

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

---

---

RESRAD-BUILD Table of Contents

---

---

RESRAD-BUILD Input Parameters.....	2
Building Information.....	3
Source Information.....	4
For time = 0.00E+00 yr	
Time Specific Parameters.....	7
Receptor-Source Dose Summary.....	10
Dose by Pathway Detail.....	11
Dose by Nuclide Detail.....	12
For time = 1.00E+00 yr	
Time Specific Parameters.....	14
Receptor-Source Dose Summary.....	17
Dose by Pathway Detail.....	18
Dose by Nuclide Detail.....	19
Full Summary.....	21

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

```

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

```

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

```

===== 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)

	[pCi/m2]	Dose Conversion Factor (Library: FGR 11)		
		Ingestion [mrem/pCi]	Inhalation [mrem/pCi]	Submersion [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

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

```
=====
=====
=====
=====
=====
=====
=====
=====
=====
=====
=====
```

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