

MicroShield 7.02
Dominion (07-MSD-7.02-1318)

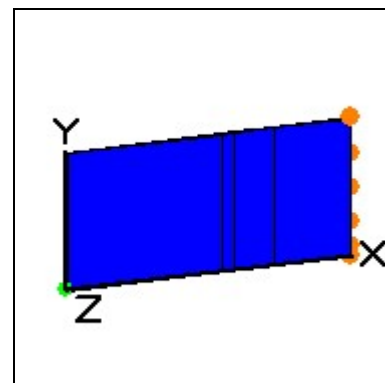
Date	By	Checked

Filename	Run Date	Run Time	Duration
synthConcrete.ms7	November 11, 2022	7:09:04 PM	00:00:00

Project Info	
Case Title	synthetic benchmark
Description	Case 1
Geometry	1 - Point

Dose Points			
A	X	Y	Z
#1	167.64 cm (5 ft 6.0 in)	0.0 cm (0.0 in)	0.0 cm (0.0 in)
#2	167.64 cm (5 ft 6.0 in)	6.0 cm (2.4 in)	0.0 cm (0.0 in)
#3	167.64 cm (5 ft 6.0 in)	20.0 cm (7.9 in)	0.0 cm (0.0 in)
#4	167.64 cm (5 ft 6.0 in)	40.0 cm (1 ft 3.7 in)	0.0 cm (0.0 in)
#5	167.64 cm (5 ft 6.0 in)	60.0 cm (1 ft 11.6 in)	0.0 cm (0.0 in)
#6	167.64 cm (5 ft 6.0 in)	80.7 cm (2 ft 7.8 in)	0.0 cm (0.0 in)

Shields			
Shield N	Dimension	Material	Density
Shield 1	91.44 cm	Air	0.00122
Shield 2	7.62 cm	Iron	7.874
Shield 3	22.86 cm	Air	0.00122
Shield 4	45.72 cm	Concrete	2.34
Air Gap		Air	0.00122



Source Input: Grouping Method - Standard Indices

Number of Groups: 25

Lower Energy Cutoff: 0.015

Photons < 0.015: Excluded

Library: Grove

Nuclide	Ci	Bq
Ba-137m	1.4190e-004	5.2503e+006
Co-58	2.2500e-005	8.3250e+005
Co-60	3.2400e-005	1.1988e+006
Cs-137	1.5000e-004	5.5500e+006
Mn-54	1.2500e-005	4.6250e+005
Sb-125	1.1300e-005	4.1810e+005

Buildup: The material reference is Shield 4
Integration Parameters

Results - Dose Point # 1 - (167.64,0,0) cm					
Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec	Fluence Rate MeV/cm ² /sec	Exposure Rate mR/hr	Exposure Rate mR/hr

		No Buildup	With Buildup	No Buildup	With Buildup
0.03	4.971e+05	8.098e-262	7.141e-28	8.026e-264	7.077e-30
0.04	9.039e+04	9.183e-120	3.443e-28	4.061e-122	1.523e-30
0.1	1.091e+03	4.448e-21	9.013e-19	6.805e-24	1.379e-21
0.15	1.049e+03	2.422e-15	6.274e-13	3.988e-18	1.033e-15
0.2	3.173e+04	6.921e-12	1.662e-09	1.222e-14	2.933e-12
0.3	1.744e+03	2.575e-11	3.989e-09	4.885e-14	7.567e-12
0.4	1.309e+05	2.092e-08	2.096e-06	4.076e-11	4.084e-09
0.5	2.919e+05	2.498e-07	1.732e-05	4.903e-10	3.400e-08
0.6	4.875e+06	1.515e-05	7.715e-04	2.957e-08	1.506e-06
0.8	1.296e+06	2.757e-05	8.649e-04	5.243e-08	1.645e-06
1.0	1.199e+06	1.037e-04	2.269e-03	1.912e-07	4.182e-06
1.5	1.203e+06	1.068e-03	1.280e-02	1.796e-06	2.153e-05
Totals	9.619e+06	1.214e-03	1.672e-02	2.070e-06	2.890e-05

Results - Dose Point # 2 - (167.64,6,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	5.515e-262	7.132e-28	5.466e-264	7.068e-30
0.04	9.039e+04	7.717e-120	3.439e-28	3.413e-122	1.521e-30
0.1	1.091e+03	4.333e-21	8.790e-19	6.630e-24	1.345e-21
0.15	1.049e+03	2.379e-15	6.171e-13	3.917e-18	1.016e-15
0.2	3.173e+04	6.817e-12	1.639e-09	1.203e-14	2.893e-12
0.3	1.744e+03	2.543e-11	3.944e-09	4.824e-14	7.482e-12
0.4	1.309e+05	2.068e-08	2.075e-06	4.030e-11	4.043e-09
0.5	2.919e+05	2.472e-07	1.716e-05	4.852e-10	3.369e-08
0.6	4.875e+06	1.500e-05	7.649e-04	2.929e-08	1.493e-06
0.8	1.296e+06	2.733e-05	8.583e-04	5.198e-08	1.633e-06
1.0	1.199e+06	1.029e-04	2.253e-03	1.897e-07	4.152e-06
1.5	1.203e+06	1.060e-03	1.272e-02	1.784e-06	2.140e-05
Totals	9.619e+06	1.206e-03	1.662e-02	2.056e-06	2.872e-05

Results - Dose Point # 3 - (167.64,20,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	1.149e-263	7.041e-28	1.139e-265	6.978e-30
0.04	9.039e+04	1.339e-120	3.395e-28	5.922e-123	1.502e-30
0.1	1.091e+03	3.331e-21	6.833e-19	5.096e-24	1.045e-21
0.15	1.049e+03	1.987e-15	5.223e-13	3.271e-18	8.601e-16
0.2	3.173e+04	5.852e-12	1.427e-09	1.033e-14	2.519e-12
0.3	1.744e+03	2.237e-11	3.518e-09	4.244e-14	6.674e-12
0.4	1.309e+05	1.844e-08	1.874e-06	3.594e-11	3.651e-09
0.5	2.919e+05	2.225e-07	1.563e-05	4.367e-10	3.069e-08
0.6	4.875e+06	1.360e-05	7.012e-04	2.655e-08	1.369e-06
0.8	1.296e+06	2.504e-05	7.943e-04	4.762e-08	1.511e-06

1.0	1.199e+06	9.501e-05	2.099e-03	1.751e-07	3.868e-06
1.5	1.203e+06	9.912e-04	1.198e-02	1.668e-06	2.016e-05
Totals	9.619e+06	1.125e-03	1.559e-02	1.917e-06	2.694e-05

Results - Dose Point # 4 - (167.64,40,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	3.921e-269	6.756e-28	3.886e-271	6.696e-30
0.04	9.039e+04	4.499e-123	3.258e-28	1.990e-125	1.441e-30
0.1	1.091e+03	1.417e-21	3.014e-19	2.168e-24	4.612e-22
0.15	1.049e+03	1.106e-15	3.037e-13	1.822e-18	5.001e-16
0.2	3.173e+04	3.563e-12	9.098e-10	6.289e-15	1.606e-12
0.3	1.744e+03	1.476e-11	2.427e-09	2.799e-14	4.603e-12
0.4	1.309e+05	1.271e-08	1.346e-06	2.477e-11	2.622e-09
0.5	2.919e+05	1.581e-07	1.154e-05	3.103e-10	2.266e-08
0.6	4.875e+06	9.893e-06	5.286e-04	1.931e-08	1.032e-06
0.8	1.296e+06	1.884e-05	6.174e-04	3.584e-08	1.174e-06
1.0	1.199e+06	7.331e-05	1.667e-03	1.351e-07	3.074e-06
1.5	1.203e+06	7.963e-04	9.863e-03	1.340e-06	1.659e-05
Totals	9.619e+06	8.985e-04	1.269e-02	1.530e-06	2.190e-05

Results - Dose Point # 5 - (167.64,60,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	5.276e-278	6.330e-28	5.229e-280	6.273e-30
0.04	9.039e+04	4.361e-127	3.052e-28	1.929e-129	1.350e-30
0.1	1.091e+03	3.545e-22	7.977e-20	5.423e-25	1.220e-22
0.15	1.049e+03	4.285e-16	1.260e-13	7.057e-19	2.075e-16
0.2	3.173e+04	1.596e-12	4.383e-10	2.817e-15	7.736e-13
0.3	1.744e+03	7.524e-12	1.328e-09	1.427e-14	2.519e-12
0.4	1.309e+05	6.961e-09	7.865e-07	1.356e-11	1.533e-09
0.5	2.919e+05	9.097e-08	7.057e-06	1.786e-10	1.385e-08
0.6	4.875e+06	5.911e-06	3.343e-04	1.154e-08	6.525e-07
0.8	1.296e+06	1.190e-05	4.105e-04	2.264e-08	7.809e-07
1.0	1.199e+06	4.821e-05	1.149e-03	8.886e-08	2.118e-06
1.5	1.203e+06	5.591e-04	7.198e-03	9.406e-07	1.211e-05
Totals	9.619e+06	6.252e-04	9.099e-03	1.064e-06	1.568e-05

Results - Dose Point # 6 - (167.64,80.7,0) cm

Energy (MeV)	Activity (Photons/sec)	Fluence Rate MeV/cm ² /sec No Buildup	Fluence Rate MeV/cm ² /sec With Buildup	Exposure Rate mR/hr No Buildup	Exposure Rate mR/hr With Buildup
0.03	4.971e+05	1.957e-290	5.797e-28	1.940e-292	5.746e-30
0.04	9.039e+04	1.039e-132	2.796e-28	4.594e-135	1.236e-30
0.1	1.091e+03	5.103e-23	1.237e-20	7.807e-26	1.893e-23

0.15	1.049e+03	1.138e-16	3.677e-14	1.875e-19	6.055e-17
0.2	3.173e+04	5.195e-13	1.576e-10	9.170e-16	2.781e-13
0.3	1.744e+03	2.938e-12	5.709e-10	5.573e-15	1.083e-12
0.4	1.309e+05	3.003e-09	3.708e-07	5.852e-12	7.224e-10
0.5	2.919e+05	4.207e-08	3.545e-06	8.259e-11	6.958e-09
0.6	4.875e+06	2.882e-06	1.761e-04	5.626e-09	3.437e-07
0.8	1.296e+06	6.276e-06	2.320e-04	1.194e-08	4.413e-07
1.0	1.199e+06	2.689e-05	6.824e-04	4.956e-08	1.258e-06
1.5	1.203e+06	3.417e-04	4.636e-03	5.750e-07	7.799e-06
Totals	9.619e+06	3.778e-04	5.730e-03	6.422e-07	9.850e-06