.89E-05	5.70E-07	1.99E-09	6.06E-02	0.00E+00	1.32E-03

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.14E-05	7.39E-07	2.58E-09	7.87E-02	0.00E+00	1.72E-03
Total	3.14E-05	7.39E-07	2.58E-09	7.87E-02	0.00E+00	1.72E-03

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.63E-04	3.51E-06	1.22E-08	3.73E-01	0.00E+00	8.15E-03
Total	3.63E-04	3.51E-06	1.22E-08	3.73E-01	0.00E+00	8.15E-03

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.03E-05	2.13E-06	7.42E-09	2.26E-01	0.00E+00	4.95E-03
Total	9.03E-05	2.13E-06	7.42E-09	2.26E-01	0.00E+00	4.95E-03

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.91E-04	3.13E-06	1.09E-08	3.33E-01	0.00E+00	7.27E-03
Total	4.91E-04	3.13E-06	1.09E-08	3.33E-01	0.00E+00	7.27E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AM-241	6.20E-02	6.20E-02
NP-237	3.70E-08	3.70E-08
U-233	3.07E-14	3.07E-14
TH-229	2.50E-17	2.50E-17

Source: 2

Nuclide	Receptor	Total
	1	
AM-241	8.04E-02	8.04E-02
NP-237	4.78E-08	4.78E-08
U-233	3.98E-14	3.98E-14
TH-229	3.24E-17	3.24E-17

Source: 3

Nuclide	Receptor	Total
	1	
AM-241	3.82E-01	3.82E-01
NP-237	2.27E-07	2.27E-07
U-233	1.89E-13	1.89E-13
TH-229	1.54E-16	1.54E-16

Source: 4

Nuclide	Receptor	Total
	1	
AM-241	2.31E-01	2.31E-01

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Evaluation Time: 1.00000000 years

NP-237	1.38E-07	1.38E-07
U-233	1.15E-13	1.15E-13
TH-229	9.31E-17	9.31E-17

Source: 5

Nuclide	Receptor	Total
	1	
AM-241	3.41E-01	3.41E-01
NP-237	2.03E-07	2.03E-07
U-233	1.69E-13	1.69E-13
TH-229	1.37E-16	1.37E-16

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Am-241_Rev1.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 1.10E+00 1.10E+00

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 1.10E+00 1.10E+00

Room 544 Actinium-227

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

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Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

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RESRAD-BUILD Input Parameters

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Number of Sources : 5
Number of Receptors: 1
Total Time : 3.650000E+02 days
Fraction Inside : 2.283105E-01

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

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	1.510	2.780	0.910	1.000	1.80E+01	1.00E-04

===== Receptor-Source Shielding Relationship =====

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

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

==== Building Information =====

Building Air Exchange Rate: 3.00E-01 1/hr

Height [m]	Air Exchanges [m3/hr]	
Area [m2]	*****	
	*	*
	*	*
	*	<=Q01: 1.76E+01
H1: 3.500	* Room 1	* Q10 : 1.76E+01
	* LAMBDA: 3.00E-01	*
Area 16.770	*	*
	*	*

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91[m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AC-227	1.400E+03	1.480E-02	6.724E+00	2.161E-03

Source: 2

Location:: Room : 1 x: 1.51 y: 5.56 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AC-227	9.870E+02	1.480E-02	6.724E+00	2.161E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Source: 3

Location:: Room : 1 x: 3.02 y: 2.78 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AC-227	4.680E+03	1.480E-02	6.724E+00	2.161E-03

Source: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91[m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AC-227	2.840E+03	1.480E-02	6.724E+00	2.161E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00[m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
AC-227	2.530E+03	1.480E-02	6.724E+00	2.161E-03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

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Assessment for Time: 1

Time =0.00E+00 yr

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

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	1.400E+03

Source: 2

Location:: Room : 1 x: 1.51 y: 5.56 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	9.870E+02

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 3

Location:: Room : 1 x: 3.02 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	4.680E+03

Source: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	2.840E+03

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	2.530E+03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	8.56E-01	1.11E+00	5.27E+00	3.19E+00	4.70E+00	1.51E+01
Total	8.56E-01	1.11E+00	5.27E+00	3.19E+00	4.70E+00	1.51E+01

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.50E-04	4.94E-06	4.16E-08	8.50E-01	0.00E+00	4.98E-03
Total	7.50E-04	4.94E-06	4.16E-08	8.50E-01	0.00E+00	4.98E-03

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.05E-04	6.42E-06	5.40E-08	1.10E+00	0.00E+00	6.46E-03
Total	3.05E-04	6.42E-06	5.40E-08	1.10E+00	0.00E+00	6.46E-03

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.47E-03	3.04E-05	2.56E-07	5.23E+00	0.00E+00	3.06E-02
Total	3.47E-03	3.04E-05	2.56E-07	5.23E+00	0.00E+00	3.06E-02

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.79E-04	1.85E-05	1.55E-07	3.18E+00	0.00E+00	1.86E-02
Total	8.79E-04	1.85E-05	1.55E-07	3.18E+00	0.00E+00	1.86E-02

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.68E-03	2.72E-05	2.29E-07	4.67E+00	0.00E+00	2.73E-02
Total	4.68E-03	2.72E-05	2.29E-07	4.67E+00	0.00E+00	2.73E-02

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AC-227	8.56E-01	8.56E-01

Source: 2

Nuclide	Receptor	Total
	1	
AC-227	1.11E+00	1.11E+00

Source: 3

Nuclide	Receptor	Total
	1	
AC-227	5.27E+00	5.27E+00

Source: 4

Nuclide	Receptor	Total
	1	
AC-227	3.19E+00	3.19E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 5

Nuclide	Receptor	Total
	1	
AC-227	4.70E+00	4.70E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

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Assessment for Time: 2
Time =1.00E+00 yr

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

Source: 1

Location:: Room : 1 x: 0.00 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	1.331E+03

Source: 2

Location:: Room : 1 x: 1.51 y: 5.56 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	9.387E+02

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 3

Location:: Room : 1 x: 3.02 y: 2.78 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	4.451E+03

Source: 4

Location:: Room : 1 x: 1.51 y: 0.00 z: 0.91 [m]

Geometry:: Type: Area Length[m]:5.56E+00 Width[m]:1.83E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	2.701E+03

Source: 5

Location:: Room : 1 x: 1.51 y: 2.78 z: 0.00 [m]

Geometry:: Type: Area Length[m]:3.02E+00 Width[m]:5.56E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	AC-227	2.406E+03

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	8.29E-01	1.08E+00	5.10E+00	3.09E+00	4.55E+00	1.47E+01
Total	8.29E-01	1.08E+00	5.10E+00	3.09E+00	4.55E+00	1.47E+01

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.13E-04	4.79E-06	4.03E-08	8.24E-01	0.00E+00	4.82E-03
Total	7.13E-04	4.79E-06	4.03E-08	8.24E-01	0.00E+00	4.82E-03

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	2.90E-04	6.22E-06	5.23E-08	1.07E+00	0.00E+00	6.26E-03
Total	2.90E-04	6.22E-06	5.23E-08	1.07E+00	0.00E+00	6.26E-03

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	3.30E-03	2.95E-05	2.48E-07	5.07E+00	0.00E+00	2.97E-02
Total	3.30E-03	2.95E-05	2.48E-07	5.07E+00	0.00E+00	2.97E-02

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	8.36E-04	1.79E-05	1.51E-07	3.08E+00	0.00E+00	1.80E-02
Total	8.36E-04	1.79E-05	1.51E-07	3.08E+00	0.00E+00	1.80E-02

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.45E-03	2.63E-05	2.21E-07	4.52E+00	0.00E+00	2.65E-02
Total	4.45E-03	2.63E-05	2.21E-07	4.52E+00	0.00E+00	2.65E-02

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
AC-227	8.29E-01	8.29E-01

Source: 2

Nuclide	Receptor	Total
	1	
AC-227	1.08E+00	1.08E+00

Source: 3

Nuclide	Receptor	Total
	1	
AC-227	5.10E+00	5.10E+00

Source: 4

Nuclide	Receptor	Total
	1	
AC-227	3.09E+00	3.09E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 5

Nuclide	Receptor	Total
	1	
AC-227	4.55E+00	4.55E+00

Title : DHS NUSTL Room 544, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_544_Surficial_Ac-227_Rev1.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 1.51E+01 1.47E+01

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 1.51E+01 1.47E+01

Room B-8 Plutonium-239

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

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Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

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RESRAD-BUILD Input Parameters
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Number of Sources : 5
Number of Receptors: 1
Total Time : 3.650000E+02 days
Fraction Inside : 4.566210E-03
    
```

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===== Receptor Information =====
    
```

Receptor	Room	x [m]	y [m]	z [m]	FracTime	Inhalation [m3/day]	Ingestion(Dust) [m2/hr]
1	1	4.570	6.860	1.830	1.000	1.80E+01	1.00E-04

```

===== Receptor-Source Shielding Relationship =====
    
```

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

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

==== Building Information ====

Building Air Exchange Rate: 3.00E-01 1/hr

Height [m]	Air Exchanges [m3/hr]	
Area [m2]	*****	
	*	*
	*	*
	*	<=Q01: 1.38E+02
H1: 3.660	* Room 1	* Q10 : 1.38E+02
	* LAMBDA: 3.00E-01	*
Area 125.420	*	*
	*	*

Deposition velocity: 1.00E-02 [m/s] Resuspension Rate: 5.00E-07 [1/s]

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

==== Source Information =====

Source: 1

Location:: Room : 1 x: 0.00 y: 6.86 z: 1.83[m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
PU-239	1.230E+02	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: 4.57 y: 13.72 z: 1.83[m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
PU-239	3.700E+02	3.540E-03	4.290E-01	4.952E-07
U-235	0.000E+00	2.673E-04	1.230E-01	9.019E-04

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

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: 9.14 y: 6.86 z: 1.83[m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 5.000E-01
 Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

	[pCi/m2]	Dose Conversion Factor (Library: FGR 11)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/(pCi/m3)]
PU-239	6.160E+01	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: 4

Location:: Room : 1 x: 4.57 y: 0.00 z: 1.83[m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
 Fraction released to air: 1.000E-01
 Removable fraction: 5.000E-01
 Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

	[pCi/m2]	Dose Conversion Factor (Library: FGR 11)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [mrem/yr/(pCi/m3)]
PU-239	6.160E+01	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

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

AC-227 0.000E+00 1.480E-02 6.724E+00 2.161E-03

Source: 5

Location:: Room : 1 x: 4.57 y: 6.86 z: 0.00[m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:9.14E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::

Nuclide Concentration Dose Conversion Factor (Library: FGR 11)

		Ingestion	Inhalation	Submersion
	[pCi/m2]	[mrem/pCi]	[mrem/pCi]	[mrem/yr/ (pCi/m3)]
PU-239	1.580E+03	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

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

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Assessment for Time: 1
Time =0.00E+00 yr
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```

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

Source: 1

Location:: Room : 1 x: 0.00 y: 6.86 z: 1.83 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	1.230E+02
	U-235	0.000E+00
	PA-231	0.000E+00
	AC-227	0.000E+00

Source: 2

Location:: Room : 1 x: 4.57 y: 13.72 z: 1.83 [m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	3.700E+02
	U-235	0.000E+00
	PA-231	0.000E+00
	AC-227	0.000E+00

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 3

Location:: Room : 1 x: 9.14 y: 6.86 z: 1.83 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	6.160E+01
	U-235	0.000E+00
	PA-231	0.000E+00
	AC-227	0.000E+00

Source: 4

Location:: Room : 1 x: 4.57 y: 0.00 z: 1.83 [m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	6.160E+01
	U-235	0.000E+00
	PA-231	0.000E+00
	AC-227	0.000E+00

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Source: 5

Location:: Room : 1 x: 4.57 y: 6.86 z: 0.00 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:9.14E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 5.000E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	1.580E+03
	U-235	0.000E+00
	PA-231	0.000E+00
	AC-227	0.000E+00

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	1.23E-04	2.46E-04	6.15E-05	4.10E-05	3.94E-03	4.41E-03
Total	1.23E-04	2.46E-04	6.15E-05	4.10E-05	3.94E-03	4.41E-03

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.66E-10	6.30E-11	2.12E-14	1.20E-04	0.00E+00	2.65E-06
Total	9.66E-10	6.30E-11	2.12E-14	1.20E-04	0.00E+00	2.65E-06

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.14E-10	1.26E-10	4.24E-14	2.41E-04	0.00E+00	5.30E-06
Total	7.14E-10	1.26E-10	4.24E-14	2.41E-04	0.00E+00	5.30E-06

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.84E-10	3.15E-11	1.06E-14	6.02E-05	0.00E+00	1.33E-06
Total	4.84E-10	3.15E-11	1.06E-14	6.02E-05	0.00E+00	1.33E-06

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.19E-10	2.10E-11	7.06E-15	4.01E-05	0.00E+00	8.83E-07
Total	1.19E-10	2.10E-11	7.06E-15	4.01E-05	0.00E+00	8.83E-07

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.40E-07	2.02E-09	6.79E-13	3.86E-03	0.00E+00	8.49E-05
Total	1.40E-07	2.02E-09	6.79E-13	3.86E-03	0.00E+00	8.49E-05

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
PU-239	1.23E-04	1.23E-04
U-235	1.73E-14	1.73E-14
PA-231	1.27E-18	1.27E-18
AC-227	4.87E-20	4.87E-20

Source: 2

Nuclide	Receptor	Total
	1	
PU-239	2.46E-04	2.46E-04
U-235	3.45E-14	3.45E-14
PA-231	2.55E-18	2.55E-18
AC-227	9.76E-20	9.76E-20

Source: 3

Nuclide	Receptor	Total
	1	
PU-239	6.15E-05	6.15E-05
U-235	8.68E-15	8.68E-15
PA-231	6.37E-19	6.37E-19
AC-227	2.44E-20	2.44E-20

Source: 4

Nuclide	Receptor	Total
	1	
PU-239	4.10E-05	4.10E-05

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 0.0000000E+00 years

U-235	5.75E-15	5.75E-15
PA-231	4.24E-19	4.24E-19
AC-227	1.63E-20	1.63E-20

Source: 5

Nuclide	Receptor	Total
	1	
PU-239	3.94E-03	3.94E-03
U-235	5.65E-13	5.65E-13
PA-231	4.08E-17	4.08E-17
AC-227	1.56E-18	1.56E-18

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

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Assessment for Time: 2
Time =1.00E+00 yr

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

Source: 1

Location:: Room : 1 x: 0.00 y: 6.86 z: 1.83 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	1.208E+02
	U-235	1.189E-07
	PA-231	1.256E-12
	AC-227	1.321E-14

Source: 2

Location:: Room : 1 x: 4.57 y: 13.72 z: 1.83 [m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]
Fraction released to air: 1.000E-01
Removable fraction: 4.907E-01
Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	3.632E+02
	U-235	3.576E-07
	PA-231	3.779E-12
	AC-227	3.973E-14

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 3

Location:: Room : 1 x: 9.14 y: 6.86 z: 1.83 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:3.66E+00 Direction: x

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	6.047E+01
	U-235	5.954E-08
	PA-231	6.291E-13
	AC-227	6.615E-15

Source: 4

Location:: Room : 1 x: 4.57 y: 0.00 z: 1.83 [m]

Geometry:: Type: Area Length[m]:9.14E+00 Width[m]:3.66E+00 Direction: y

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	6.047E+01
	U-235	5.954E-08
	PA-231	6.291E-13
	AC-227	6.615E-15

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

Source: 5

Location:: Room : 1 x: 4.57 y: 6.86 z: 0.00 [m]

Geometry:: Type: Area Length[m]:1.37E+01 Width[m]:9.14E+00 Direction: z

Pathway ::

Direct Ingestion Rate: 0.000E+00 [1/hr]

Fraction released to air: 1.000E-01

Removable fraction: 4.907E-01

Time to Remove: 1.000E+04 [day]

Contamination::	Nuclide	Concentration
		[pCi/m2]
	PU-239	1.551E+03
	U-235	1.527E-06
	PA-231	1.614E-11
	AC-227	1.697E-13

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

RESRAD-BUILD Dose Tables

Source Contributions to Receptor Doses

[mrem]

	Source	Source	Source	Source	Source	Total
	1	2	3	4	5	
Receptor 1	1.23E-04	2.46E-04	6.15E-05	4.10E-05	3.94E-03	4.41E-03
Total	1.23E-04	2.46E-04	6.15E-05	4.10E-05	3.94E-03	4.41E-03

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

Pathway Detail of Doses

[mrem]

Source: 1

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	9.48E-10	6.30E-11	2.12E-14	1.20E-04	0.00E+00	2.65E-06
Total	9.48E-10	6.30E-11	2.12E-14	1.20E-04	0.00E+00	2.65E-06

Source: 2

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	7.01E-10	1.26E-10	4.24E-14	2.41E-04	0.00E+00	5.30E-06
Total	7.01E-10	1.26E-10	4.24E-14	2.41E-04	0.00E+00	5.30E-06

Source: 3

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	4.75E-10	3.15E-11	1.06E-14	6.02E-05	0.00E+00	1.33E-06
Total	4.75E-10	3.15E-11	1.06E-14	6.02E-05	0.00E+00	1.33E-06

Source: 4

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.17E-10	2.10E-11	7.06E-15	4.01E-05	0.00E+00	8.83E-07
Total	1.17E-10	2.10E-11	7.06E-15	4.01E-05	0.00E+00	8.83E-07

Source: 5

Receptor	External	Deposition	Immersion	Inhalation	Radon	Ingestion
1	1.37E-07	2.02E-09	6.79E-13	3.86E-03	0.00E+00	8.49E-05
Total	1.37E-07	2.02E-09	6.79E-13	3.86E-03	0.00E+00	8.49E-05

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

Nuclide Detail of Doses

[mrem]

Source: 1

Nuclide	Receptor	Total
	1	
PU-239	1.23E-04	1.23E-04
U-235	5.20E-14	5.20E-14
PA-231	8.90E-18	8.90E-18
AC-227	7.26E-19	7.26E-19

Source: 2

Nuclide	Receptor	Total
	1	
PU-239	2.46E-04	2.46E-04
U-235	1.04E-13	1.04E-13
PA-231	1.78E-17	1.78E-17
AC-227	1.46E-18	1.46E-18

Source: 3

Nuclide	Receptor	Total
	1	
PU-239	6.15E-05	6.15E-05
U-235	2.60E-14	2.60E-14
PA-231	4.46E-18	4.46E-18
AC-227	3.64E-19	3.64E-19

Source: 4

Nuclide	Receptor	Total
	1	
PU-239	4.10E-05	4.10E-05

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Evaluation Time: 1.00000000 years

U-235	1.72E-14	1.72E-14
PA-231	2.97E-18	2.97E-18
AC-227	2.42E-19	2.42E-19

Source: 5

Nuclide	Receptor	Total
	1	
PU-239	3.94E-03	3.94E-03
U-235	1.69E-12	1.69E-12
PA-231	2.86E-16	2.86E-16
AC-227	2.33E-17	2.33E-17

Title : DHS NUSTL Room B-8, Surficial Contaminat

Input File : C:\RESRAD_Family\BUILD\3.5\NUSTL_Rm_B-8_Surficial_Pu-239_Rev1.bld

Full Summary

RESRAD-BUILD Dose (Time) Tables

Receptor Dose Received for the Exposure Duration

(mrem)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 4.41E-03 4.41E-03

Receptor Dose/Yr Averaged Over Exposure Duration

(mrem/yr)

Evaluation Time [yr]

0.00E+00 1.00E+00

1 4.42E-03 4.42E-03