Residential Doses Calculated in RESRAD-BUILD Based on Removable Fractions (1%, 10%, and 20%)
Hunters Point Naval Shipyard Building Surfaces

Dose-Removable Fraction Scenario:					
		Resident Child Dose[b]			
Isotope[a]	Building Surface RGs (dpm/100 cm^2)	Dose - Floor (mrem)	Dose - 1 Wall (mrem)	Dose - 4 Walls (mrem)	Total Child Dose (mrem/yr)
AM-241	**100**	1.63E-01	1.03E-01	4.12E-01	9.58E-02
NP-237	---	2.64E-07	1.53E-07	6.12E-07	1.46E-07
U-233	---	3.63E-13	2.37E-13	9.48E-13	2.19E-13
TH-229	---	9.71E-16	6.01E-16	2.40E-15	5.63E-16
PU-239	**100**	1.43E-01	9.37E-02	3.75E-01	8.63E-02
U-235	---	3.18E-10	1.63E-10	6.52E-10	1.62E-10
PA-231	---	5.54E-14	3.58E-14	1.43E-13	3.31E-14
AC-227	---	1.24E-14	7.91E-15	3.16E-14	7.34E-15
U-235	**488**	5.26E-01	2.70E-01	1.08E+00	2.68E-01
PA-231	---	1.38E-04	8.90E-05	3.56E-04	8.23E-05
AC-227	---	4.05E-05	2.59E-05	1.04E-04	2.40E-05
TH-232	**36.5**	1.87E-01	1.23E-01	4.92E-01	1.13E-01
TH-228	---	1.48E-01	9.13E-02	3.65E-01	8.55E-02
RA-228	---	3.90E-02	1.70E-02	6.80E-02	1.78E-02
RA-226	**100**	9.29E-01	4.66E-01	1.86E+00	4.66E-01
PB-210	---	1.91E-03	1.20E-03	4.80E-03	1.12E-03
EU-154	**5,000**	1.87E+01	8.10E+00	3.24E+01	8.52E+00
GD-152	---	6.55E-14	4.29E-14	1.72E-13	3.95E-14
EU-152	**5,000**	1.88E+01	8.14E+00	3.26E+01	8.56E+00
CS-137	**5,000**	1.02E+01	4.40E+00	1.76E+01	4.63E+00
SR-90	**1,000**	2.82E-02	1.39E-02	5.56E-02	1.40E-02
CO-60	**5,000**	3.16E+01	1.37E+01	5.48E+01	1.44E+01
H-3	**5,000**	8.47E-06	5.55E-06	2.22E-05	5.11E-06
				Total Receptor Risk =	**3.73E+01**

Notes:

[a] Isotopes presented in bold are radionuclides of concern (ROCs) for HPNS building structures for which RGs were established.

[b] Isoptope-specific source doses presented for floor and walls each represent cumulative doses calculated based on the ROC RG

Removable Fraction = 1%

Resident Adult Dose[b]				Total Residential Dose (mrem/yr)	Resident Child Dose[b]		
Dose - Floor (mrem)	Dose - 1 Wall (mrem)	Dose - 4 Walls (mrem)	Total Adult Dose (mrem/yr)		Dose - Floor (mrem)	Dose - 1 Wall (mrem)	Dose - 4 Walls (mrem)
9.36E-01	6.02E-01	2.41E+00	1.67E-01	2.63E-01	1.48E+00	9.67E-01	3.87E+00
7.61E-06	4.61E-06	1.84E-05	1.30E-06	1.45E-06	1.83E-06	1.18E-06	4.72E-06
6.02E-11	3.93E-11	1.57E-10	1.09E-11	1.11E-11	3.59E-12	2.35E-12	9.40E-12
6.74E-13	4.28E-13	1.71E-12	1.19E-13	1.20E-13	8.28E-15	5.40E-15	2.16E-14
8.81E-01	5.77E-01	2.31E+00	1.59E-01	2.46E-01	1.43E+00	9.35E-01	3.74E+00
7.98E-09	4.38E-09	1.75E-08	1.28E-09	1.44E-09	1.34E-09	8.33E-10	3.33E-09
8.89E-12	5.78E-12	2.31E-11	1.60E-12	1.63E-12	5.32E-13	3.48E-13	1.39E-12
8.09E-12	5.24E-12	2.10E-11	1.45E-12	1.46E-12	1.16E-13	7.56E-14	3.02E-13
2.33E+00	1.28E+00	5.12E+00	3.73E-01	6.40E-01	2.22E+00	1.38E+00	5.52E+00
4.66E-03	3.03E-03	1.21E-02	8.39E-04	9.21E-04	1.32E-03	8.66E-04	3.46E-03
5.64E-03	3.65E-03	1.46E-02	1.01E-03	1.04E-03	3.79E-04	2.48E-04	9.92E-04
1.21E+00	7.91E-01	3.16E+00	2.19E-01	3.32E-01	1.87E+00	1.23E+00	4.92E+00
2.80E+00	1.73E+00	6.92E+00	4.86E-01	5.72E-01	1.77E-01	1.10E-01	4.40E-01
3.76E-01	1.64E-01	6.56E-01	5.16E-02	6.94E-02	4.32E-02	1.98E-02	7.92E-02
3.06E+00	1.54E+00	6.16E+00	4.61E-01	9.27E-01	9.80E-01	5.00E-01	2.00E+00
2.37E-02	1.47E-02	5.88E-02	4.13E-03	5.24E-03	1.70E-02	1.11E-02	4.44E-02
2.26E+01	9.79E+00	3.92E+01	3.09E+00	1.16E+01	1.86E+01	8.06E+00	3.22E+01
1.70E-12	1.11E-12	4.44E-12	3.07E-13	3.47E-13	6.55E-13	4.29E-13	1.72E-12
3.13E+01	1.36E+01	5.44E+01	4.29E+00	1.28E+01	1.86E+01	8.10E+00	3.24E+01
2.45E+01	1.06E+01	4.24E+01	3.35E+00	7.98E+00	1.01E+01	4.41E+00	1.76E+01
7.11E-02	3.57E-02	1.43E-01	1.07E-02	2.47E-02	9.69E-02	5.90E-02	2.36E-01
2.13E+01	9.22E+00	3.69E+01	2.91E+00	1.73E+01	3.13E+01	1.36E+01	5.44E+01
9.40E-06	6.17E-06	2.47E-05	1.70E-06	6.82E-06	8.47E-05	5.56E-05	2.22E-04
			1.56E+01	**5.28E+01**			

Non-bolded isotopes represent decay chain nuclides with no established RGs.

ɜs, over all exposure pathways (ingestion, inhalation, external, submersion, deposition, and radon). Doses for the floor and wa

Removable Fraction = 10%							
b	Resident Adult Dose[b]					Resident	
Total Child Dose (mrem/yr)	Dose - Floor (mrem)	Dose - 1 Wall (mrem)	Dose - 4 Walls (mrem)	Total Adult Dose (mrem/yr)	Total Residential Dose (mrem/yr)	Dose - Floor (mrem)	Dose - 1 Wall (mrem)
8.91E-01	8.88E+00	5.81E+00	2.32E+01	1.61E+00	2.50E+00	2.94E+00	1.93E+00
1.09E-06	6.08E-05	3.95E-05	1.58E-04	1.09E-05	1.20E-05	3.56E-06	2.32E-06
2.17E-12	5.97E-10	3.92E-10	1.57E-09	1.08E-10	1.10E-10	7.17E-12	4.70E-12
4.98E-15	6.16E-12	4.02E-12	1.61E-11	1.11E-12	1.12E-12	1.64E-14	1.07E-14
8.62E-01	8.79E+00	5.76E+00	2.30E+01	1.59E+00	2.45E+00	2.85E+00	1.87E+00
7.79E-10	4.48E-08	2.86E-08	1.14E-07	7.96E-09	8.74E-09	2.46E-09	1.57E-09
3.21E-13	8.64E-11	5.66E-11	2.26E-10	1.56E-11	1.60E-11	1.06E-12	6.94E-13
6.97E-14	7.77E-11	5.09E-11	2.04E-10	1.41E-11	1.41E-11	2.30E-13	1.51E-13
1.29E+00	1.32E+01	8.41E+00	3.36E+01	2.34E+00	3.63E+00	4.11E+00	2.62E+00
7.97E-04	4.55E-02	2.98E-02	1.19E-01	8.24E-03	9.03E-03	2.64E-03	1.73E-03
2.29E-04	5.44E-02	3.56E-02	1.42E-01	9.84E-03	1.01E-02	7.55E-04	4.95E-04
1.13E+00	1.21E+01	7.90E+00	3.16E+01	2.19E+00	3.32E+00	3.75E+00	2.46E+00
1.03E-01	3.72E+00	2.33E+00	9.32E+00	6.52E-01	7.55E-01	2.08E-01	1.31E-01
2.04E-02	3.92E-01	1.80E-01	7.20E-01	5.56E-02	7.60E-02	4.77E-02	2.29E-02
4.97E-01	3.10E+00	1.58E+00	6.32E+00	4.71E-01	9.68E-01	1.03E+00	5.38E-01
1.02E-02	2.05E-01	1.33E-01	5.32E-01	3.69E-02	4.71E-02	3.37E-02	2.21E-02
8.47E+00	2.15E+01	9.36E+00	3.74E+01	2.95E+00	1.14E+01	1.84E+01	8.01E+00
3.95E-13	1.70E-11	1.12E-11	4.48E-11	3.09E-12	3.49E-12	1.31E-12	8.59E-13
8.50E+00	2.97E+01	1.29E+01	5.16E+01	4.07E+00	1.26E+01	1.85E+01	8.04E+00
4.62E+00	2.33E+01	1.01E+01	4.04E+01	3.19E+00	7.81E+00	1.01E+01	4.41E+00
5.55E-02	2.65E-01	1.64E-01	6.56E-01	4.61E-02	1.02E-01	1.73E-01	1.09E-01
1.43E+01	2.04E+01	8.84E+00	3.54E+01	2.79E+00	1.71E+01	3.11E+01	1.35E+01
5.12E-05	9.41E-05	6.17E-05	2.47E-04	1.70E-05	6.82E-05	1.69E-04	1.11E-04
4.07E+01				**2.20E+01**	**6.27E+01**		

ıls are presented as total mrem calculated over the exposure duration (i.e., 6 years for a child and 20 years for an adult). The

Removable Fraction = 20%						
Child Dose[b]		Resident Adult Dose[b]				Total Residential Dose (mrem/yr)
Dose - 4 Walls (mrem)	Total Child Dose (mrem/yr)	Dose - Floor (mrem)	Dose - 1 Wall (mrem)	Dose - 4 Walls (mrem)	Total Adult Dose (mrem/yr)	
7.72E+00	1.78E+00	1.77E+01	1.16E+01	4.64E+01	3.21E+00	4.98E+00
9.28E-06	2.14E-06	1.20E-04	7.83E-05	3.13E-04	2.17E-05	2.38E-05
1.88E-11	4.33E-12	1.19E-09	7.83E-10	3.13E-09	2.16E-10	2.20E-10
4.28E-14	9.87E-15	1.22E-11	8.02E-12	3.21E-11	2.21E-12	2.22E-12
7.48E+00	1.72E+00	1.76E+01	1.15E+01	4.60E+01	3.18E+00	4.90E+00
6.28E-09	1.46E-09	8.50E-08	5.50E-08	2.20E-07	1.53E-08	1.67E-08
2.78E-12	6.39E-13	1.71E-10	1.12E-10	4.48E-10	3.10E-11	3.16E-11
6.04E-13	1.39E-13	1.54E-10	1.01E-10	4.04E-10	2.79E-11	2.80E-11
1.05E+01	2.43E+00	2.52E+01	1.63E+01	6.52E+01	4.52E+00	6.95E+00
6.92E-03	1.59E-03	9.09E-02	5.96E-02	2.38E-01	1.65E-02	1.81E-02
1.98E-03	4.56E-04	1.09E-01	7.12E-02	2.85E-01	1.97E-02	2.01E-02
9.84E+00	2.27E+00	2.41E+01	1.58E+01	6.32E+01	4.37E+00	6.63E+00
5.24E-01	1.22E-01	4.73E+00	3.01E+00	1.20E+01	8.39E-01	9.61E-01
9.16E-02	2.32E-02	4.10E-01	1.97E-01	7.88E-01	5.99E-02	8.31E-02
2.15E+00	5.30E-01	3.13E+00	1.64E+00	6.56E+00	4.85E-01	1.01E+00
8.84E-02	2.04E-02	4.06E-01	2.65E-01	1.06E+00	7.33E-02	9.37E-02
3.20E+01	8.41E+00	2.04E+01	8.88E+00	3.55E+01	2.80E+00	1.12E+01
3.44E-12	7.91E-13	3.40E-11	2.23E-11	8.92E-11	6.16E-12	6.95E-12
3.22E+01	8.44E+00	2.80E+01	1.22E+01	4.88E+01	3.84E+00	1.23E+01
1.76E+01	4.62E+00	2.19E+01	9.53E+00	3.81E+01	3.00E+00	7.62E+00
4.36E-01	1.02E-01	4.81E-01	3.06E-01	1.22E+00	8.53E-02	1.87E-01
5.40E+01	1.42E+01	1.93E+01	8.40E+00	3.36E+01	2.65E+00	1.68E+01
4.44E-04	1.02E-04	1.88E-04	1.23E-04	4.92E-04	3.40E-05	1.36E-04
	4.47E+01				**2.91E+01**	**7.38E+01**

total child dose (calculated as the sum of the floor + 4 walls) and total adult dose are then divided by the receptor