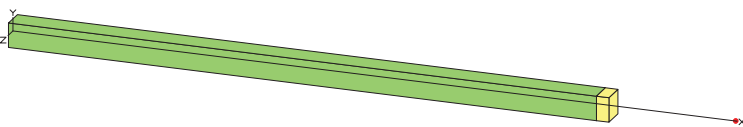


Case Title: Hematite
Description: Ind. Occ., Infinite Slab Shielded Backfill - EU 3.5%
Geometry: 16 - Infinite Slab

Source Dimensions
Thick 480.0 cm 15 ft 9.0 in

Dose Points

| | | | |
|-----|---------------------------|----------------|----------------|
| | <u>X</u> | <u>Y</u> | <u>Z</u> |
| # 1 | 590.16 cm 19 ft 4.3 in | 0 cm 0.0 in | 0 cm 0.0 in |



Shields

| <u>Shield Name</u> | <u>Dimension</u> | <u>Material</u> | <u>Density</u> |
|--------------------|------------------|-----------------|----------------|
| Source | Infinite | Concrete | 1.6 |
| Shield 1 | .102 m | Concrete | 2.35 |
| Air Gap | | Air | 0.00122 |

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

| <u>Nuclide</u> | <u>μCi/cm³</u> | <u>Bq/cm³</u> |
|----------------|---------------------------|--------------------------|
| Ac-227 | 8.3419e-006 | 3.0865e-001 |
| Bi-210 | 3.5148e-007 | 1.3005e-002 |
| Bi-211 | 8.2852e-006 | 3.0655e-001 |
| Bi-214 | 1.4058e-006 | 5.2015e-002 |
| Fr-223 | 1.1512e-007 | 4.2594e-003 |
| Pa-231 | 2.3443e-005 | 8.6740e-001 |
| Pa-234 | 2.5187e-004 | 9.3193e+000 |
| Pa-234m | 1.5742e-001 | 5.8245e+003 |
| Pb-210 | 3.5212e-007 | 1.3029e-002 |
| Pb-211 | 8.2852e-006 | 3.0655e-001 |
| Pb-214 | 1.4058e-006 | 5.2015e-002 |
| Po-210 | 3.3413e-007 | 1.2363e-002 |
| Po-211 | 2.2619e-008 | 8.3689e-004 |
| Po-214 | 1.4055e-006 | 5.2004e-002 |
| Po-215 | 8.2853e-006 | 3.0656e-001 |
| Po-218 | 1.4061e-006 | 5.2026e-002 |
| Ra-223 | 8.2853e-006 | 3.0656e-001 |
| Ra-226 | 1.4075e-006 | 5.2078e-002 |
| Rn-219 | 8.2853e-006 | 3.0656e-001 |
| Rn-222 | 1.4061e-006 | 5.2026e-002 |
| Th-227 | 8.1918e-006 | 3.0310e-001 |
| Th-230 | 2.1753e-004 | 8.0485e+000 |
| Th-231 | 3.6950e-002 | 1.3671e+003 |
| Th-234 | 1.5742e-001 | 5.8245e+003 |
| Tl-207 | 8.2626e-006 | 3.0572e-001 |
| U-234 | 8.0556e-001 | 2.9806e+004 |
| U-235 | 3.6950e-002 | 1.3671e+003 |
| U-238 | 1.5742e-001 | 5.8245e+003 |

Buildup
The material reference is : Source

Results

| <u>Energy</u> MeV | <u>Activity</u> photons/sec | <u>Fluence Rate</u> MeV/cm ² /sec <u>No Buildup</u> | <u>Fluence Rate</u> MeV/cm ² /sec <u>With Buildup</u> | <u>Exposure Rate</u> mR/hr <u>No Buildup</u> | <u>Exposure Rate</u> mR/hr <u>With Buildup</u> |
|----------------------|--------------------------------|--|--|--|--|
| 0.015 | 5.636e+03 | 0.000e+00 | 0.000e+00 | 0.000e+00 | 0.000e+00 |
| 0.02 | 3.675e-03 | 2.805e-44 | 3.643e-44 | 9.715e-46 | 1.262e-45 |
| 0.03 | 2.004e+02 | 7.787e-14 | 1.448e-13 | 7.718e-16 | 1.435e-15 |
| 0.04 | 1.340e-02 | 2.368e-11 | 7.059e-11 | 1.047e-13 | 3.122e-13 |
| 0.05 | 3.520e+01 | 2.290e-05 | 1.075e-04 | 6.100e-08 | 2.865e-07 |
| 0.06 | 2.345e+02 | 2.657e-03 | 1.827e-02 | 5.277e-06 | 3.629e-05 |
| 0.08 | 1.688e+02 | 2.656e-02 | 2.875e-01 | 4.203e-05 | 4.550e-04 |
| 0.1 | 5.124e+02 | 2.731e-01 | 3.961e+00 | 4.178e-04 | 6.060e-03 |
| 0.15 | 2.159e+02 | 5.024e-01 | 9.214e+00 | 8.274e-04 | 1.517e-02 |
| 0.2 | 8.457e+02 | 4.520e+00 | 8.245e+01 | 7.977e-03 | 1.455e-01 |
| 0.3 | 9.163e-01 | 1.448e-02 | 2.262e-01 | 2.748e-05 | 4.290e-04 |
| 0.4 | 6.725e-01 | 2.248e-02 | 2.896e-01 | 4.380e-05 | 5.643e-04 |
| 0.5 | 8.522e-01 | 5.066e-02 | 5.520e-01 | 9.943e-05 | 1.084e-03 |
| 0.6 | 3.497e+00 | 3.313e-01 | 3.110e+00 | 6.467e-04 | 6.071e-03 |
| 0.8 | 1.935e+01 | 3.808e+00 | 2.755e+01 | 7.242e-03 | 5.241e-02 |
| 1.0 | 6.184e+01 | 2.135e+01 | 1.273e+02 | 3.935e-02 | 2.346e-01 |
| 1.5 | 1.314e+00 | 1.238e+00 | 5.184e+00 | 2.083e-03 | 8.721e-03 |
| 2.0 | 1.822e-01 | 3.396e-01 | 1.169e+00 | 5.252e-04 | 1.808e-03 |
| TOTALS: | 7.938e+03 | 3.247e+01 | 2.613e+02 | 5.928e-02 | 4.730e-01 |