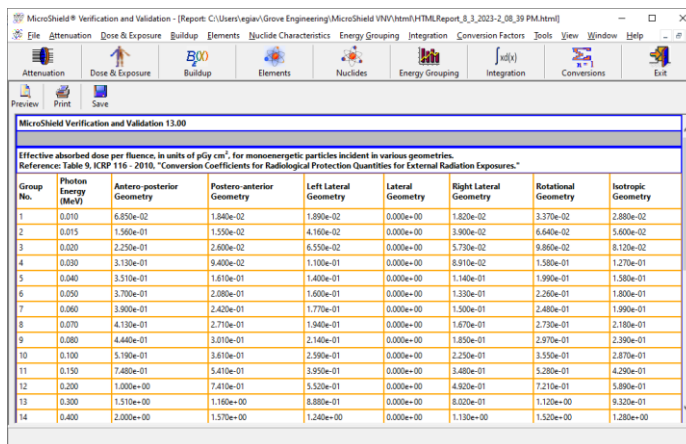


MicroShield® V&V Version 13

Grove Software has a verification and validation (V&V) package available for the MicroShield® software. MicroShield® Verification and Validation (V&V) Version 13 provides documentation and additional software tools as an aid to users in their evaluations and to support internal software qualification. The verification and validation package provides the following:

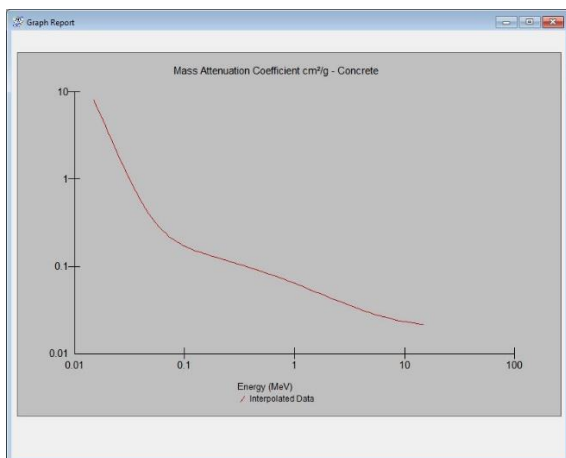


MicroShield Verification and Validation 13.00

Effective absorbed dose per fluence, in units of $\mu\text{Gy cm}^2$, for monoenergetic particles incident in various geometries. Reference: Table 9, ICRP 116 - 2010, "Conversion Coefficients for Radiological Protection Quantities for External Radiation Exposures."

Group No.	Photon Energy (MeV)	Antero-posterior Geometry	Postero-anterior Geometry	Left Lateral Geometry	Lateral Geometry	Right Lateral Geometry	Rotational Geometry	Isotropic Geometry
1	0.010	6.850e-02	1.940e-02	1.990e-02	0.000e+00	1.820e-02	3.370e-02	2.880e-02
2	0.015	1.560e-01	1.550e-02	4.160e-02	0.000e+00	3.900e-02	6.640e-02	5.600e-02
3	0.020	2.250e-01	2.600e-02	6.550e-02	0.000e+00	5.730e-02	9.860e-02	8.120e-02
4	0.030	3.130e-01	9.400e-02	1.100e-01	0.000e+00	8.910e-02	1.580e-01	1.270e-01
5	0.040	3.510e-01	1.610e-01	1.400e-01	0.000e+00	1.140e-01	1.990e-01	1.580e-01
6	0.050	3.700e-01	2.080e-01	1.600e-01	0.000e+00	1.330e-01	2.260e-01	1.800e-01
7	0.060	3.900e-01	2.420e-01	1.770e-01	0.000e+00	1.500e-01	2.480e-01	1.990e-01
8	0.070	4.130e-01	2.710e-01	1.940e-01	0.000e+00	1.670e-01	2.730e-01	2.180e-01
9	0.080	4.440e-01	3.010e-01	2.140e-01	0.000e+00	1.850e-01	2.970e-01	2.390e-01
10	0.100	5.190e-01	3.610e-01	2.590e-01	0.000e+00	2.250e-01	3.550e-01	2.870e-01
11	0.150	7.480e-01	5.410e-01	3.950e-01	0.000e+00	3.480e-01	5.280e-01	4.290e-01
12	0.200	1.000e+00	7.410e-01	5.520e-01	0.000e+00	4.920e-01	7.210e-01	5.890e-01
13	0.300	1.510e+00	1.180e+00	8.880e-01	0.000e+00	8.020e-01	1.120e+00	9.320e-01
14	0.400	2.000e+00	1.570e+00	1.240e+00	0.000e+00	1.130e+00	1.520e+00	1.280e+00

- The V&V test plans and results for user records.
- Users may repeat the tests for comparison and further evidence.
- Traceability for the nuclear and material data used in the program.
- A means to exercise routines to verify that calculations are done properly.



The MicroShield® Validation Report consolidates a myriad of information sources used over the years for development of MicroShield®, many of which would be difficult to find by users. The MicroShield® V&V Software is a program that independently exercises various MicroShield® processing routines and displays the data files that are provided.

MicroShield® V&V Version 13 Software is compatible with Microsoft Windows®. Complete installation may require up to 30MB of hard disk space.

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