

Corrigenda

Corrigenda to ICRP *Publication 116: Conversion Coefficients for Radiological Protection Quantities for External Radiation Exposures* [Ann. ICRP 40(2–5) 2010]

The following errors were introduced into some of the data in Tables A.1, A.2, B.7, B.10, and G.2. Asterisks in the tables below highlight changes in the numerical values from the original values. Supplementary data files v2 available at the publisher’s website reflect these corrections.

Table A.1. Photons: effective dose per fluence, in units of pSv cm², for monoenergetic particles incident in various geometries.

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
0.01	0.0685	0.0184	0.0189	0.0182	0.0337	0.0288
0.015	0.156	0.0155	0.0416	0.0390	0.0665*	0.0560
0.02	0.225	0.0261*	0.0654*	0.0573	0.0988*	0.0813*
0.03	0.312*	0.0946*	0.109*	0.0886*	0.159*	0.127
0.04	0.350*	0.163*	0.138*	0.113*	0.199	0.158
0.05	0.369*	0.209*	0.158*	0.132*	0.226	0.180
0.06	0.389*	0.243*	0.174*	0.149*	0.248	0.198*
0.07	0.411*	0.273*	0.191*	0.165*	0.273	0.218
0.08	0.443*	0.302*	0.211*	0.183*	0.297	0.238*
0.1	0.518*	0.363*	0.255*	0.224*	0.356*	0.286*
0.15	0.747*	0.543*	0.391*	0.346*	0.529*	0.429
0.2	1.00	0.745*	0.546*	0.489*	0.722*	0.589
0.3	1.51	1.16	0.880*	0.797*	1.12	0.932

(continued)

Table A.1. (continued)

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
0.4	2.00	1.58*	1.23*	1.12*	1.53*	1.28
0.5	2.47	1.99*	1.57*	1.45	1.92	1.63
0.511	2.52	2.03	1.61*	1.48*	1.97*	1.66*
0.6	2.91	2.39*	1.91*	1.77*	2.31*	1.97
0.662	3.17	2.63*	2.12*	1.97*	2.54	2.17
0.8	3.73	3.14*	2.57*	2.40*	3.04	2.62
1.0	4.49	3.84*	3.21*	3.02*	3.73*	3.25
1.117	4.90	4.23*	3.56*	3.36*	4.10	3.60
1.33	5.60*	4.90*	4.18*	3.97*	4.75	4.21*
1.5	6.12	5.41*	4.66*	4.43*	5.24	4.67*
2.0	7.48	6.77*	5.94*	5.68*	6.56*	5.91*
3.0	9.75	9.13*	8.18*	7.88*	8.85*	8.08
4.0	11.7	11.2	10.2	9.84*	10.9*	10.0
5.0	13.4	13.2*	12.0	11.6*	12.7	11.8
6.0	15.0	15.0	13.7	13.3*	14.4	13.5
6.129	15.1	15.2	13.9	13.5*	14.6	13.7
8.0	17.8	18.6	16.9*	16.6	17.6	16.6
10.0	20.5	22.1*	20.0*	19.7	20.7*	19.7*
15.0	26.1	30.4*	27.3*	27.1	27.7	26.8
20.0	30.8	38.2	34.4	34.3*	34.4	33.8
30.0	37.9	51.3*	47.4	48.0*	46.0*	46.1
40.0	43.2*	61.8*	59.3*	60.9	56.0	56.9
50.0	47.1	70.1*	69.7*	72.3*	64.3*	66.1*
60.0	50.1	76.5*	78.6*	82.1*	71.1*	74.1
80.0	54.5	86.2*	92.9*	98.1*	81.8*	87.1*
100	57.8	92.7*	103	110	89.5*	97.5
150	63.2*	103*	122*	130	102	116
200	67.2*	110*	134*	144*	110*	129*
300	72.3	118*	149*	161	121	147
400	75.4*	123*	159*	173*	128	159
500	77.4*	127*	166*	181*	132*	167*
600	78.7*	130*	171*	187*	136	174
800	80.4*	134*	179*	195	141*	185
1000	81.6*	137*	184*	202*	145	193
1500	83.7*	141*	194*	213*	151*	208
2000	85.0*	144*	200*	220	156	218
3000	86.6*	147*	208*	230*	161	232

(continued)

Table A.1. (continued)

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
4000	87.8*	149*	213*	236*	164*	242*
5000	88.6*	151*	217*	241*	167*	251
6000	89.1*	152*	221*	245*	169*	258
8000	89.9*	153*	226*	251	172	268
10,000	90.4*	154*	230*	256*	174*	276

AP, antero-posterior; PA, postero-anterior; LLAT, left lateral; RLAT, right lateral; ROT, rotational; ISO, isotropic.

Table A.2. Photons: effective dose per air kerma free-in-air, in units of Sv Gy⁻¹, for monoenergetic particles incident in various geometries.

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
0.01	0.0090	0.0024	0.0025	0.0024	0.0044	0.0038
0.015	0.0486*	0.0048	0.0130	0.0122	0.0207	0.0175
0.02	0.131*	0.0151	0.0379	0.0332	0.0572*	0.0471*
0.03	0.422*	0.128*	0.148*	0.120*	0.215*	0.171
0.04	0.798*	0.371*	0.315*	0.258*	0.455	0.360*
0.05	1.12*	0.638*	0.480*	0.402*	0.688	0.547*
0.06	1.33	0.832*	0.595*	0.508*	0.850	0.679*
0.07	1.42	0.940*	0.659*	0.569*	0.939	0.751
0.08	1.43*	0.980*	0.684*	0.594*	0.964*	0.773
0.1	1.39	0.975*	0.685*	0.601*	0.954*	0.768*
0.15	1.25	0.906*	0.651*	0.577*	0.882*	0.715
0.2	1.17	0.869*	0.637*	0.570*	0.843*	0.687
0.3	1.09	0.840*	0.637*	0.577*	0.814*	0.674*
0.4	1.06	0.834*	0.648*	0.592*	0.807*	0.678
0.5	1.04	0.836*	0.660*	0.608*	0.808*	0.684
0.511	1.03	0.836*	0.661*	0.610*	0.808*	0.685
0.6	1.02	0.839*	0.673*	0.623*	0.811*	0.692
0.662	1.02	0.841*	0.680*	0.632*	0.814*	0.697
0.8	1.01	0.848*	0.695*	0.649*	0.822*	0.708
1.0	1.00	0.857*	0.716*	0.673*	0.831*	0.725
1.117	0.999	0.863*	0.726*	0.686*	0.837*	0.734
1.33	0.996	0.872*	0.745*	0.706*	0.846	0.749*
1.5	0.996	0.880*	0.758*	0.721*	0.853	0.760*

(continued)

Table A.2. (continued)

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
2.0	0.990	0.895*	0.785*	0.752*	0.868*	0.782*
3.0	0.977	0.915*	0.820*	0.790*	0.887*	0.810
4.0	0.960	0.924*	0.837*	0.810*	0.894*	0.824
5.0	0.943	0.928*	0.844*	0.821*	0.894*	0.832*
6.0	0.924	0.928*	0.846*	0.824*	0.890*	0.832
6.129	0.922*	0.928*	0.845*	0.824*	0.889*	0.832
8.0	0.886	0.923*	0.841*	0.823*	0.875*	0.826*
10.0	0.848	0.914*	0.830*	0.815*	0.856	0.814
15.0	0.756	0.881*	0.793*	0.785*	0.804	0.779*
20.0	0.679	0.843	0.758*	0.757*	0.759	0.745*

AP, antero-posterior; PA, postero-anterior; LLAT, left lateral; RLAT, right lateral; ROT rotational; ISO, isotropic.

Table B.7. Photons, female: oesophagus absorbed dose per fluence, in units of pGy cm², for monoenergetic particles incident in various geometries.

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
0.01	4.6E-5*	4.7E-8*	1.4E-6*	1.7E-6*	2.7E-6*	4.0E-5*
0.015	0.0141*	4.1E-6*	1.1E-4*	1.2E-4*	0.0025*	0.0013*
0.02	0.0754*	0.0021*	0.0025*	0.0040*	0.0204*	0.0129*
0.03	0.201*	0.0510*	0.0257*	0.0297*	0.0865*	0.0545*
0.04	0.261*	0.140*	0.0602*	0.0570*	0.149*	0.102*
0.05	0.300*	0.211*	0.0890*	0.0827*	0.189*	0.136*
0.06	0.331*	0.260*	0.110*	0.101*	0.222*	0.164*
0.07	0.360*	0.289*	0.130*	0.120*	0.249*	0.199*
0.08	0.393*	0.330*	0.149*	0.139*	0.283*	0.217*
0.1	0.470*	0.410*	0.189*	0.178*	0.347*	0.268*
0.15	0.702*	0.621*	0.302*	0.288*	0.530	0.408*
0.2	0.948*	0.844*	0.437*	0.411*	0.725*	0.565*
0.3	1.44*	1.30*	0.731*	0.690*	1.15*	0.898*
0.4	1.94*	1.75*	1.03*	0.987*	1.57*	1.23*
0.5	2.41*	2.19*	1.35*	1.28*	1.98*	1.58*
0.511	2.44*	2.23*	1.38*	1.32*	2.03*	1.60*
0.6	2.82*	2.61*	1.67*	1.59*	2.41*	1.91*
0.662	3.07*	2.84*	1.89*	1.78*	2.64*	2.12*
0.8	3.66*	3.35*	2.33*	2.21*	3.16*	2.60*

(continued)

Table B.7. (continued)

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
1.0	4.41*	4.09*	2.95*	2.78*	3.84*	3.27*
1.117	4.84*	4.51*	3.28*	3.11*	4.24*	3.67*
1.33	5.54*	5.23*	3.85*	3.67*	4.90*	4.26*
1.5	6.05*	5.75*	4.28*	4.14*	5.40*	4.72*
2.0	7.46*	7.08*	5.53*	5.40*	6.84*	5.99*
3.0	9.95*	9.34*	7.73*	7.68*	9.35*	8.13*
4.0	12.1*	11.4*	9.79*	9.63*	11.5*	10.2*
5.0	14.2	13.4*	11.6*	11.6*	13.3*	12.1*
6.0	16.1	15.4*	13.5*	13.5*	15.1*	13.9*
6.129	16.4	15.7*	13.6*	13.8*	15.4*	14.1*
8.0	19.9	19.4*	17.3*	17.0*	18.9*	17.5*
10.0	23.3*	23.1*	20.8*	20.3*	22.5*	20.9*
15.0	30.6*	32.3*	28.8*	28.5*	31.0*	29.7*
20.0	36.5*	41.0*	37.1*	37.2*	38.9*	38.1*
30.0	45.5*	53.4*	54.3*	53.5*	52.1*	51.8*
40.0	51.5*	61.7*	69.2*	68.5*	62.2*	63.7*
50.0	55.6*	67.9*	81.2*	81.6*	70.3*	73.1*
60.0	58.6*	72.4*	91.2*	92.6*	76.6*	81.6*
80.0	63.1*	80.4*	107*	110*	86.3*	94.9*
100	66.4*	84.7*	119*	121*	93.3*	105*
150	71.8*	93.2*	139*	141*	105*	123*
200	76.3*	97.6*	151*	155*	112*	135*
300	82.2*	103*	166*	173*	120*	150*
400	85.2*	108*	175*	184*	126*	160*
500	86.9*	111*	183*	192*	129*	167*
600	87.8*	114*	188*	198*	132*	174*
800	89.4*	116*	196*	206*	136*	184*
1000	90.7*	118*	201*	211*	138*	192*
1500	93.1*	120*	211*	220*	143*	204*
2000	94.2*	122*	218*	226*	147*	213*
3000	95.7*	124*	226*	235*	149*	225*
4000	97.5*	126*	229*	241*	152*	234*
5000	98.7*	127*	232*	245*	154*	243*
6000	99.4*	128*	235*	247*	155*	250*
8000	100*	129*	241*	248*	158*	262*
10,000	100*	129*	247*	248*	159*	272*

AP, antero-posterior; PA, postero-anterior; LLAT, left lateral; RLAT, right lateral; ROT rotational; ISO, isotropic.

Table B.10. Photons, female: remainder absorbed dose per fluence, in units of pGy cm², for monoenergetic particles incident in various geometries.

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
0.01	0.0023	8.0E-4	0.0011	0.0012	0.0014	0.0017
0.015	0.0370	0.0114*	0.0130*	0.0119	0.0177	0.0135
0.02	0.0966*	0.0361*	0.0347*	0.0271	0.0469*	0.0346
0.03	0.210*	0.120*	0.0888*	0.0676*	0.122*	0.0883*
0.04	0.273*	0.187*	0.129*	0.105*	0.178*	0.131*
0.05	0.308*	0.231*	0.156*	0.130*	0.215*	0.159*
0.06	0.335*	0.265*	0.176*	0.150*	0.239*	0.182*
0.07	0.368*	0.296*	0.197*	0.171*	0.266*	0.203*
0.08	0.395*	0.328*	0.219*	0.191*	0.292*	0.225*
0.1	0.470*	0.399*	0.267*	0.235*	0.355*	0.273*
0.15	0.687*	0.596*	0.414*	0.370*	0.533*	0.414*
0.2	0.925*	0.813*	0.580*	0.524*	0.733*	0.572*
0.3	1.41*	1.26*	0.939*	0.855*	1.15*	0.910*
0.4	1.88*	1.70*	1.31*	1.20*	1.56*	1.25*
0.5	2.33*	2.12*	1.68*	1.54*	1.96*	1.60*
0.511	2.38*	2.17*	1.72*	1.57*	2.00*	1.63*
0.6	2.76*	2.53*	2.04*	1.87*	2.35*	1.93*
0.662	3.01*	2.78*	2.26*	2.08*	2.59*	2.14*
0.8	3.56*	3.31*	2.73*	2.53*	3.10*	2.59*
1.0	4.30*	4.03*	3.39*	3.17*	3.80*	3.21*
1.117	4.71*	4.42*	3.76*	3.53*	4.19*	3.57*
1.33	5.40*	5.11*	4.40*	4.16*	4.86*	4.19*
1.5	5.93*	5.63*	4.90*	4.63*	5.36*	4.65*
2.0	7.33*	7.02*	6.23*	5.92*	6.72*	5.93*
3.0	9.75*	9.40*	8.56*	8.20*	9.09*	8.22*
4.0	11.9*	11.5	10.6*	10.2	11.2*	10.3
5.0	13.8	13.5*	12.6*	12.1	13.1	12.1*
6.0	15.7*	15.3*	14.4*	13.9	15.0*	13.9*
6.129	15.9*	15.6*	14.6*	14.1	15.2	14.1*
8.0	19.1*	18.9*	17.9*	17.4*	18.5	17.2*
10.0	22.4*	22.4*	21.3*	20.7*	21.9	20.5*
15.0	29.4*	30.6*	29.2*	28.7	29.9*	28.2*
20.0	35.6*	38.6	36.8	36.4	37.2*	35.9*
30.0	44.7*	50.7*	50.2*	50.6	49.2*	49.4*
40.0	51.0	59.8*	62.0*	63.4*	59.0*	60.6

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Table B.10. (continued)

Energy (MeV)	AP	PA	LLAT	RLAT	ROT	ISO
50.0	55.6*	66.7*	72.0*	74.3	67.0*	70.1*
60.0	59.3*	71.8*	80.3*	83.5*	73.3*	78.2*
80.0	64.6*	79.8*	92.9*	98.2*	83.3*	91.5*
100	68.5*	85.2*	102*	109*	90.3*	102*
150	75.2*	94.1*	117*	128	102*	120*
200	79.8*	100*	128*	140*	109*	133*
300	85.8*	107*	141*	155*	118*	150*
400	89.6*	111*	149*	166*	124*	161*
500	92.0*	114*	154*	173*	128*	169*
600	93.6*	117*	159*	178*	132*	175*
800	95.4*	120*	165*	186*	136*	185*
1000	97.1*	123*	169*	192*	139*	193*
1500	99.6*	126*	177*	201*	144*	206*
2000	101*	129*	182*	208*	148*	216*
3000	103*	131*	188*	216*	152*	230*
4000	105*	133*	192*	222*	155*	240*
5000	106*	134*	195*	226*	157*	247*
6000	106*	135*	197*	230*	159*	254*
8000	107*	136*	201*	235*	161*	263*
10,000	107*	136*	204*	239*	162*	270*

AP, antero-posterior; PA, postero-anterior; LLAT, left lateral; RLAT, right lateral; ROT rotational; ISO, isotropic.

Table G.2. Local skin absorbed dose per fluence (D/Φ), in $\mu\text{Gy cm}^2$, for monoenergetic alpha particles normally incident on skin.

Energy (MeV)	D/Φ
6.5	0.00111
6.8	0.0256
7.0	0.0420
7.5	0.0752
8.0	0.103
8.5	0.128
9.0	0.150
9.5	0.172*
10.0	0.180