

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOPE 2014	OpenDose mean
Blood Vessels, Trunk	0.05	2.022e-01 ± 7.6e-05	2.054e-01 ± 3.7e-05	2.032e-01 ± 7.6e-05	2.038e-01 ± 2.2e-04	2.052e-01 ± 8.2e-05	2.028e-01 ± 7.6e-05	2.042e-01 ± 1.2e-03
	0.1	1.108e-01 ± 3.8e-05	1.125e-01 ± 1.9e-05	1.120e-01 ± 3.8e-05	1.122e-01 ± 1.0e-04	1.127e-01 ± 3.4e-05	1.122e-01 ± 3.7e-05	1.122e-01 ± 5.8e-04
	0.2	1.160e-01 ± 3.8e-05	1.169e-01 ± 5.7e-05	1.171e-01 ± 3.8e-05	1.162e-01 ± 1.0e-04	1.171e-01 ± 3.5e-05	1.170e-01 ± 3.7e-05	1.169e-01 ± 4.3e-04
	0.5	1.205e-01 ± 4.7e-05	1.207e-01 ± 7.4e-06	1.206e-01 ± 4.7e-05	1.211e-01 ± 5.5e-05	1.206e-01 ± 4.8e-05	1.208e-01 ± 4.4e-05	1.207e-01 ± 1.9e-04
	1	1.052e-01 ± 4.7e-05	1.051e-01 ± 7.5e-06	1.049e-01 ± 4.7e-05	1.058e-01 ± 2.4e-05	1.047e-01 ± 4.2e-05	1.053e-01 ± 3.9e-05	1.051e-01 ± 3.2e-04
	2	7.574e-02 ± 4.1e-05	7.561e-02 ± 2.2e-05	7.540e-02 ± 4.1e-05	7.567e-02 ± 1.4e-05	7.490e-02 ± 3.7e-05	7.575e-02 ± 2.6e-05	7.551e-02 ± 2.7e-04
	5	3.808e-02 ± 2.7e-05	3.817e-02 ± 6.1e-05	3.809e-02 ± 2.7e-05	3.804e-02 ± 1.1e-05	3.726e-02 ± 2.6e-05	3.809e-02 ± 1.2e-05	3.800e-02 ± 2.8e-04
Brain	0.05	2.840e-04 ± 1.3e-06	2.714e-04 ± 4.3e-07	2.766e-04 ± 1.3e-06	2.824e-04 ± 3.6e-06	2.688e-04 ± 1.3e-06	2.694e-04 ± 1.2e-06	2.743e-04 ± 5.7e-06
	0.1	5.426e-04 ± 1.4e-06	5.385e-04 ± 1.1e-06	5.392e-04 ± 1.4e-06	5.525e-04 ± 3.4e-06	5.382e-04 ± 1.4e-06	5.359e-04 ± 1.1e-06	5.409e-04 ± 4.8e-06
	0.2	6.458e-04 ± 1.3e-06	6.484e-04 ± 2.6e-06	6.499e-04 ± 1.3e-06	6.549e-04 ± 3.0e-06	6.488e-04 ± 1.4e-06	6.477e-04 ± 1.0e-06	6.497e-04 ± 2.6e-06
	0.5	8.121e-04 ± 1.6e-06	8.172e-04 ± 5.6e-07	8.171e-04 ± 1.7e-06	8.124e-04 ± 2.4e-06	8.126e-04 ± 1.6e-06	8.133e-04 ± 1.3e-06	8.144e-04 ± 2.4e-06
	1	9.206e-04 ± 1.9e-06	9.238e-04 ± 8.1e-07	9.222e-04 ± 1.9e-06	9.242e-04 ± 1.7e-06	9.226e-04 ± 1.9e-06	9.227e-04 ± 1.5e-06	9.221e-04 ± 1.6e-06
	2	9.645e-04 ± 2.1e-06	9.660e-04 ± 2.0e-05	9.618e-04 ± 2.1e-06	9.623e-04 ± 1.3e-06	9.674e-04 ± 2.1e-06	9.642e-04 ± 1.2e-06	9.645e-04 ± 2.0e-06
	5	8.956e-04 ± 2.1e-06	8.973e-04 ± 2.3e-06	8.933e-04 ± 2.1e-06	8.920e-04 ± 1.0e-06	8.971e-04 ± 2.2e-06	8.962e-04 ± 8.2e-07	8.951e-04 ± 1.9e-06
Liver	0.05	1.979e-02 ± 1.0e-05	2.011e-02 ± 3.6e-06	2.005e-02 ± 1.0e-05	2.031e-02 ± 2.9e-05	2.010e-02 ± 1.0e-05	2.004e-02 ± 9.7e-06	2.007e-02 ± 1.3e-04
	0.1	1.459e-02 ± 7.0e-06	1.487e-02 ± 1.0e-05	1.479e-02 ± 7.0e-06	1.493e-02 ± 1.6e-05	1.487e-02 ± 7.4e-06	1.483e-02 ± 5.7e-06	1.482e-02 ± 9.8e-05
	0.2	1.314e-02 ± 5.9e-06	1.325e-02 ± 9.3e-07	1.323e-02 ± 6.0e-06	1.330e-02 ± 1.3e-05	1.328e-02 ± 6.6e-06	1.325e-02 ± 4.7e-06	1.325e-02 ± 4.7e-05
	0.5	1.254e-02 ± 6.5e-06	1.258e-02 ± 3.3e-07	1.256e-02 ± 6.5e-06	1.259e-02 ± 8.0e-06	1.260e-02 ± 6.3e-06	1.258e-02 ± 5.4e-06	1.257e-02 ± 2.0e-05
	1	1.161e-02 ± 6.8e-06	1.163e-02 ± 3.5e-06	1.162e-02 ± 6.8e-06	1.169e-02 ± 4.4e-06	1.165e-02 ± 7.0e-06	1.163e-02 ± 5.1e-06	1.163e-02 ± 2.3e-05
	2	1.008e-02 ± 6.7e-06	1.009e-02 ± 2.9e-04	1.009e-02 ± 6.7e-06	1.012e-02 ± 2.6e-06	1.012e-02 ± 7.1e-06	1.011e-02 ± 3.8e-06	1.010e-02 ± 1.5e-05
	5	7.826e-03 ± 6.1e-06	7.829e-03 ± 5.6e-06	7.825e-03 ± 6.1e-06	7.793e-03 ± 1.6e-06	7.851e-03 ± 6.3e-06	7.832e-03 ± 2.2e-06	7.828e-03 ± 1.8e-05

Supplemental Table 1. OpenDose photon SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Blood Vessels Trunk and target Blood Vessels Trunk, Brain and Liver. SAFs are given for a selection of different Monte Carlo codes and the mean over all available OpenDose data is also shown.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOPE 2014	OpenDose mean
Spleen	0.05	1.776e-02 ± 3.1e-05	1.813e-02 ± 5.0e-05	1.808e-02 ± 3.2e-05	1.844e-02 ± 9.3e-05	1.810e-02 ± 3.1e-05	1.810e-02 ± 3.0e-05	1.810e-02 ± 1.7e-04
	0.1	1.309e-02 ± 1.9e-05	1.337e-02 ± 1.4e-05	1.327e-02 ± 2.0e-05	1.353e-02 ± 5.3e-05	1.333e-02 ± 2.0e-05	1.329e-02 ± 1.8e-05	1.331e-02 ± 1.1e-04
	0.2	1.156e-02 ± 1.6e-05	1.169e-02 ± 1.6e-05	1.166e-02 ± 1.6e-05	1.169e-02 ± 4.2e-05	1.168e-02 ± 1.6e-05	1.169e-02 ± 1.4e-05	1.167e-02 ± 4.0e-05
	0.5	1.087e-02 ± 1.8e-05	1.090e-02 ± 1.1e-05	1.092e-02 ± 1.8e-05	1.094e-02 ± 2.7e-05	1.092e-02 ± 1.9e-05	1.090e-02 ± 1.6e-05	1.090e-02 ± 2.6e-05
	1	1.000e-02 ± 2.0e-05	1.005e-02 ± 3.8e-05	9.985e-03 ± 1.9e-05	1.006e-02 ± 1.7e-05	1.005e-02 ± 1.9e-05	1.005e-02 ± 1.6e-05	1.003e-02 ± 2.6e-05
	2	8.697e-03 ± 1.9e-05	8.736e-03 ± 1.8e-05	8.695e-03 ± 1.9e-05	8.744e-03 ± 1.2e-05	8.705e-03 ± 1.9e-05	8.726e-03 ± 1.2e-05	8.710e-03 ± 2.4e-05
	5	6.815e-03 ± 1.7e-05	6.797e-03 ± 2.1e-05	6.803e-03 ± 1.7e-05	6.803e-03 ± 8.7e-06	6.805e-03 ± 1.7e-05	6.795e-03 ± 6.7e-06	6.798e-03 ± 1.1e-05
Thyroid	0.05	6.722e-02 ± 1.7e-04	6.869e-02 ± 3.2e-04	6.796e-02 ± 1.7e-04	7.334e-02 ± 5.1e-04	6.938e-02 ± 1.7e-04	6.765e-02 ± 1.6e-04	6.885e-02 ± 1.8e-03
	0.1	3.754e-02 ± 8.8e-05	3.778e-02 ± 1.3e-04	3.751e-02 ± 8.8e-05	3.850e-02 ± 2.5e-04	3.801e-02 ± 8.7e-05	3.765e-02 ± 8.3e-05	3.783e-02 ± 3.1e-04
	0.2	3.461e-02 ± 7.8e-05	3.460e-02 ± 8.7e-05	3.457e-02 ± 7.8e-05	3.442e-02 ± 2.1e-04	3.464e-02 ± 8.0e-05	3.454e-02 ± 7.4e-05	3.457e-02 ± 7.1e-05
	0.5	3.442e-02 ± 9.3e-05	3.428e-02 ± 1.7e-04	3.435e-02 ± 9.3e-05	3.429e-02 ± 1.3e-04	3.430e-02 ± 9.3e-05	3.432e-02 ± 8.6e-05	3.430e-02 ± 6.5e-05
	1	3.172e-02 ± 9.8e-05	3.160e-02 ± 1.4e-04	3.182e-02 ± 9.8e-05	3.238e-02 ± 8.5e-05	3.180e-02 ± 9.9e-05	3.151e-02 ± 8.0e-05	3.177e-02 ± 2.5e-04
	2	2.689e-02 ± 9.2e-05	2.715e-02 ± 4.1e-05	2.712e-02 ± 9.2e-05	2.804e-02 ± 6.2e-05	2.708e-02 ± 9.2e-05	2.698e-02 ± 5.8e-05	2.714e-02 ± 3.5e-04
	5	1.958e-02 ± 7.2e-05	1.964e-02 ± 1.2e-04	1.964e-02 ± 7.2e-05	1.939e-02 ± 4.2e-05	1.947e-02 ± 7.0e-05	1.960e-02 ± 3.2e-05	1.956e-02 ± 8.2e-05
Urinary Bladder Wall	0.05	2.722e-02 ± 6.9e-05	2.772e-02 ± 6.4e-05	2.764e-02 ± 6.9e-05	2.759e-02 ± 2.1e-04	2.773e-02 ± 6.9e-05	2.752e-02 ± 6.8e-05	2.760e-02 ± 1.6e-04
	0.1	1.699e-02 ± 3.7e-05	1.734e-02 ± 1.6e-05	1.730e-02 ± 3.8e-05	1.738e-02 ± 1.1e-04	1.740e-02 ± 3.8e-05	1.728e-02 ± 3.6e-05	1.729e-02 ± 1.2e-04
	0.2	1.585e-02 ± 3.3e-05	1.602e-02 ± 2.1e-05	1.595e-02 ± 3.3e-05	1.598e-02 ± 9.2e-05	1.611e-02 ± 3.2e-05	1.598e-02 ± 3.2e-05	1.600e-02 ± 8.2e-05
	0.5	1.569e-02 ± 3.9e-05	1.568e-02 ± 7.2e-05	1.572e-02 ± 3.9e-05	1.566e-02 ± 5.9e-05	1.569e-02 ± 3.9e-05	1.576e-02 ± 3.7e-05	1.569e-02 ± 2.9e-05
	1	1.448e-02 ± 4.0e-05	1.453e-02 ± 1.0e-04	1.447e-02 ± 4.0e-05	1.459e-02 ± 3.8e-05	1.452e-02 ± 3.9e-05	1.446e-02 ± 3.5e-05	1.450e-02 ± 4.0e-05
	2	1.229e-02 ± 3.4e-05	1.233e-02 ± 6.5e-05	1.229e-02 ± 3.4e-05	1.231e-02 ± 2.7e-05	1.235e-02 ± 3.3e-05	1.240e-02 ± 2.5e-05	1.234e-02 ± 3.8e-05
	5	8.891e-03 ± 2.4e-05	8.833e-03 ± 3.5e-07	8.858e-03 ± 2.4e-05	8.963e-03 ± 1.9e-05	8.878e-03 ± 2.3e-05	8.931e-03 ± 1.4e-05	8.897e-03 ± 3.9e-05

Supplemental Table 2. *OpenDose photon SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Blood Vessels Trunk and target Spleen, Thyroid and Urinary Bladder Wall. SAFs are given for a selection of different Monte Carlo codes and the mean over all available OpenDose data is also shown.*

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOPE 2014	OpenDose mean
Blood Vessels, Trunk	0.05	4.111e+00 ± 2.1e-05	4.086e+00 ± 3.2e-05	4.111e+00 ± 2.2e-05	4.111e+00 ± 3.2e-04	4.110e+00 ± 0.0e+00	4.111e+00 ± 4.1e-04	4.108e+00 ± 8.2e-03
	0.1	4.078e+00 ± 3.8e-05	4.065e+00 ± 2.7e-05	4.076e+00 ± 3.9e-05	4.077e+00 ± 8.1e-04	4.074e+00 ± 0.0e+00	4.078e+00 ± 4.1e-04	4.075e+00 ± 4.0e-03
	0.2	3.980e+00 ± 6.4e-05	3.974e+00 ± 8.3e-05	3.978e+00 ± 6.5e-05	3.979e+00 ± 1.1e-03	3.972e+00 ± 0.0e+00	3.982e+00 ± 3.9e-04	3.978e+00 ± 3.3e-03
	0.5	3.614e+00 ± 1.1e-04	3.608e+00 ± 2.0e-04	3.609e+00 ± 1.1e-04	3.612e+00 ± 1.1e-03	3.591e+00 ± 0.0e+00	3.617e+00 ± 3.3e-04	3.609e+00 ± 7.6e-03
	1	3.052e+00 ± 1.4e-04	3.046e+00 ± 3.7e-04	3.044e+00 ± 1.4e-04	3.051e+00 ± 9.4e-04	3.010e+00 ± 0.0e+00	3.054e+00 ± 2.4e-04	3.044e+00 ± 1.3e-02
	2	2.262e+00 ± 1.5e-04	2.264e+00 ± 8.9e-05	2.259e+00 ± 1.5e-04	2.265e+00 ± 7.0e-04	2.210e+00 ± 2.2e-04	2.264e+00 ± 1.4e-04	2.256e+00 ± 1.8e-02
	5	1.224e+00 ± 1.1e-04	1.234e+00 ± 5.3e-05	1.231e+00 ± 1.1e-04	1.233e+00 ± 3.7e-04	1.182e+00 ± 1.2e-04	1.224e+00 ± 6.5e-05	1.224e+00 ± 1.6e-02
Brain	0.05	1.232e-09 ± 1.0e-09	6.428e-09 ± 6.4e-09	1.252e-09 ± 1.3e-09	4.599e-08 ± 4.2e-08	0.000e+00 ± 0.0e+00	4.021e-09 ± 4.1e-09	7.550e-09 ± 1.5e-08
	0.1	6.045e-08 ± 1.4e-08	5.600e-08 ± 5.3e-09	2.969e-08 ± 7.8e-09	1.765e-09 ± 1.8e-09	5.276e-08 ± 1.2e-08	5.978e-08 ± 1.1e-08	4.098e-08 ± 1.9e-08
	0.2	1.966e-07 ± 1.8e-08	2.161e-07 ± 2.4e-08	1.923e-07 ± 2.0e-08	2.775e-07 ± 6.0e-08	2.331e-07 ± 2.1e-08	1.983e-07 ± 1.7e-08	2.099e-07 ± 3.1e-08
	0.5	7.215e-07 ± 2.7e-08	7.580e-07 ± 2.8e-08	7.207e-07 ± 2.9e-08	6.542e-07 ± 5.7e-08	7.687e-07 ± 2.8e-08	6.985e-07 ± 2.2e-08	7.191e-07 ± 3.5e-08
	1	1.840e-06 ± 4.2e-08	1.888e-06 ± 3.5e-08	1.757e-06 ± 4.0e-08	1.805e-06 ± 7.2e-08	1.857e-06 ± 4.1e-08	1.861e-06 ± 3.4e-08	1.838e-06 ± 3.8e-08
	2	4.666e-06 ± 6.7e-08	4.645e-06 ± 8.4e-08	4.610e-06 ± 6.8e-08	4.325e-06 ± 8.1e-08	4.891e-06 ± 7.0e-08	4.627e-06 ± 5.2e-08	4.629e-06 ± 1.5e-07
	5	1.567e-05 ± 1.3e-07	1.611e-05 ± 8.8e-08	1.558e-05 ± 1.3e-07	1.550e-05 ± 1.0e-07	1.624e-05 ± 1.4e-07	1.555e-05 ± 8.1e-08	1.568e-05 ± 2.9e-07
Liver	0.05	1.697e-05 ± 2.9e-07	3.599e-05 ± 9.3e-08	1.740e-05 ± 3.0e-07	1.791e-05 ± 5.3e-07	1.853e-05 ± 3.1e-07	1.673e-05 ± 2.9e-07	1.938e-05 ± 6.3e-06
	0.1	5.388e-05 ± 5.2e-07	6.324e-05 ± 5.0e-07	5.620e-05 ± 5.3e-07	5.508e-05 ± 8.9e-07	5.882e-05 ± 5.4e-07	5.413e-05 ± 5.1e-07	5.636e-05 ± 3.0e-06
	0.2	1.605e-04 ± 8.9e-07	1.658e-04 ± 1.1e-06	1.621e-04 ± 8.9e-07	1.623e-04 ± 1.3e-06	1.708e-04 ± 9.1e-07	1.597e-04 ± 8.8e-07	1.630e-04 ± 3.4e-06
	0.5	5.634e-04 ± 1.6e-06	5.679e-04 ± 3.1e-07	5.739e-04 ± 1.7e-06	5.619e-04 ± 1.7e-06	5.956e-04 ± 1.7e-06	5.625e-04 ± 1.6e-06	5.715e-04 ± 1.0e-05
	1	1.290e-03 ± 2.4e-06	1.300e-03 ± 2.3e-06	1.303e-03 ± 2.4e-06	1.284e-03 ± 1.9e-06	1.351e-03 ± 2.4e-06	1.290e-03 ± 2.0e-06	1.302e-03 ± 2.0e-05
	2	3.080e-03 ± 3.7e-06	3.082e-03 ± 2.9e-06	3.111e-03 ± 3.7e-06	3.089e-03 ± 2.1e-06	3.250e-03 ± 3.9e-06	3.084e-03 ± 2.2e-06	3.111e-03 ± 5.4e-05
	5	1.007e-02 ± 6.5e-06	1.001e-02 ± 4.4e-06	1.006e-02 ± 6.5e-06	1.009e-02 ± 8.1e-07	1.051e-02 ± 6.3e-06	1.009e-02 ± 2.5e-06	1.011e-02 ± 1.5e-04

Supplemental Table 3. OpenDose electron SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Blood Vessels Trunk and target Blood Vessels Trunk, Brain and Liver. SAFs are given for a selection of different Monte Carlo codes and the mean over all available OpenDose data is also shown.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOPE 2014	OpenDose mean
Spleen	0.05	1.575e-06 ± 2.5e-07	1.241e-06 ± 6.7e-08	1.642e-06 ± 2.6e-07	1.091e-06 ± 7.3e-07	1.185e-06 ± 2.2e-07	1.524e-06 ± 2.5e-07	1.351e-06 ± 2.4e-07
	0.1	3.999e-06 ± 3.1e-07	4.454e-06 ± 5.2e-09	4.431e-06 ± 3.2e-07	3.263e-06 ± 7.9e-07	4.842e-06 ± 3.4e-07	3.925e-06 ± 3.0e-07	4.216e-06 ± 4.7e-07
	0.2	1.051e-05 ± 3.8e-07	1.101e-05 ± 1.4e-08	1.047e-05 ± 3.7e-07	1.001e-05 ± 1.1e-06	1.053e-05 ± 3.8e-07	9.672e-06 ± 3.4e-07	1.025e-05 ± 4.1e-07
	0.5	2.230e-05 ± 4.0e-07	2.418e-05 ± 5.1e-07	2.242e-05 ± 3.9e-07	2.396e-05 ± 1.1e-06	2.437e-05 ± 4.2e-07	2.232e-05 ± 3.7e-07	2.316e-05 ± 8.2e-07
	1	4.044e-05 ± 4.8e-07	4.329e-05 ± 3.8e-07	4.132e-05 ± 4.8e-07	4.120e-05 ± 1.0e-06	4.426e-05 ± 5.0e-07	4.094e-05 ± 4.5e-07	4.194e-05 ± 1.2e-06
	2	8.394e-05 ± 7.8e-07	8.988e-05 ± 5.0e-07	8.826e-05 ± 8.2e-07	8.373e-05 ± 1.1e-06	9.213e-05 ± 8.5e-07	8.634e-05 ± 6.7e-07	8.713e-05 ± 2.7e-06
	5	1.588e-03 ± 5.9e-06	1.582e-03 ± 6.2e-06	1.600e-03 ± 5.9e-06	1.606e-03 ± 3.7e-06	1.765e-03 ± 6.2e-06	1.622e-03 ± 3.3e-06	1.614e-03 ± 5.8e-05
Thyroid	0.05	3.158e-05 ± 3.3e-06	1.231e-04 ± 8.7e-06	3.320e-05 ± 3.5e-06	2.031e-05 ± 6.2e-06	3.344e-05 ± 3.5e-06	4.121e-05 ± 3.8e-06	4.273e-05 ± 3.1e-05
	0.1	9.938e-05 ± 5.8e-06	1.666e-04 ± 2.4e-06	9.510e-05 ± 5.7e-06	1.106e-04 ± 1.1e-05	1.054e-04 ± 5.9e-06	9.314e-05 ± 5.5e-06	1.067e-04 ± 2.4e-05
	0.2	2.729e-04 ± 9.7e-06	3.263e-04 ± 4.9e-06	2.637e-04 ± 9.5e-06	2.587e-04 ± 1.5e-05	2.813e-04 ± 9.7e-06	2.707e-04 ± 9.5e-06	2.738e-04 ± 2.1e-05
	0.5	1.238e-03 ± 2.1e-05	1.280e-03 ± 9.1e-06	1.241e-03 ± 2.1e-05	1.251e-03 ± 2.2e-05	1.330e-03 ± 2.1e-05	1.201e-03 ± 1.9e-05	1.253e-03 ± 3.7e-05
	1	6.444e-03 ± 4.4e-05	6.612e-03 ± 3.0e-05	6.586e-03 ± 4.4e-05	6.574e-03 ± 3.8e-05	6.997e-03 ± 4.5e-05	6.368e-03 ± 3.8e-05	6.568e-03 ± 1.9e-04
	2	3.960e-02 ± 1.1e-04	3.961e-02 ± 1.4e-05	4.028e-02 ± 1.1e-04	3.966e-02 ± 7.2e-05	4.308e-02 ± 1.1e-04	3.970e-02 ± 7.2e-05	4.021e-02 ± 1.1e-03
	5	1.411e-01 ± 2.0e-04	1.409e-01 ± 2.9e-04	1.409e-01 ± 2.0e-04	1.405e-01 ± 1.0e-04	1.454e-01 ± 2.0e-04	1.412e-01 ± 8.4e-05	1.414e-01 ± 1.6e-03
Urinary Bladder Wall	0.05	3.482e-04 ± 8.0e-06	8.495e-04 ± 2.2e-05	3.639e-04 ± 8.2e-06	3.898e-04 ± 1.4e-05	3.752e-04 ± 8.3e-06	3.551e-04 ± 8.1e-06	4.161e-04 ± 1.6e-04
	0.1	1.140e-03 ± 1.4e-05	1.254e-03 ± 1.0e-05	1.194e-03 ± 1.5e-05	1.121e-03 ± 2.3e-05	1.214e-03 ± 1.5e-05	1.111e-03 ± 1.4e-05	1.169e-03 ± 4.9e-05
	0.2	3.415e-03 ± 2.5e-05	3.305e-03 ± 3.3e-06	3.475e-03 ± 2.5e-05	3.518e-03 ± 3.6e-05	3.660e-03 ± 2.6e-05	3.430e-03 ± 2.5e-05	3.469e-03 ± 9.4e-05
	0.5	1.226e-02 ± 4.6e-05	1.213e-02 ± 4.7e-05	1.244e-02 ± 4.6e-05	1.256e-02 ± 4.7e-05	1.289e-02 ± 4.6e-05	1.221e-02 ± 4.4e-05	1.241e-02 ± 2.3e-04
	1	2.594e-02 ± 6.2e-05	2.584e-02 ± 1.7e-04	2.627e-02 ± 6.3e-05	2.607e-02 ± 5.0e-05	2.702e-02 ± 6.2e-05	2.602e-02 ± 5.3e-05	2.617e-02 ± 3.5e-04
	2	4.425e-02 ± 7.0e-05	4.396e-02 ± 1.3e-04	4.431e-02 ± 7.0e-05	4.403e-02 ± 5.2e-05	4.535e-02 ± 6.8e-05	4.425e-02 ± 5.0e-05	4.435e-02 ± 4.0e-04
	5	5.103e-02 ± 5.7e-05	5.088e-02 ± 1.1e-04	5.107e-02 ± 5.7e-05	5.064e-02 ± 4.5e-05	5.101e-02 ± 5.6e-05	5.123e-02 ± 3.3e-05	5.101e-02 ± 1.7e-04

Supplemental Table 4. OpenDose electron SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Blood Vessels Trunk and target Spleen, Thyroid and Urinary Bladder Wall. SAFs are given for a selection of different Monte Carlo codes and the mean over all available OpenDose data is also shown.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOP E 2014	OpenDose mean	ICRP 133	diff.
Blood Vessels, Trunk	0.05	2.031e-02 ± 2.4e-05	2.062e-02 ± 2.9e-05	2.047e-02 ± 2.4e-05	2.068e-02 ± 7.2e-05	2.056e-02 ± 2.5e-05	2.047e-02 ± 2.4e-05	2.053e-02 ± 1.1e-04	-	-
	0.1	1.472e-02 ± 1.5e-05	1.496e-02 ± 8.7e-06	1.490e-02 ± 1.5e-05	1.503e-02 ± 4.1e-05	1.496e-02 ± 1.5e-05	1.492e-02 ± 1.4e-05	1.492e-02 ± 8.7e-05	-	-
	0.2	1.320e-02 ± 1.2e-05	1.330e-02 ± 2.0e-05	1.326e-02 ± 1.2e-05	1.328e-02 ± 3.3e-05	1.331e-02 ± 1.2e-05	1.330e-02 ± 1.1e-05	1.328e-02 ± 3.4e-05	-	-
	0.5	1.259e-02 ± 1.4e-05	1.257e-02 ± 1.2e-05	1.255e-02 ± 1.4e-05	1.264e-02 ± 2.1e-05	1.260e-02 ± 1.4e-05	1.259e-02 ± 1.3e-05	1.259e-02 ± 2.3e-05	-	-
	1	1.163e-02 ± 1.5e-05	1.165e-02 ± 3.3e-05	1.154e-02 ± 1.5e-05	1.166e-02 ± 1.3e-05	1.163e-02 ± 1.5e-05	1.162e-02 ± 1.2e-05	1.163e-02 ± 3.5e-05	-	-
	2	1.008e-02 ± 1.5e-05	1.007e-02 ± 2.6e-05	1.009e-02 ± 1.5e-05	1.012e-02 ± 9.4e-06	1.009e-02 ± 1.4e-05	1.011e-02 ± 9.2e-06	1.009e-02 ± 1.7e-05	-	-
	5	7.814e-03 ± 1.2e-05	7.810e-03 ± 2.0e-05	7.813e-03 ± 1.2e-05	7.807e-03 ± 6.6e-06	7.833e-03 ± 1.2e-05	7.826e-03 ± 5.3e-06	7.819e-03 ± 1.0e-05	-	-
Brain	0.05	3.486e-05 ± 4.6e-07	3.026e-05 ± 2.1e-07	3.250e-05 ± 4.4e-07	3.288e-05 ± 1.2e-06	3.110e-05 ± 4.3e-07	3.080e-05 ± 4.0e-07	3.195e-05 ± 1.4e-06	3.091e-05	-3.3%
	0.1	1.122e-04 ± 6.4e-07	1.073e-04 ± 1.6e-07	1.111e-04 ± 6.3e-07	1.113e-04 ± 1.5e-06	1.069e-04 ± 6.2e-07	1.087e-04 ± 5.1e-07	1.095e-04 ± 2.1e-06	1.085e-04	-0.9%
	0.2	1.689e-04 ± 6.7e-07	1.664e-04 ± 4.2e-07	1.681e-04 ± 6.7e-07	1.712e-04 ± 1.5e-06	1.675e-04 ± 6.7e-07	1.678e-04 ± 5.1e-07	1.684e-04 ± 1.4e-06	1.704e-04	1.2%
	0.5	2.734e-04 ± 9.3e-07	2.740e-04 ± 9.1e-07	2.747e-04 ± 9.3e-07	2.705e-04 ± 1.4e-06	2.745e-04 ± 9.3e-07	2.736e-04 ± 7.6e-07	2.737e-04 ± 1.3e-06	2.716e-04	-0.8%
	1	3.686e-04 ± 1.2e-06	3.705e-04 ± 4.2e-07	3.667e-04 ± 1.2e-06	3.740e-04 ± 1.1e-06	3.700e-04 ± 1.2e-06	3.691e-04 ± 9.1e-07	3.700e-04 ± 2.0e-06	3.731e-04	0.8%
	2	4.437e-04 ± 1.4e-06	4.445e-04 ± 1.8e-06	4.433e-04 ± 1.4e-06	4.429e-04 ± 8.8e-07	4.440e-04 ± 1.4e-06	4.425e-04 ± 8.4e-07	4.432e-04 ± 9.7e-07	4.421e-04	-0.2%
	5	4.592e-04 ± 1.5e-06	4.586e-04 ± 1.7e-06	4.604e-04 ± 1.5e-06	4.537e-04 ± 7.2e-07	4.611e-04 ± 1.5e-06	4.617e-04 ± 5.9e-07	4.593e-04 ± 2.7e-06	4.552e-04	-0.9%
Liver	0.05	1.937e-01 ± 2.8e-05	1.983e-01 ± 1.9e-05	1.965e-01 ± 2.8e-05	1.985e-01 ± 6.9e-05	1.981e-01 ± 2.0e-05	1.964e-01 ± 3.1e-05	1.972e-01 ± 1.5e-03	1.590e-01	-19.4%
	0.1	1.105e-01 ± 1.7e-05	1.128e-01 ± 5.0e-06	1.122e-01 ± 1.7e-05	1.128e-01 ± 2.8e-05	1.129e-01 ± 2.3e-05	1.124e-01 ± 1.5e-05	1.124e-01 ± 7.4e-04	8.911e-02	-20.7%
	0.2	1.060e-01 ± 1.5e-05	1.070e-01 ± 1.0e-05	1.068e-01 ± 1.5e-05	1.064e-01 ± 2.4e-05	1.071e-01 ± 1.1e-05	1.069e-01 ± 1.4e-05	1.068e-01 ± 3.7e-04	8.315e-02	-22.1%
	0.5	1.060e-01 ± 1.8e-05	1.063e-01 ± 3.0e-05	1.062e-01 ± 1.8e-05	1.065e-01 ± 2.1e-05	1.063e-01 ± 2.1e-05	1.063e-01 ± 1.7e-05	1.063e-01 ± 1.3e-04	8.222e-02	-22.6%
	1	9.650e-02 ± 1.9e-05	9.652e-02 ± 2.6e-05	9.552e-02 ± 1.9e-05	9.715e-02 ± 2.6e-05	9.653e-02 ± 1.9e-05	9.659e-02 ± 1.5e-05	9.649e-02 ± 4.2e-04	7.317e-02	-24.2%
	2	7.886e-02 ± 1.8e-05	7.888e-02 ± 2.1e-05	7.878e-02 ± 1.8e-05	7.878e-02 ± 2.2e-05	7.867e-02 ± 1.6e-05	7.889e-02 ± 1.1e-05	7.880e-02 ± 7.0e-05	5.971e-02	-24.2%
	5	5.254e-02 ± 1.6e-05	5.264e-02 ± 1.2e-05	5.252e-02 ± 1.6e-05	5.238e-02 ± 1.5e-05	5.228e-02 ± 1.6e-05	5.257e-02 ± 5.7e-06	5.252e-02 ± 1.2e-04	4.089e-02	-22.1%

Supplemental Table 5. OpenDose photon SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Liver and target Blood Vessels Trunk, Brain and Liver. SAFs are given for a selection of different Monte Carlo codes and the last 2 columns compare the mean over all available OpenDose data to ICRP 133 data.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOP E 2014	OpenDose mean	ICRP 133	diff.
Spleen	0.05	1.668e-02 ± 3.0e-05	1.681e-02 ± 2.7e-05	1.690e-02 ± 3.0e-05	1.710e-02 ± 8.9e-05	1.679e-02 ± 3.0e-05	1.679e-02 ± 2.9e-05	1.683e-02 ± 1.2e-04	1.622e-02	-3.6%
	0.1	1.455e-02 ± 2.1e-05	1.481e-02 ± 3.8e-05	1.479e-02 ± 2.1e-05	1.494e-02 ± 5.6e-05	1.486e-02 ± 2.1e-05	1.479e-02 ± 1.9e-05	1.480e-02 ± 1.1e-04	1.481e-02	0.0%
	0.2	1.297e-02 ± 1.7e-05	1.312e-02 ± 1.2e-05	1.307e-02 ± 1.7e-05	1.317e-02 ± 4.3e-05	1.309e-02 ± 1.7e-05	1.309e-02 ± 1.5e-05	1.308e-02 ± 5.3e-05	1.321e-02	1.0%
	0.5	1.230e-02 ± 1.9e-05	1.233e-02 ± 1.4e-05	1.229e-02 ± 1.9e-05	1.235e-02 ± 2.9e-05	1.230e-02 ± 1.8e-05	1.230e-02 ± 1.7e-05	1.231e-02 ± 2.3e-05	1.234e-02	0.3%
	1	1.145e-02 ± 2.0e-05	1.147e-02 ± 3.2e-05	1.133e-02 ± 2.0e-05	1.146e-02 ± 1.8e-05	1.148e-02 ± 2.1e-05	1.145e-02 ± 1.6e-05	1.145e-02 ± 4.5e-05	1.133e-02	-1.0%
	2	1.009e-02 ± 2.1e-05	1.007e-02 ± 1.0e-06	1.008e-02 ± 2.1e-05	1.006e-02 ± 1.3e-05	1.008e-02 ± 2.0e-05	1.011e-02 ± 1.2e-05	1.008e-02 ± 1.5e-05	9.897e-03	-1.8%
	5	7.960e-03 ± 1.8e-05	7.967e-03 ± 1.7e-05	7.962e-03 ± 1.8e-05	7.932e-03 ± 9.2e-06	7.954e-03 ± 1.8e-05	7.945e-03 ± 7.0e-06	7.954e-03 ± 1.3e-05	7.953e-03	-0.0%
Thyroid	0.05	1.833e-03 ± 2.7e-05	1.752e-03 ± 1.4e-05	1.790e-03 ± 2.7e-05	1.922e-03 ± 8.1e-05	1.804e-03 ± 2.7e-05	1.817e-03 ± 2.6e-05	1.813e-03 ± 4.8e-05	1.753e-03	-3.3%
	0.1	2.309e-03 ± 2.2e-05	2.335e-03 ± 7.0e-06	2.326e-03 ± 2.2e-05	2.524e-03 ± 6.7e-05	2.363e-03 ± 2.2e-05	2.355e-03 ± 1.7e-05	2.360e-03 ± 2.1e-05	2.306e-03	-2.3%
	0.2	2.321e-03 ± 1.8e-05	2.326e-03 ± 6.5e-06	2.284e-03 ± 1.8e-05	2.354e-03 ± 5.0e-05	2.276e-03 ± 1.8e-05	2.271e-03 ± 1.7e-05	2.303e-03 ± 2.8e-05	2.353e-03	2.2%
	0.5	2.399e-03 ± 2.1e-05	2.364e-03 ± 1.1e-05	2.424e-03 ± 2.1e-05	2.425e-03 ± 3.6e-05	2.417e-03 ± 2.1e-05	2.445e-03 ± 2.0e-05	2.411e-03 ± 2.3e-05	2.387e-03	-1.0%
	1	2.440e-03 ± 2.4e-05	2.414e-03 ± 2.7e-05	2.438e-03 ± 2.4e-05	2.352e-03 ± 2.4e-05	2.450e-03 ± 2.5e-05	2.418e-03 ± 2.0e-05	2.426e-03 ± 3.3e-05	2.429e-03	0.1%
	2	2.273e-03 ± 2.5e-05	2.326e-03 ± 4.9e-05	2.305e-03 ± 2.5e-05	2.248e-03 ± 1.8e-05	2.331e-03 ± 2.5e-05	2.346e-03 ± 1.7e-05	2.300e-03 ± 3.3e-05	2.350e-03	2.2%
	5	1.937e-03 ± 2.2e-05	1.916e-03 ± 4.2e-06	1.943e-03 ± 2.2e-05	1.833e-03 ± 1.3e-05	1.922e-03 ± 2.2e-05	1.951e-03 ± 1.0e-05	1.916e-03 ± 3.5e-05	1.950e-03	1.8%
Urinary Bladder Wall	0.05	1.652e-04 ± 5.2e-06	1.579e-04 ± 2.1e-06	1.565e-04 ± 5.1e-06	1.287e-04 ± 1.3e-05	1.466e-04 ± 4.9e-06	1.546e-04 ± 5.0e-06	1.531e-04 ± 1.1e-05	1.443e-04	-5.7%
	0.1	4.198e-04 ± 6.0e-06	4.097e-04 ± 1.2e-07	4.159e-04 ± 5.9e-06	4.084e-04 ± 1.7e-05	4.024e-04 ± 5.8e-06	4.114e-04 ± 5.8e-06	4.107e-04 ± 6.2e-06	4.070e-04	-0.9%
	0.2	5.303e-04 ± 5.3e-06	5.297e-04 ± 2.7e-06	5.350e-04 ± 5.3e-06	5.563e-04 ± 1.6e-05	5.346e-04 ± 5.3e-06	5.361e-04 ± 5.1e-06	5.365e-04 ± 7.8e-06	5.302e-04	-1.2%
	0.5	7.117e-04 ± 6.9e-06	7.228e-04 ± 2.8e-06	7.129e-04 ± 6.9e-06	7.175e-04 ± 1.2e-05	7.309e-04 ± 7.0e-06	7.217e-04 ± 6.8e-06	7.197e-04 ± 7.1e-06	6.831e-04	-5.1%
	1	8.795e-04 ± 8.7e-06	8.396e-04 ± 2.2e-06	8.708e-04 ± 8.5e-06	8.753e-04 ± 9.4e-06	8.745e-04 ± 8.6e-06	8.691e-04 ± 7.7e-06	8.695e-04 ± 1.2e-05	8.949e-04	2.9%
	2	9.621e-04 ± 8.9e-06	9.734e-04 ± 6.3e-06	9.637e-04 ± 8.9e-06	9.637e-04 ± 7.3e-06	9.568e-04 ± 8.7e-06	9.531e-04 ± 6.9e-06	9.596e-04 ± 6.8e-06	9.755e-04	1.7%
	5	9.132e-04 ± 7.2e-06	9.205e-04 ± 3.8e-06	9.126e-04 ± 7.3e-06	9.224e-04 ± 5.9e-06	9.253e-04 ± 7.2e-06	9.204e-04 ± 4.7e-06	9.198e-04 ± 4.2e-06	9.187e-04	-0.1%

Supplemental Table 6. OpenDose photon SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Liver and target Spleen, Thyroid and Urinary Bladder Wall. SAFs are given for a selection of different Monte Carlo codes and the last 2 columns compare the mean over all available OpenDose data to ICRP 133 data.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOP E 2014	OpenDose mean	ICRP 133	diff.
Blood Vessels, Trunk	0.05	1.789e-05 ± 7.2e-07	3.802e-05 ± 1.1e-04	1.687e-05 ± 7.1e-07	1.796e-05 ± 1.3e-06	1.773e-05 ± 7.1e-07	1.873e-05 ± 7.5e-07	1.984e-05 ± 6.9e-06	-	-
	0.1	5.311e-05 ± 1.2e-06	6.910e-05 ± 5.9e-07	5.745e-05 ± 1.3e-06	5.644e-05 ± 2.2e-06	5.900e-05 ± 1.3e-06	2.947e-05 ± 1.0e-06	5.431e-05 ± 1.0e-05	-	-
	0.2	1.603e-04 ± 2.1e-06	1.701e-04 ± 5.1e-07	1.622e-04 ± 2.1e-06	1.619e-04 ± 3.2e-06	1.711e-04 ± 2.2e-06	1.563e-04 ± 2.1e-06	1.634e-04 ± 4.8e-06	-	-
	0.5	5.640e-04 ± 3.9e-06	5.769e-04 ± 8.9e-06	5.708e-04 ± 4.0e-06	5.729e-04 ± 4.0e-06	5.958e-04 ± 4.1e-06	5.560e-04 ± 3.7e-06	5.722e-04 ± 1.1e-05	-	-
	1	1.295e-03 ± 5.8e-06	1.300e-03 ± 5.8e-06	1.305e-03 ± 5.8e-06	1.263e-03 ± 4.5e-06	1.343e-03 ± 5.9e-06	1.289e-03 ± 4.8e-06	1.299e-03 ± 2.2e-05	-	-
	2	3.092e-03 ± 8.7e-06	3.112e-03 ± 1.2e-05	3.115e-03 ± 8.7e-06	3.095e-03 ± 5.5e-06	3.251e-03 ± 8.8e-06	3.090e-03 ± 5.3e-06	3.114e-03 ± 5.3e-05	-	-
	5	1.005e-02 ± 1.5e-05	1.012e-02 ± 7.4e-05	1.004e-02 ± 1.5e-05	1.008e-02 ± 7.3e-06	1.050e-02 ± 1.5e-05	1.011e-02 ± 6.0e-06	1.012e-02 ± 1.5e-04	-	-
Brain	0.05	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0	-
	0.1	8.427e-09 ± 6.5e-09	1.471e-08 ± 3.4e-09	2.067e-09 ± 1.1e-09	0.0e00 ± 0.0e00	5.755e-09 ± 3.9e-09	5.432e-09 ± 3.1e-09	6.563e-09 ± 4.3e-09	0.0	-
	0.2	3.136e-08 ± 7.6e-09	3.091e-08 ± 3.8e-09	3.029e-08 ± 6.9e-09	3.164e-08 ± 1.4e-08	2.285e-08 ± 5.5e-09	4.771e-08 ± 8.0e-09	3.193e-08 ± 7.8e-09	6.655e-08	108.5%
	0.5	1.634e-07 ± 1.3e-08	1.355e-07 ± 3.4e-08	1.705e-07 ± 1.4e-08	1.679e-07 ± 3.2e-08	1.757e-07 ± 1.4e-08	1.521e-07 ± 1.0e-08	1.635e-07 ± 1.3e-08	1.650e-07	0.9%
	1	4.694e-07 ± 2.2e-08	4.736e-07 ± 1.7e-08	5.037e-07 ± 2.2e-08	4.520e-07 ± 3.7e-08	4.940e-07 ± 2.2e-08	4.631e-07 ± 1.7e-08	4.777e-07 ± 1.8e-08	5.057e-07	5.8%
	2	1.509e-06 ± 4.2e-08	1.367e-06 ± 3.2e-08	1.507e-06 ± 4.1e-08	1.507e-06 ± 4.7e-08	1.491e-06 ± 4.0e-08	1.498e-06 ± 3.1e-08	1.478e-06 ± 4.4e-08	1.605e-06	8.6%
	5	6.099e-06 ± 8.8e-08	6.244e-06 ± 3.4e-07	6.113e-06 ± 8.7e-08	6.076e-06 ± 6.5e-08	6.257e-06 ± 8.7e-08	6.072e-06 ± 5.3e-08	6.149e-06 ± 9.6e-08	5.870e-06	-4.5%
Liver	0.05	7.139e-01 ± 1.4e-06	7.133e-01 ± 0.0e+00	7.139e-01 ± 1.4e-06	7.139e-01 ± 5.8e-05	7.139e-01 ± 0.0e+00	7.139e-01 ± 7.1e-05	7.138e-01 ± 2.0e-04	5.522e-01	-22.6%
	0.1	7.130e-01 ± 2.5e-06	7.127e-01 ± 3.7e-06	7.130e-01 ± 2.6e-06	7.130e-01 ± 1.4e-04	7.129e-01 ± 0.0e+00	7.136e-01 ± 7.1e-05	7.130e-01 ± 2.3e-04	5.514e-01	-22.7%
	0.2	7.105e-01 ± 4.3e-06	7.103e-01 ± 2.8e-06	7.105e-01 ± 4.3e-06	7.105e-01 ± 2.0e-04	7.103e-01 ± 0.0e+00	7.105e-01 ± 6.9e-05	7.105e-01 ± 8.9e-05	5.492e-01	-22.7%
	0.5	7.011e-01 ± 7.9e-06	7.009e-01 ± 5.5e-06	7.010e-01 ± 7.9e-06	7.011e-01 ± 2.1e-04	7.005e-01 ± 0.0e+00	7.012e-01 ± 6.0e-05	7.010e-01 ± 2.1e-04	5.423e-01	-22.6%
	1	6.859e-01 ± 1.1e-05	6.857e-01 ± 1.3e-05	6.857e-01 ± 1.1e-05	6.859e-01 ± 2.1e-04	6.847e-01 ± 0.0e+00	6.860e-01 ± 4.7e-05	6.857e-01 ± 3.9e-04	5.284e-01	-22.9%
	2	6.577e-01 ± 1.5e-05	6.577e-01 ± 5.6e-05	6.575e-01 ± 1.5e-05	6.578e-01 ± 2.0e-04	6.555e-01 ± 0.0e+00	6.578e-01 ± 3.2e-05	6.574e-01 ± 7.4e-04	5.055e-01	-23.1%
	5	5.804e-01 ± 2.1e-05	5.812e-01 ± 7.0e-05	5.807e-01 ± 2.1e-05	5.810e-01 ± 1.8e-04	5.758e-01 ± 0.0e+00	5.802e-01 ± 1.9e-05	5.801e-01 ± 1.7e-03	4.499e-01	-22.4%

Supplemental Table 7. OpenDose electron SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Liver and target Blood Vessels Trunk, Brain and Liver. SAFs are given for a selection of different Monte Carlo codes and the last 2 columns compare the mean over all available OpenDose data to ICRP 133 data.

Target	Energy (MeV)	EGS++ 2018	FLUKA 2011	GATE 8.1	Geant4 10.5	MCNPX 2.7	PENELOP E 2014	OpenDose mean	ICRP 133	diff.
Spleen	0.05	6.004e-07 ± 1.6e-07	6.899e-07 ± 1.4e-05	5.851e-07 ± 1.7e-07	5.154e-07 ± 4.8e-07	8.723e-07 ± 2.0e-07	6.104e-07 ± 1.6e-07	6.002e-07 ± 1.4e-07	2.016e-07	-66.4%
	0.1	2.739e-06 ± 2.6e-07	3.119e-06 ± 4.3e-07	3.051e-06 ± 2.8e-07	2.829e-06 ± 9.0e-07	3.498e-06 ± 3.0e-07	1.544e-06 ± 1.9e-07	2.955e-06 ± 6.6e-07	2.540e-06	-14.0%
	0.2	8.369e-06 ± 3.4e-07	8.778e-06 ± 2.3e-07	7.429e-06 ± 3.1e-07	9.856e-06 ± 1.1e-06	8.983e-06 ± 3.5e-07	8.677e-06 ± 3.3e-07	8.513e-06 ± 7.4e-07	8.631e-06	1.4%
	0.5	2.109e-05 ± 3.8e-07	2.297e-05 ± 3.6e-07	2.138e-05 ± 4.0e-07	1.861e-05 ± 9.3e-07	2.247e-05 ± 4.0e-07	2.139e-05 ± 3.6e-07	2.166e-05 ± 1.3e-06	2.170e-05	0.2%
	1	4.240e-05 ± 5.1e-07	4.340e-05 ± 7.1e-07	4.330e-05 ± 5.2e-07	4.139e-05 ± 1.0e-06	4.455e-05 ± 5.1e-07	4.254e-05 ± 4.6e-07	4.275e-05 ± 9.1e-07	4.584e-05	7.2%
	2	8.592e-05 ± 7.6e-07	9.082e-05 ± 2.1e-06	8.824e-05 ± 7.7e-07	8.710e-05 ± 1.1e-06	9.105e-05 ± 7.6e-07	8.538e-05 ± 6.1e-07	8.769e-05 ± 2.0e-06	9.108e-05	3.9%
	5	2.263e-04 ± 1.4e-06	2.263e-04 ± 3.9e-06	2.253e-04 ± 1.3e-06	2.156e-04 ± 1.2e-06	2.334e-04 ± 1.3e-06	2.248e-04 ± 8.6e-07	2.253e-04 ± 4.5e-06	2.250e-04	-0.1%
Thyroid	0.05	0.000e+00 ± 0.0e+00	1.478e-09 ± 1.5e-07	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	1.847e-10 ± 5.2e-10	0.000e+00	-100.0%
	0.1	9.424e-08 ± 4.9e-08	2.078e-07 ± 2.1e-07	4.172e-08 ± 2.9e-08	0.000e+00 ± 0.0e+00	3.439e-07 ± 2.6e-07	8.770e-08 ± 5.2e-08	1.314e-07 ± 1.2e-07	2.896e-07	120.2%
	0.2	7.255e-07 ± 2.8e-07	1.069e-06 ± 4.9e-07	1.148e-06 ± 3.6e-07	6.556e-07 ± 6.0e-07	9.704e-07 ± 3.1e-07	1.276e-06 ± 4.2e-07	1.031e-06 ± 3.1e-07	8.380e-07	-18.7%
	0.5	2.783e-06 ± 3.5e-07	3.704e-06 ± 1.3e-07	3.657e-06 ± 4.4e-07	5.123e-06 ± 1.3e-06	3.587e-06 ± 4.6e-07	2.453e-06 ± 3.4e-07	3.290e-06 ± 8.6e-07	1.874e-06	-43.0%
	1	6.276e-06 ± 4.7e-07	8.215e-06 ± 1.4e-06	7.256e-06 ± 5.0e-07	6.587e-06 ± 1.3e-06	6.903e-06 ± 5.6e-07	7.300e-06 ± 5.1e-07	7.077e-06 ± 5.9e-07	8.355e-06	18.1%
	2	1.713e-05 ± 1.0e-06	1.672e-05 ± 1.7e-06	1.470e-05 ± 7.5e-07	1.347e-05 ± 1.2e-06	1.500e-05 ± 7.8e-07	1.628e-05 ± 8.7e-07	1.534e-05 ± 1.2e-06	1.637e-05	6.7%
	5	4.218e-05 ± 1.4e-06	3.855e-05 ± 4.0e-06	4.452e-05 ± 1.6e-06	4.621e-05 ± 1.5e-06	4.472e-05 ± 1.5e-06	4.499e-05 ± 1.1e-06	4.380e-05 ± 2.3e-06	3.874e-05	-11.6%
Urinary Bladder Wall	0.05	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00 ± 0.0e+00	0.000e+00	-
	0.1	2.969e-08 ± 2.2e-08	9.194e-08 ± 9.2e-08	4.910e-08 ± 4.5e-08	0.000e+00 ± 0.0e+00	4.153e-18 ± 2.2e-18	0.000e+00 ± 0.0e+00	2.430e-08 ± 3.3e-08	0.000e+00	-100.0%
	0.2	6.160e-08 ± 2.7e-08	2.447e-07 ± 1.3e-07	1.069e-07 ± 6.8e-08	0.000e+00 ± 0.0e+00	1.843e-07 ± 9.1e-08	1.271e-07 ± 5.2e-08	1.414e-07 ± 7.2e-08	1.086e-07	-23.2%
	0.5	4.236e-07 ± 1.2e-07	5.559e-07 ± 8.0e-08	5.103e-07 ± 8.9e-08	8.154e-07 ± 2.8e-07	5.879e-07 ± 1.1e-07	5.155e-07 ± 9.6e-08	5.753e-07 ± 1.2e-07	5.907e-07	2.7%
	1	1.410e-06 ± 1.7e-07	1.199e-06 ± 4.4e-08	1.676e-06 ± 1.8e-07	8.475e-07 ± 2.5e-07	1.514e-06 ± 1.5e-07	1.464e-06 ± 1.6e-07	1.407e-06 ± 2.5e-07	1.618e-06	15.0%
	2	4.418e-06 ± 3.4e-07	5.469e-06 ± 1.7e-06	4.055e-06 ± 3.0e-07	3.626e-06 ± 3.9e-07	3.660e-06 ± 2.4e-07	3.795e-06 ± 2.4e-07	4.167e-06 ± 5.6e-07	4.189e-06	0.5%
	5	1.446e-05 ± 5.4e-07	1.388e-05 ± 1.9e-06	1.414e-05 ± 5.1e-07	1.379e-05 ± 5.3e-07	1.532e-05 ± 5.7e-07	1.517e-05 ± 4.6e-07	1.450e-05 ± 6.7e-07	1.415e-05	-2.4%

Supplemental Table 8. OpenDose electron SAFs (kg^{-1}) for the model ICRP 110 adult female, the source Liver and target Spleen, Thyroid and Urinary Bladder Wall. SAFs are given for a selection of different Monte Carlo codes and the last 2 columns compare the mean over all available OpenDose data to ICRP 133 data.