Dose Comparison and Decay Corrected Dose Comparison Summary
Adult Indoor Worker Shortlived Isotope Dose and Risk Comparisons

Isotope	Concentration Ground Plane (pCi/cm^2)	BDCC Dose mrem/yr	RESRADBLD Dose mrem/yr	RESRADBLD Dose 25 years mrem	BDCC Dose * 25 years mrem	BDCC Decayed Dose * 25 years
Co-60	2.25E+01	**1.86E+01**	**6.31E+00**	**4.80E+01**	4.65E+02	1.46E+02
Cs-137 and Ba-137	-	***2.21E+00***	**1.56E+00**	**2.97E+01**	5.53E+01	4.25E+01
Eu-152	2.25E+01	**1.28E+01**	**3.11E+00**	**4.39E+01**	3.20E+02	1.85E+02
Eu-154	2.25E+01	**1.10E+01**	**3.31E+00**	**3.69E+01**	2.75E+02	1.23E+02
Total shortlived HPNS Dose		**4.46E+01**	**1.43E+01**	**1.58E+02**	**1.12E+03**	**4.97E+02**

Ba-137m	2.25E+01	**2.21E+00**
Cs-137	2.25E+01	**1.40E-03**

Adult Indoor Worker Risk Comparison and Decay Corrected Risk Comparisor

Isotope	Concentration Ground Plane (pCi/cm^2{super 2})	Ground Plane Risk 1yr	RESRADBLD Risk 1Yr	RESRADBLD Risk 25 years	BPRG Risk * 25 years	BPRG Decayed Risk * 25 years
Co-60	2.25E+01	**3.59E-05**	**4.84E-06**	**3.67E-05**	8.98E-04	2.81E-04
Cs-137+Ba-137m	***2.25E+01***	***4.09E-06***	**3.95E-06**	**2.21E-05**	1.02E-04	7.86E-05
Eu-152	2.25E+01	**2.63E-05**	**2.35E-06**	**3.32E-05**	6.58E-04	3.80E-04
Eu-154	2.25E+01	**2.15E-05**	**2.51E-06**	**2.79E-05**	5.38E-04	2.41E-04
Total Shortlived HPNS Risk		**8.78E-05**	**1.37E-05**	**1.20E-04**	**2.19E-03**	**9.81E-04**

Ba-137m	2.25E+01	**4.08E-06**
Cs-137	2.25E+01	**5.56E-09**

% Difference BDCC vs BDCC Decay	BDCC ratio to BDCC Decay	% Difference RESRADBLD vs BDCC 1 yr	BDCC /RESRADBLD 1 yr	% Difference RESRADBLD vs BDCC Decay 25yr	BDCC Decay/ RESRADBLD 25 yr	BDCC no decay 25 yr /RESRAD 25 yr	Impact factor of decay to Calc/RESBLD
105	3.19	98.65	2.95	100.86	3.03	9.68	3.19
26	1.30	34.36	1.41	35.60	1.43	1.86	1.30
53	1.73	121.79	4.11	123.28	4.21	7.28	1.73
76	2.23	107.52	3.33	107.85	3.34	7.46	2.23
77	2.25	102.94	3.12	103.44	3.14	7.06	2.25

ı Summary

% Difference BPRG vs BPRG Decay	BPRG ratio to BPRG Decay	% Difference RESRADBLD vs BPRG 1 year	BPRG /RESRADBLD 1 yr	% Difference RESRADBLD vs BPRG Decay 25 yr	BPRG/RESRADBLD Decay 25 yr	BPRG no Decay 25 yr / RESRADBLD 25 yr	Impact factor of decay to Calc/RESBLD
105	3.19	152.51	7.42	153.80	7.66	24.43	3.19
26	1.30	3.32	1.03	112.13	3.55	4.62	1.30
53	1.73	167.15	11.18	167.88	11.45	19.79	1.73
76	2.23	158.17	8.56	158.45	8.63	19.27	2.23
76	2.24	146.17	6.43	156.41	8.18	18.29	2.24

Isotope	External Exposure DCF (Ground Plane) (mrem/yr per pCi/cm^2)	Concentration Ground Plane (pCi/cm^2)	Lambda	Halflife (yr)	Ground Plane Dose	
Co-60	2.74E+00	2.25E+01	1.31E-01	5.27E+00	**1.86E+01**	1.63E+01
Cs-137 and Ba-137	***6.84E-01***	**-**	***2.30E-02***	***3.02E+01***	***2.21E+00***	2.16E+00
Eu-152	1.28E+00	2.25E+01	5.12E-02	1.35E+01	**1.28E+01**	1.22E+01
Eu-154	1.39E+00	2.25E+01	8.06E-02	8.59E+00	**1.10E+01**	1.01E+01
Ba-137m	6.84E-01	2.25E+01	1.43E+05	4.86E-06	**2.21E+00**	
Cs-137	3.33E-04	2.25E+01	2.30E-02	3.02E+01	**1.40E-03**	

25 yr/halflife
4.74E+00
8.28E-01
1.85E+00
2.91E+00

Isotope	External Exposure Slope Factor (Ground Plane) (risk/yr per pCi/cm^2{super 2})	Concentration Ground Plane (pCi/cm^2{super 2})	Lambda	Halflife (yr)	Ground Plane Risk	
Co-60	2.18E-06	2.25E+01	1.31E-01	5.27E+00	**3.59E-05**	3.15E-05
Cs-137+Ba-137m	**-**	***2.25E+01***	***2.30E-02***	***3.02E+01***	***4.09E-06***	3.99E-06
Eu-152	1.03E-06	2.25E+01	5.12E-02	1.35E+01	**2.63E-05**	2.50E-05
Eu-154	1.10E-06	2.25E+01	8.06E-02	8.59E+00	**2.15E-05**	1.98E-05
Ba-137m	5.36E-07	2.25E+01	1.43E+05	4.86E-06	**4.08E-06**	
Cs-137	5.53E-10	2.25E+01	2.30E-02	3.02E+01	**5.56E-09**	

1.43E+01	1.26E+01	1.10E+01	9.66E+00	8.48E+00
2.11E+00	2.06E+00	2.02E+00	1.97E+00	1.93E+00
1.16E+01	1.10E+01	1.04E+01	9.91E+00	9.41E+00
9.36E+00	8.64E+00	7.97E+00	7.35E+00	6.78E+00

			Check should = approx 0.5
Predicted rough Half dose =		9.66E+00	5.19E-01
		1.27E+00	5.76E-01
	avg	6.41E+00	5.01E-01
	avg	5.55E+00	5.04E-01

2.76E-05	2.42E-05	2.13E-05	1.86E-05	1.64E-05
3.90E-06	3.81E-06	3.73E-06	3.64E-06	3.56E-06
2.37E-05	2.26E-05	2.14E-05	2.04E-05	1.93E-05
1.83E-05	1.69E-05	1.56E-05	1.44E-05	1.33E-05

			Check should = approx 0.5
Predicted rough Half risk =		1.86E-05	5.19E-01
		2.35E-06	5.76E-01
	avg	1.32E-05	5.01E-01
	avg	1.08E-05	5.04E-01

7.43E+00	6.52E+00	5.72E+00	5.02E+00	4.40E+00	3.86E+00	3.39E+00	2.97E+00
1.88E+00	1.84E+00	1.80E+00	1.76E+00	1.72E+00	1.68E+00	1.64E+00	1.60E+00
8.94E+00	8.50E+00	8.07E+00	7.67E+00	7.29E+00	6.92E+00	6.58E+00	6.25E+00
6.26E+00	5.77E+00	5.33E+00	4.91E+00	4.53E+00	4.18E+00	3.86E+00	3.56E+00

Check passes
25 years not quite 1 half life
Check passes
Check passes

1.43E-05	1.26E-05	1.10E-05	9.69E-06	8.50E-06	7.45E-06	6.54E-06	5.74E-06
3.48E-06	3.40E-06	3.32E-06	3.25E-06	3.17E-06	3.10E-06	3.03E-06	2.96E-06
1.84E-05	1.75E-05	1.66E-05	1.58E-05	1.50E-05	1.42E-05	1.35E-05	1.28E-05
1.22E-05	1.13E-05	1.04E-05	9.60E-06	8.86E-06	8.17E-06	7.54E-06	6.96E-06

Check passes
25 years not quite 1 half life
Check passes
Check passes

2.61E+00	2.29E+00	2.01E+00	1.76E+00	1.54E+00	1.35E+00	1.19E+00	1.04E+00	9.14E-01	8.02E-01
1.57E+00	1.53E+00	1.49E+00	1.46E+00	1.43E+00	1.40E+00	1.36E+00	1.33E+00	1.30E+00	1.27E+00
5.94E+00	5.64E+00	5.36E+00	5.09E+00	4.84E+00	4.60E+00	4.37E+00	4.15E+00	3.94E+00	3.75E+00
3.28E+00	3.03E+00	2.79E+00	2.58E+00	2.38E+00	2.19E+00	2.02E+00	1.87E+00	1.72E+00	1.59E+00

5.03E-06	4.41E-06	3.87E-06	3.40E-06	2.98E-06	2.61E-06	2.29E-06	2.01E-06	1.76E-06	1.55E-06
2.89E-06	2.83E-06	2.76E-06	2.70E-06	2.64E-06	2.58E-06	2.52E-06	2.46E-06	2.41E-06	2.35E-06
1.22E-05	1.16E-05	1.10E-05	1.05E-05	9.94E-06	9.45E-06	8.97E-06	8.53E-06	8.10E-06	7.70E-06
6.42E-06	5.92E-06	5.46E-06	5.04E-06	4.65E-06	4.29E-06	3.96E-06	3.65E-06	3.37E-06	3.11E-06

Total Dose 25 years
1.46E+02

4.25E+01
1.85E+02
1.23E+02

Combined total Dose
4.97E+02

Total risk 25 years
2.81E-04
7.86E-05
3.80E-04
2.41E-04

Combined total risk
9.81E-04

1 Year RESRADBLD Source Dose Evaluation Summary

Isotope	Floor	Wall
Co-60	1.68	0.99
Cs-137 and Ba-137	0.416	0.245
Eu-152	0.828	0.488
Eu-154	0.88	0.519
Total shortlived Dose	3.80	2.24

1 Year RESRADBLD Source Risk Evaluation Summary

Isotope	Floor	Wall
Co-60	1.29E-06	7.58E-07
Cs-137+Ba-137m	3.10E-06	1.82E-07
Eu-152	6.26E-07	3.69E-07
Eu-154	6.68E-07	3.94E-07
Total Shortlived risk	5.68E-06	1.70E-06

25 Year RESRADBLD Source Dose Evaluation Summary

Isotope	Floor	Wall
Co-60	12.8	7.53
Cs-137 and Ba-137	7.9	4.65
Eu-152	11.7	6.89
Eu-154	9.81	5.78
Total shortlived Dose	42.21	24.85

25 year RESRADBLD Source Risk Evaluation Summary

Isotope	Floor	Wall
Co-60	9.79E-06	5.76E-06
Cs-137+Ba-137m	5.89E-06	3.47E-06
Eu-152	8.84E-06	5.21E-06
Eu-154	7.45E-06	4.39E-06
Total Shortlived risk	3.20E-05	1.88E-05

mrem/yr					Evaluation			
Wall	Wall	Wall	Ceiling	Totals	% total due to ceiling	% total due to 4 walls	floor/total	(floor + walls) /floor
0.99	0.99	0.99	0.672	6.312	10.65	62.74	0.27	3.36
0.245	0.245	0.245	0.166	1.562	10.63	62.74	0.27	3.36
0.488	0.488	0.488	0.331	3.111	10.64	62.75	0.27	3.36
0.519	0.519	0.519	0.352	3.308	10.64	62.76	0.27	3.36
2.24	2.24	2.24	1.52	14.29	10.64	62.74	0.27	3.36

Risk					Evaluation			
Wall	Wall	Wall	Ceiling	Totals	% total due to ceiling	% total due to 4 walls	floor/total	(floor + walls) /floor
7.58E-07	7.58E-07	7.58E-07	5.14E-07	4.84E-06	10.63	62.70	0.27	3.35
1.82E-07	1.82E-07	1.82E-07	1.24E-07	3.95E-06	3.14	18.42	0.78	1.23
3.69E-07	3.69E-07	3.69E-07	2.51E-07	2.35E-06	10.67	62.73	0.27	3.36
3.94E-07	3.94E-07	3.94E-07	2.67E-07	2.51E-06	10.63	62.76	0.27	3.36
1.70E-06	1.70E-06	1.70E-06	1.16E-06	1.37E-05	8.47	49.90	0.42	2.20

Risk					Evaluation			
Wall	Wall	Wall	Ceiling	Totals	% total due to ceiling	% total due to 4 walls	Floor/total	(floor + walls) /floor
7.53	7.53	7.53	5.11	48.03	10.64	62.71	0.27	3.35
4.65	4.65	4.65	3.16	29.66	10.65	62.71	0.27	3.35
6.89	6.89	6.89	4.68	43.94	10.65	62.72	0.27	3.36
5.78	5.78	5.78	3.92	36.85	10.64	62.74	0.27	3.36
24.85	24.85	24.85	16.87	158.48	10.64	62.72	0.27	3.35

Risk					Evaluation			
Wall	Wall	Wall	Ceiling	Totals	% total due to ceiling	% total due to 4 walls	floor/total	(floor + walls) /floor
5.76E-06	5.76E-06	5.76E-06	3.91E-06	3.67E-05	10.64	62.71	0.27	3.35
3.47E-06	3.47E-06	3.47E-06	2.35E-06	2.21E-05	10.62	62.75	0.27	3.36
5.21E-06	5.21E-06	5.21E-06	3.54E-06	3.32E-05	10.66	62.73	0.27	3.36
4.39E-06	4.39E-06	4.39E-06	2.88E-06	2.79E-05	10.33	62.96	0.27	3.36
1.88E-05	1.88E-05	1.88E-05	1.27E-05	1.20E-04	10.57	62.78	0.27	3.36

need to double check these values