

Case Title: BM10-37
Description: 0.2 mCi Cs-137 - Shielded
Geometry: 7 - Cylinder Volume - Side Shields

Source Dimensions

Height	0.84 cm	0.3 in
Radius	0.13 cm	0.1 in

Dose Points

	<u>X</u>	<u>Y</u>	<u>Z</u>
# 1	2.18 cm 0.9 in	0.42 cm 0.2 in	0 cm 0.0 in
# 2	6.68 cm 2.6 in	0.42 cm 0.2 in	0 cm 0.0 in
# 3	31.68 cm 1 ft 0.5 in	0.42 cm 0.2 in	0 cm 0.0 in
# 4	101.68 cm 3 ft 4.0 in	0.42 cm 0.2 in	0 cm 0.0 in

Shields

<u>Shield Name</u>	<u>Dimension</u>	<u>Material</u>	<u>Density</u>
Source	.045 cm ³	Stycast 1264 A/B	1.1
Shield 1	1.33 cm	Iron	7.86
Transition		Air	0.00122
Air Gap		Air	0.00122
Wall Clad	.22 cm	Iron	7.86
Top Clad	.48 cm	Iron	7.86

Source Input

Grouping Method : Actual Photon Energies

<u>Nuclide</u>	<u>curies</u>	<u>becquerels</u>	<u>µCi/cm³</u>	<u>Bq/cm³</u>
Ba-137m	1.8920e-004	7.0004e+006	4.2423e+003	1.5697e+008
Cs-137	2.0000e-004	7.4000e+006	4.4845e+003	1.6593e+008

Buildup

The material reference is : Shield 1

Integration Parameters

Radial	10
Circumferential	10
Y Direction (axial)	20

Results - Dose Point # 1 - (2.18,0.42,0) cm

<u>Energy</u> <u>MeV</u>	<u>Activity</u> <u>photons/sec</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>No Buildup</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>With Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>No Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>With Buildup</u>
0.0045	7.267e+04	5.529e-300	4.761e-26	3.790e-300	3.263e-26
0.0318	1.449e+05	9.483e-35	7.388e-25	7.899e-37	6.154e-27
0.0322	2.674e+05	2.737e-33	1.385e-24	2.203e-35	1.115e-26
0.0364	9.731e+04	2.104e-23	2.478e-23	1.196e-25	1.408e-25
0.6616	6.299e+06	2.776e+04	5.130e+04	5.381e+01	9.945e+01
TOTALS:	6.881e+06	2.776e+04	5.130e+04	5.381e+01	9.945e+01

Results - Dose Point # 2 - (6.68,0.42,0) cm

<u>Energy</u> <u>MeV</u>	<u>Activity</u> <u>photons/sec</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>No Buildup</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>With Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>No Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>With Buildup</u>
0.0045	7.267e+04	1.603e-300	5.118e-27	1.098e-300	3.508e-27
0.0318	1.449e+05	1.455e-35	7.942e-26	1.212e-37	6.615e-28
0.0322	2.674e+05	4.162e-34	1.489e-25	3.349e-36	1.198e-27
0.0364	9.731e+04	2.934e-24	3.455e-24	1.667e-26	1.963e-26
0.6616	6.299e+06	2.997e+03	5.525e+03	5.810e+00	1.071e+01
TOTALS:	6.881e+06	2.997e+03	5.525e+03	5.810e+00	1.071e+01

Results - Dose Point # 3 - (31.68,0.42,0) cm

<u>Energy</u> <u>MeV</u>	<u>Activity</u> <u>photons/sec</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>No Buildup</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>With Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>No Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>With Buildup</u>
0.0045	7.267e+04	9.706e-302	2.278e-28	6.653e-302	1.561e-28
0.0318	1.449e+05	6.745e-37	3.535e-27	5.618e-39	2.944e-29

<u>Energy</u> <u>MeV</u>	<u>Activity</u> <u>photons/sec</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>No Buildup</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>With Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>No Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>With Buildup</u>
0.0322	2.674e+05	1.926e-35	6.627e-27	1.550e-37	5.333e-29
0.0364	9.731e+04	1.341e-25	1.579e-25	7.619e-28	8.971e-28
0.6616	6.299e+06	1.331e+02	2.457e+02	2.581e-01	4.764e-01
TOTALS:	6.881e+06	1.331e+02	2.457e+02	2.581e-01	4.764e-01

Results - Dose Point # 4 - (101.68,0.42,0) cm

<u>Energy</u> <u>MeV</u>	<u>Activity</u> <u>photons/sec</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>No Buildup</u>	<u>Fluence Rate</u> <u>MeV/cm²/sec</u> <u>With Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>No Buildup</u>	<u>Exposure Rate</u> <u>mR/hr</u> <u>With Buildup</u>
0.0045	7.267e+04	8.411e-303	2.211e-29	5.765e-303	1.516e-29
0.0318	1.449e+05	6.395e-38	3.432e-28	5.327e-40	2.858e-30
0.0322	2.674e+05	1.827e-36	6.433e-28	1.470e-38	5.177e-30
0.0364	9.731e+04	1.276e-26	1.502e-26	7.248e-29	8.534e-29
0.6616	6.299e+06	1.284e+01	2.379e+01	2.489e-02	4.611e-02
TOTALS:	6.881e+06	1.284e+01	2.379e+01	2.489e-02	4.611e-02