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

| Date | By | Checked |
|---|---|---|
| | | |

| Filename | Run Date | Run Time | Duration |
|---|---|---|---|
| EXAMP#6E.MS7 | August 11, 2020 | 5:00:11 PM | 00:00:00 |

| Project Info | |
|---|---|
| Case Title | Example 6e |
| Description | User manual case for resin liner source inference |
| Geometry | 7 - Cylinder Volume - Side Shields |

| Source Dimensions | |
|---|---|
| Height | 121.92 cm (4 ft) |
| Radius | 60.96 cm (2 ft) |

| Dose Points | | | |
|---|---|---|---|
| A | X | Y | Z |
| #1 | 487.68 cm (16 ft) | 60.96 cm (2 ft) | 0.0 cm (0.0 in) |

| Shields | | | |
|---|---|---|---|
| Shield N | Dimension | Material | Density |
| Source | 1.42e+06 cm³ | Mixed -> | 2.01 |
| | | Concrete | 1.88 |
| | | Water | 0.13 |
| Shield 1 | .635 cm | Iron | 7.86 |
| Shield 2 | 15.24 cm | Air | 0.00122 |
| Shield 3 | 5.08 cm | Air | 0.00122 |
| Shield 4 | 30.48 cm | Concrete | 2.35 |
| Transition | 146.368 cm | Air | 0.00122 |
| Shield 6 | 30.48 cm | Concrete | 2.35 |
| Air Gap | | Air | 0.00122 |

Image filename:

**Source Input: Grouping Method - Standard Indices**
**Number of Groups: 25**
**Lower Energy Cutoff: 0.015**
**Photons < 0.015: Included**
**Library: Grove**

| Nuclide | Ci | Bq | µCi/cm³ | Bq/cm³ |
|---|---|---|---|---|
| Ba-137m | 3.8137e+002 | 1.4111e+013 | 2.6794e+002 | 9.9136e+006 |
| Co-58 | 5.2772e+001 | 1.9526e+012 | 3.7076e+001 | 1.3718e+006 |
| Co-60 | 8.6716e+001 | 3.2085e+012 | 6.0924e+001 | 2.2542e+006 |
| Cs-137 | 4.0314e+002 | 1.4916e+013 | 2.8323e+002 | 1.0480e+007 |
| Mn-54 | 3.2597e+001 | 1.2061e+012 | 2.2901e+001 | 8.4735e+005 |
| Sb-125 | 3.0106e+001 | 1.1139e+012 | 2.1152e+001 | 7.8261e+005 |
| Te-125m | 1.0765e+000 | 3.9829e+010 | 7.5628e-001 | 2.7982e+004 |

**Buildup: The material reference is Shield 6**

| Integration Parameters | |
|---|---|
| Radial | 16 |
| Circumferential | 16 |
| Y Direction (axial) | 16 |

**Results**

| Energy (MeV) | Activity (Photons/sec) | Fluence Rate MeV/cm²/sec No Buildup | Fluence Rate MeV/cm²/sec With Buildup | Exposure Rate mR/hr No Buildup | Exposure Rate mR/hr With Buildup |
|---|---|---|---|---|---|
| 0.03 | 1.377e+12 | 3.139e-88 | 2.343e-22 | 3.111e-90 | 2.322e-24 |
| 0.04 | 2.451e+11 | 6.324e-43 | 1.106e-22 | 2.797e-45 | 4.892e-25 |
| 0.1 | 3.021e+09 | 6.091e-12 | 7.001e-10 | 9.319e-15 | 1.071e-12 |
| 0.15 | 2.796e+09 | 2.075e-09 | 4.007e-07 | 3.417e-12 | 6.599e-10 |
| 0.2 | 8.455e+10 | 1.041e-06 | 2.118e-04 | 1.838e-09 | 3.738e-07 |
| 0.3 | 4.646e+09 | 1.600e-06 | 2.336e-04 | 3.035e-09 | 4.432e-07 |
| 0.4 | 3.488e+11 | 1.050e-03 | 1.035e-01 | 2.047e-06 | 2.016e-04 |
| 0.5 | 6.984e+11 | 1.051e-02 | 7.332e-01 | 2.064e-05 | 1.439e-03 |
| 0.6 | 1.310e+13 | 7.007e-01 | 3.640e+01 | 1.368e-03 | 7.104e-02 |
| 0.8 | 3.162e+12 | 1.160e+00 | 3.786e+01 | 2.207e-03 | 7.201e-02 |
| 1.0 | 3.209e+12 | 4.909e+00 | 1.130e+02 | 9.049e-03 | 2.083e-01 |
| 1.5 | 3.219e+12 | 5.538e+01 | 7.105e+02 | 9.317e-02 | 1.195e+00 |
| **Totals** | **2.545e+13** | **6.216e+01** | **8.986e+02** | **1.058e-01** | **1.548e+00** |