DEEP DOSE EQUIVALENT GAMMA RAY CONSTANTS
(mSv/hr per MBq at 1 meter)
Data from Unger and Truby ORNL RSIC-45/R1, 1982

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{7}Be	53.4 d	9.292 E −6	1.879	^{57}Co	270.9 d	4.087 E −5	39.809
^{11}C	20.5 m	1.937 E −4	1.695	^{58}Co	70.8 d	1.659 E −4	1.008
^{13}N	10.0 m	1.938 E −4	1.695	^{58}mCo	9.1 h	2.637 E −8	528.9
^{16}C	7.1 s	3.984 E −4	0.495	^{60}Co	5.3 y	3.703 E −4	0.679
^{15}O	2.0 m	1.940 E −4	1.695	^{60}mCo	10.5 m	9.057 E −7	0.837
^{18}F	1.8 h	1.879 E −4	1.695	^{61}Co	1.6 h	2.286 E −5	1.706
^{22}Na	2.6 y	3.620 E −4	0.852	^{56}Ni	6.1 d	2.941 E −4	1.003
^{24}Na	15.0 h	5.237 E −4	0.528	^{57}Ni	1.5 d	2.911 E −4	0.681
^{27}Mg	9.5 m	1.449 E −4	0.869	^{65}Ni	2.5 h	8.038 E −5	0.655
^{28}Mg	20.9 h	2.375 E −4	0.763	^{61}Cu	3.4 h	1.536 E −4	1.497
^{26}Al	7.2 E + 5 y	4.047 E −4	0.652	^{62}Cu	9.7 m	1.910 E −4	1.679
^{28}Al	2.2 m	2.384 E −4	0.548	^{64}Cu	12.7 h	3.566 E −5	1.614
^{31}Si	2.6 h	1.306 E −7	0.676	^{67}Cu	2.58 d	2.363 E −5	13.011
^{38}Cl	37.2 m	1.942 E −4	0.527	^{62}Zn	9.3 h	8.990 E −5	1.592
^{41}Ar	1.8 h	1.881 E −4	0.667	^{65}Zn	244.4 d	8.924 E −5	0.738
^{40}K	1.28 E + 9 y	2.208 E −5	0.619	^{69}Zn	55.6 m	1.168 E −9	2.362
^{42}K	12.4 h	3.869 E −5	0.604	^{69}mZn	13.8 h	7.983 E −5	2.153
^{43}K	22.6 h	1.811 E −4	1.546	^{66}Ga	9.4 h	3.504 E −4	0.615
^{45}Ca	162.7 d	8.072 E −12	823.3	^{67}Ga	3.3 d	3.004 E −5	4.768
^{47}Ca	4.5 d	1.581 E −4	0.686	^{68}Ga	1.1 h	1.789 E −4	1.609
^{49}Ca	8.7 m	3.615 E −4	0.472	^{72}Ga	14.1 h	3.936 E −4	0.643
^{44}Sc	3.9 h	3.602 E −4	0.915	^{68}Ge	288 d	1.634 E −5	1345
^{46}Sc	83.8 d	3.155 E −4	0.787	^{71}Ge	11.8 d	1.653 E −5	1345
^{46m}Sc	18.7 s	1.809 E −5	24.378	^{77}Ge	11.3 h	1.934 E −4	1.089
^{47}Sc	3.4 d	2.170 E −5	18.513	^{72}As	1.1 d	3.148 E −4	1.107
^{48}Sc	1.8 d	5.117 E −4	0.728	^{73}As	80.3 d	3.784 E −5	662.1
^{49}Sc	57.4 m	1.407 E −7	0.556	^{74}As	17.8 d	1.472 E −4	1.475
^{44}Ti	47.3 y	3.909 E −5	28.726	^{76}As	1.1 d	7.408 E −5	1.036
^{45}Ti	3.1 h	1.653 E −4	1.687	^{77}As	1.6 d	1.699 E −6	2.522
^{51}Ti	5.8 m	7.130 E −5	2.110	^{73}Se	7.1 h	2.969 E −4	2.212
^{48}V	16.0 d	4.598 E −4	0.770	^{75}Se	119.8 d	2.323 E −4	9.079
^{52}V	3.7 m	2.057 E −4	0.626	^{77}Br	2.4 d	1.923 E −4	3.068
^{49}Cr	42.1 m	2.029 E −4	1.766	^{80}Br	17.4 m	2.166 E −5	1.625
^{51}Cr	27.7 d	6.320 E −6	3.833	^{80m}Br	4.4 h	1.900 E −4	698.2
^{52}Mn	5.6 d	5.430 E −4	0.773	^{82}Br	1.5 d	4.377 E −4	0.906
^{52m}Mn	21.4 m	3.903 E −4	0.795	^{83}Br	2.4 h	1.401 E −6	1.612
^{54}Mn	312.7 d	1.382 E −4	0.932	^{84}Br	31.8 m	2.392 E −4	0.573
^{56}Mn	2.6 h	2.496 E −4	0.662	^{85}Br	172 s	1.059 E −5	0.834
^{57}Mn	1.5 m	3.031 E −5	1.697	^{79}Kr	1.5 d	1.631 E −4	3.139
^{52}Fe	8.3 h	1.413 E −4	1.859	^{81}Kr	2.1 E + 5 y	1.172 E −4	795.2
^{59}Fe	44.6 d	1.789 E −4	0.705	^{83m}Kr	1.8 h	3.209 E −5	801.4
^{56}Co	78.8 d	5.205 E −4	0.645	^{85}Kr	10.7 y	4.232 E −7	1.681
				^{85m}Kr	4.5 h	4.328 E −5	9.045

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.

(continued)

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{87}Kr	1.3 h	1.169 E −4	0.627	^{95}Nb	35.1 d	1.298 E −4	1.023
^{88}Kr	2.8 h	2.769 E −4	0.556	^{95m}Nb	3.6 d	6.390 E −5	16.959
^{89}Kr	3.2 m	2.626 E −4	0.622	^{96}Nb	23.3 h	4.120 E −4	0.926
^{90}Kr	32.3 s	2.073 E −4	0.733	^{97}Nb	1.2 h	1.175 E −4	1.203
^{81}Rb	4.6 h	2.264 E −4	2.452	^{97m}Nb	60 s	1.262 E −4	1.063
^{82}Rb	1.2 m	2.104 E −4	1.572	^{91}Mo	15.5 m	1.898 E −4	1.660
^{83}Rb	86.2 d	2.085 E −4	2.186	^{93}Mo	3500 y	7.963 E −5	1292
^{84}Rb	32.9 d	2.326 E −4	1.176	^{99}Mo	2.8 d	3.052 E −5	1.165
^{86}Rb	18.7 d	1.458 E −5	0.747	^{101}Mo	14.6 m	2.391 E −4	0.736
^{88}Rb	17.8 m	8.701 E −5	0.571	^{95}Tc	20.0 h	2.092 E −4	1.179
^{89}Rb	15.4 m	2.960 E −4	0.630	^{95m}Tc	61 d	1.939 E −4	1.407
^{90}Rb	157 s	2.548 E −4	0.518	^{96}Tc	4.3 d	4.899 E −4	0.994
^{90m}Rb	258.0 s	4.429 E −4	0.585	^{96m}Tc	51.5 m	4.430 E −5	2.427
^{82}Sr	25.0 d	1.065 E −4	842.8	^{97}Tc	2.6 E + 6 y	7.596 E −5	1176
^{85}Sr	64.8 d	2.052 E −4	2.244	^{97m}Tc	89 d	5.233 E −5	1060
^{85m}Sr	1.1 h	6.004 E −5	8.972	^{98}Tc	4.2 E + 6 y	2.430 E −4	1.130
^{87m}Sr	2.8 h	8.010 E −5	2.872	^{99}Tc	2.1 E + 5 y	1.242 E −10	21.144
^{89}Sr	50.6 d	2.205 E −8	0.858	^{99m}Tc	6.0 h	3.317 E −5	27.731
^{91}Sr	9.5 h	1.118 E −4	0.865	^{101}Tc	14.2 m	6.916 E −5	2.913
^{92}Sr	2.7 h	1.946 E −4	0.651	^{97}Ru	2.9 d	1.194 E −4	10.310
^{93}Sr	7.3 m	3.665 E −4	0.780	^{103}Ru	39.4 d	8.970 E −5	1.724
^{86}Y	14.7 h	6.292 E −4	0.782	^{105}Ru	4.4 h	1.397 E −4	1.202
^{87}Y	3.3 d	1.861 E −4	2.486	^{103m}Rh	56.1 m	6.912 E −6	864
^{88}Y	106.6 d	4.819 E −4	0.661	^{105}Rh	1.5 d	1.588 E −5	3.949
^{90m}Y	3.2 h	1.316 E −4	2.213	^{105m}Rh	45 s	4.251 E −5	98.565
^{91}Y	58.5 d	5.403 E −7	0.697	^{106}Rh	29.9 s	3.734 E −5	1.260
^{91m}Y	49.7 m	1.028 E −4	1.527	^{103}Pd	17.0 d	6.219 E −5	871.6
^{92}Y	3.5 h	3.971 E −5	0.784	^{109}Pd	13.5 h	1.310 E −7	1.706
^{93}Y	10.1 h	1.396 E −5	0.696	^{106m}Ag	8.5 d	5.237 E −4	0.948
^{86}Zr	16.5 h	2.383 E −4	11.219	^{108}Ag	2.4 m	4.399 E −6	1.545
^{88}Zr	83.4 d	1.710 E −4	3.559	^{108m}Ag	127 y	3.436 E −4	1.392
^{89}Zr	3.3 d	2.662 E −4	1.046	^{109m}Ag	39.6 s	2.722 E −5	548.6
^{95}Zr	64.0 d	1.258 E −4	1.059	^{110}Ag	24.6 s	5.558 E −6	1.210
^{97}Zr	16.9 h	2.922 E −5	0.803	^{110m}Ag	249.9 d	4.466 E −4	0.876
^{90}Nb	14.6 h	6.597 E −4	0.627	^{111}Ag	7.5 d	5.329 E −6	3.440
^{91}Nb	1.0 E + 4 y	8.832 E −5	1330	^{109}Cd	464 d	4.983 E −5	683.6
^{91m}Nb	61 d	7.160 E −5	3.692	^{111m}Cd	48.7 m	8.463 E −5	8.502
^{92}Nb	3.6 E + 7 y	3.414 E −4	1.097	^{115}Cd	2.2 d	4.068 E −5	1.711
^{92m}Nb	10.1 d	2.413 E −4	0.977	^{115m}Cd	44.6 d	3.433 E −6	0.778
^{93m}Nb	14.6 y	1.421 E −5	1292	^{117}Cd	2.5 h	1.740 E −4	0.733
^{94}Nb	2.0 E + 4 y	2.648 E −4	0.983	^{117m}Cd	3.4 h	2.935 E −4	0.619
^{94m}Nb	6.3 m	5.481 E −5	1180	^{111}Im	2.8 d	1.356 E −4	10.321

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{113m}In	1.7 h	6.567 E −5	2.858	^{129}I	1.6 E + 7 y	3.401 E −5	287
^{114}In	1.2 m	6.223 E −6	1.358	^{130}I	12.4 h	3.791 E −4	1.187
^{114m}In	49.5 d	4.074 E −5	2.318	^{131}I	8.0 d	7.647 E −5	2.409
^{115m}In	4.4 h	5.329 E −5	4.220	^{132}I	2.3 h	3.858 E −4	0.972
^{116m}In	54.1 m	3.660 E −4	0.674	^{133}I	20.8 h	1.105 E −4	1.321
^{117}In	43.8 m	1.359 E −4	1.682	^{134}I	52.6 m	4.251 E −4	0.845
^{117m}In	1.9 h	3.060 E −5	5.608	^{135}I	6.6 h	2.327 E −4	0.664
^{113}Sn	115.1 d	4.844 E −5	462.8	^{136}I	83 s	3.417 E −4	0.579
^{117m}Sn	13.6 d	6.796 E −5	26.595	^{122}Xe	20.1 h	4.867 E −5	7.257
^{119m}Sn	293.0 d	2.789 E −5	517.0	^{123}Xe	2.1 h	1.416 E −4	1.147
^{123}Sn	129.2 d	1.062 E −6	0.744	^{125}Xe	16.8 h	9.622 E −5	4.757
^{125}Sn	9.6 d	4.674 E −5	0.735	^{127}Xe	36.4 d	9.331 E −5	7.526
^{126}Sn	1.0 E + 5 y	3.408 E −5	31.647	^{129m}Xe	8.9 d	6.165 E −5	235.8
^{117}Sb	2.8 h	8.219 E −5	14.115	^{131m}Xe	11.8 d	2.533 E −5	263.7
^{122}Sb	2.7 d	8.223 E −5	1.400	^{133}Xe	5.2 d	2.783 E −5	39.877
^{124}Sb	60.2 d	2.883 E −4	0.714	^{133m}Xe	2.2 d	3.034 E −5	19.750
^{125}Sb	2.8 y	1.028 E −4	1.764	^{135}Xe	9.1 h	5.121 E −5	5.015
^{126}Sb	12.4 d	4.860 E −4	1.172	^{135m}Xe	15.4 m	8.651 E −5	1.668
^{126m}Sb	19.0 m	2.824 E −4	1.266	^{137}Xe	3.8 m	3.346 E −5	1.247
^{127}Sb	3.9 d	1.200 E −4	1.255	^{138}Xe	14.1 m	1.679 E −4	0.611
^{129}Sb	4.4 h	2.315 E −4	0.840	^{126}Cs	1.6 m	2.166 E −4	1.581
^{121}Te	16.8 d	1.455 E −4	1.683	^{129}Cs	1.3 d	9.725 E −5	3.213
^{121m}Te	154 d	6.703 E −5	5.779	^{131}Cs	9.7 d	3.363 E −5	310.3
^{123}Te	1.0 E + 13 y	2.687 E −5	429.8	^{132}Cs	6.5 d	1.556 E −4	1.295
^{123m}Te	119.7 d	5.261 E −5	24.041	^{134}Cs	2.1 y	2.701 E −4	1.095
^{125m}Te	58 d	6.168 E −5	368.9	^{134m}Cs	2.9 h	1.904 E −5	75.989
^{127}Te	9.4 h	9.428 E −7	2.419	^{136}Cs	13.2 d	3.632 E −4	0.872
^{127m}Te	109 d	1.977 E −5	373.5	^{137}Cs	30.17 y	$\Gamma = 1.032 \times 10^{-4}$ from 137 mBa	
^{129}Te	1.2 h	1.833 E −5	2.063				
^{129m}Te	33.6 d	1.997 E −5	2.000	^{138}Cs	32.2 m	3.422 E −4	0.634
^{131}Te	25.0 m	8.073 E −5	1.203	^{139}Cs	9.4 m	4.260 E −5	0.596
^{131m}Te	30 h	2.452 E −4	0.895	^{131}Ba	11.8 d	1.244 E −4	2.239
^{132}Te	3.3 d	7.549 E −5	10.115	^{133}Ba	10.5 y	1.231 E −4	4.188
^{133}Te	12.4 m	1.584 E −4	0.898	^{133m}Ba	1.6 d	3.372 E −5	8.792
^{133m}Te	55.4 m	3.689 E −4	0.851	^{135m}Ba	1.2 d	2.974 E −5	9.494
^{134}Te	41.8 m	1.731 E −4	1.365	^{137m}Ba	2.6 m	1.081 E −4	1.224
^{122}I	3.6 m	1.901 E −4	1.555	^{139}Ba	1.4 h	7.717 E −6	2.807
^{123}I	13.1 h	7.478 E −5	19.341	^{140}Ba	12.8 d	4.446 E −5	1.889
^{124}I	4.2 d	2.050 E −4	0.968	^{141}Ba	18.3 m	1.562 E −4	0.981
^{125}I	60.1 d	7.432 E −5	373.1	^{142}Ba	10.7 m	1.537 E −4	0.841
^{126}I	12.9 d	1.055 E −4	1.452	^{141}La	3.9 h	6.112 E −6	0.633
^{128}I	25.0 m	1.616 E −5	1.988	^{142}La	1.6 h	3.656 E −4	0.558

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.

(continued)

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{139}Ce	137.7 d	5.554 E −5	22.320	^{175}Yb	4.2 d	8.233 E −6	2.998
^{141}Ce	32.5 d	1.979 E −5	26.056	^{177}Lu	6.7 d	7.636 E −6	10.935
^{143}Ce	1.4 d	6.893 E −5	2.109	^{177m}Lu	160.1 d	2.112 E −4	3.983
^{144}Ce	284.3 d	6.302 E −6	35.806	^{181}Hf	42.4 d	1.061 E −4	2.078
^{142}Pr	19.1 h	8.106 E −6	0.591	^{182}Ta	114.7 d	2.086 E −4	0.751
^{143}Pr	13.6 d	1.524 E −12	1.061	^{181}W	120.9 d	1.389 E −5	52.038
^{144}Pr	17.3 m	4.600 E −6	0.619	^{185}W	75.1 d	5.465 E −9	33.602
^{144m}Pr	7.2 m	9.933 E −6	184.2	^{187}W	23.8 h	8.886 E −5	1.353
^{147}Nd	11.0 d	3.769 E −5	2.234	^{188}W	69.4 d	3.615 E −7	5.327
^{149}Nd	1.7 h	8.112 E −5	2.200	^{182}Re	2.7 d	3.078 E −4	0.853
^{143}Pm	265 d	7.216 E −5	1.222	^{182m}Re	12.7 h	1.994 E −4	0.761
^{144}Pm	363 d	2.958 E −4	1.299	^{183}Re	70 d	4.257 E −5	17.021
^{145}Pm	17.7 y	2.418 E −5	152.1	^{184}Re	38.0 d	1.573 E −4	0.963
^{146}Pm	2020 d	1.462 E −4	1.316	^{184m}Re	169 d	7.678 E −5	1.211
^{147}Pm	2.6 d	7.232 E −10	36.526	^{186}Re	3.8 d	4.909 E −6	28.571
^{148}Pm	5.4 d	8.937 E −5	0.741	^{188}Re	17.0 h	1.094 E −5	1.324
^{148m}Pm	41.3 d	3.567 E −4	1.210	185Os	93.6 d	1.310 E −4	1.219
^{149}Pm	2.2 d	2.317 E −6	2.479	^{190m}Os	9.9 m	3.018 E −4	1.684
^{151}Pm	1.2 d	7.086 E −5	1.966	^{191}Os	15.4 d	1.837 E −5	34.767
^{151}Sm	90 y	2.442 E −8	776.6	^{191m}Os	13.0 h	1.449 E −6	40.828
^{153}Sm	1.9 d	2.440 E −5	69.799	^{193}Os	1.2 d	1.414 E −5	2.450
^{152}Eu	13.6 y	2.012 E −4	0.831	^{190}Ir	11.8 d	2.681 E −4	1.580
^{152m}Eu	9.3 h	5.746 E −5	0.911	^{190m}Ir	1.2 h	6.120 E −11	456.9
^{154}Eu	8.8 y	2.042 E −4	0.802	^{190m}Ir	3.2 h	1.499 E −5	40.962
^{155}Eu	5.0 y	1.804 E −5	28.563	^{192}Ir	74.0 d	1.599 E −4	2.331
^{156}Eu	15.2 d	1.992 E −4	0.647	^{193m}Ir	11.9 d	1.017 E −7	37.618
^{153}Gd	241.6 d	4.659 E −5	79.273	^{194}Ir	19.1 h	1.673 E −5	1.248
^{159}Gd	18.6 h	1.059 E −5	3.622	^{194m}Ir	171 d	4.372 E −4	1.587
^{162}Gd	9.7 m	8.341 E −5	2.282	^{191}Pt	2.7 d	6.588 E −5	2.483
^{157}Tb	150 y	2.426 E −6	114.4	^{193m}Pt	4.3 d	4.649 E −6	40.629
^{160}Tb	72.3 d	1.788 E −4	0.834	^{195m}Pt	4.0 d	2.029 E −5	36.632
^{162}Tb	7.8 m	1.924 E −4	1.018	^{197}Pt	18.3 h	5.647 E −6	17.673
^{157}Dy	8.1 h	8.357 E −5	4.052	^{197m}Pt	1.6 h	1.931 E −5	4.581
^{165}Dy	2.3 h	6.193 E −6	1.817	^{194}Au	1.6 d	1.784 E −4	0.753
^{166}Dy	3.4 d	1.550 E −5	23.196	^{195}Au	183 d	2.362 E −5	36.236
^{166}Ho	1.1 d	6.270 E −6	0.879	^{195m}Au	30.6 s	4.132 E −5	6.174
^{166m}Ho	1200 y	2.870 E −4	1.140	^{196}Au	6.2 d	9.922 E −5	3.261
^{169}Er	9.4 d	3.406 E −10	46.160	^{198}Au	2.7 d	7.882 E −5	2.317
^{171}Er	7.5 h	8.010 E −5	3.957	^{199}Au	3.1 d	1.866 E −5	16.121
^{170}Tm	128.6 d	1.673 E −6	29.074	^{197}Hg	2.7 d	1.874 E −5	29.898
^{171}Tm	1.9 y	2.597 E −7	60.086	^{197m}Hg	23.8 h	2.059 E −5	14.537
^{169}Yb	32.0 d	8.837 E −5	13.301	^{203}Hg	46.6 d	6.841 E −5	6.007

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{200}Tl	1.1 d	2.253 E −4	0.886	^{225}Ac	10.0 d	5.172 E −5	472.6
^{201}Tl	3.0 d	2.372 E −5	26.211	^{227}Ac	21.8 y	2.364 E −6	690.1
^{202}Tl	12.2 d	9.438 E −5	2.272	^{228}Ac	6.1 h	2.281 E −4	0.985
^{204}Tl	3.8 y	3.014 E −7	30.056	^{216}Th	30.9 m	1.818 E −5	138.9
^{207}Tl	4.8 m	3.524 E −7	0.870	^{227}Th	18.7 d	1.145 E −4	14.730
^{208}Tl	3.1 m	4.605 E −4	0.554	^{228}Th	1.9 y	2.142 E −5	731.9
^{209}Tl	2.2 m	3.496 E −4	0.705	^{229}Th	7340.0 y	1.989 E −4	103.7
^{210}Tl	1.3 m	4.601 E −4	0.736	^{230}Th	7.7 E + 4 d	1.861 E −5	815.2
^{203}Pb	2.2 d	1.828 E −4	8.722	^{231}Th	1.1 d	1.473 E −4	679.1
^{204m}Pb	1.1 h	3.650 E −4	0.946	^{232}Th	1.4 E + 10 *y*	1.848 E −5	828.7
^{205}Pb	1.5 E + 7 *y*	6.789 E −5	1345	^{233}Th	22.3 m	2.587 E −5	3.684
^{210}Pb	22.3 y	6.801 E −5	1098	^{234}Th	24.1 d	2.038 E −5	148.5
^{211}Pb	36.1 m	9.836 E −6	1.211	^{230}Pa	17.4 d	2.387 E −4	1.322
^{212}Pb	10.6 h	7.389 E −5	11.112	^{231}Pa	3.3 + 4 d	1.011 E −4	131.7
^{214}Pb	26.8 m	8.742 E −5	4.027	^{233}Pa	27.0 d	1.335 E −4	7.024
^{206}Bi	6.2 d	6.820 E −4	0.945	^{234}Pa	6.7 h	5.356 E −4	1.107
^{207}Bi	33.4 y	3.603 E −4	1.015	^{234m}Pa	1.2 m	2.776 E −6	0.978
^{208}Bi	3.7 E + 5 *y*	4.110 E −4	0.532	^{230}U	20.8 d	2.463 E −5	683.5
^{211}Bi	2.1 m	1.274 E −5	3.617	^{231}U	4.2 d	2.120 E −4	293.4
^{212}Bi	1 h	5.264 E −5	1.042	^{232}U	72.0 y	2.403 E −5	716.7
^{213}Bi	45.6 m	3.140 E −5	2.094	^{233}U	159 E + 7 *y*	7.866 E −6	705.0
^{214}Bi	19.9 m	2.268 E −4	0.672	^{234}U	2.44 E + 5 *y*	2.097 E −5	720.7
^{209}Po	102 y	9.811 E −7	1.288	^{235}U	7.04 E + 8 *y*	9.159 E −5	22.675
^{210}Po	138 d	1.424 E −9	0.967	^{236}U	2.34 E + 7 *y*	1.992 E −5	722.4
^{211}Po	0.5 s	1.328 E −6	1.016	^{237}U	6.7 d	1.589 E −4	54.239
^{213}Po	4.2 − 6 s	5.146 E −9	1.002	^{238}U	4.47 E + 9 *y*	1.763 E −5	722.5
^{214}Po	1.6 − 4 s	1.398 E −8	0.975	^{239}U	23.4 m	3.630 E −5	23.988
^{215}Po	1.8 − 3 s	2.861 E −8	2.152	^{240}U	14.1 h	7.686 E −5	921.3
^{216}Po	0.1 s	2.424 E −9	0.965	^{235}Np	1.1 y	6.979 E −5	840.5
^{211}At	7.2 h	6.120 E −5	61.088	^{236}Np	1.15 E + 5 *y*	2.833 E −4	161.6
^{217}At	0.032 s	4.331 E −8	1.378	^{236m}Np	22.5 h	6.390 E −5	69.674
^{218}Rn	0.035 s	1.367 E −7	1.337	^{237}Np	2.1 E + 6 *y*	1.251 E −4	512.0
^{219}Rn	4 s	1.419 E −5	3.555	^{238}Np	2.1 d	1.497 E −4	0.965
^{220}Rn	55.6 s	9.723 E −8	1.534	^{239}Np	2.4 d	1.386 E −4	19.449
^{222}Rn	3.8 d	7.390 E −8	1.690	^{240}Np	65 m	3.826 E −4	1.342
^{221}Fr	4.8 m	1.193 E −5	11.522	^{240m}Np	7.4 m	1.144 E −4	1.489
^{223}Fr	21.8 m	8.930 E −5	67.566	^{236}Pu	2.9 y	2.405 E −5	863.6
^{222}Ra	38.0 s	2.115 E −6	3.912	^{237}Pu	45.3 d	1.039 E −4	212.7
^{223}Ra	11.4 d	8.789 E −5	10.794	^{238}Pu	87.8 y	2.135 E −5	864.8
^{224}Ra	3.6 d	2.967 E −6	8.124	^{239}Pu	2.41 E + 4 *y*	8.145 E −6	860.3
^{225}Ra	14.8 d	4.164 E −5	304.4	^{240}Pu	6569 y	2.030 E −5	864.4
^{226}Ra	1600.0 y	3.274 E −6	18.693	^{242}Pu	3.76 E + 5 *y*	1.684 E −5	864.4

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.

(continued)

Nuclide	Half-Life	Γ	μ	Nuclide	Half-Life	Γ	μ
^{243}Pu	5 h	2.509 E −5	35.548	^{248}Cm	3.4 E + 5 *y*	1.227 E −5	1054
^{244}Pu	8.3 E + 7 *y*	1.462 E −5	865.1	^{249}Cm	1.1 h	4.007 E −6	1.478
^{245}Pu	10.6 h	1.046 E −4	1.432	^{250}Bk	3.2 h	1.834 E −4	0.862
^{246}Pu	10.9 d	2.727 E −5	10.771	^{248}Cf	333.5 d	1.229 E −5	1271
^{241}Am	432.2 y	8.479 E −5	260.7	^{249}Cf	350.6 y	1.119 E −4	3.459
^{242}Am	16.0 h	5.476 E −5	720.7	^{250}Cf	13.1 y	1.212 E −5	1269
^{242m}Am	152 y	4.950 E −5	1132	^{251}Cf	900 y	1.162 E −4	43.960
^{243}Am	7380 y	8.456 E −5	71.213	^{252}Cf	2.6 y	1.131 E −5	1269
^{244}Am	10.1 h	3.168 E −4	1.420	^{253}Cf	17.8 d	2.080 E −7	1272
^{245}Am	2 h	2.341 E −5	17.710	^{254}Cf	60.5 d	1.311 E −11	122.5
^{246}Am	25 m	2.149 E −4	0.899	^{253}Es	20.5 d	6.921 E −6	1196
^{242}Cm	163.2 d	1.949 E −5	1054	^{254}Es	275.7 d	1.490 E −4	1229
^{243}Cm	28.5 y	1.286 E −4	23.268	^{254m}Es	1.6 d	1.519 E −4	1.404
^{244}Cm	18.1 y	1.741 E −5	1054	^{255}Es	39.8 d	8.529 E −7	1263
^{245}Cm	8500 y	1.220 E −4	140.0	^{254}Fm	3.2 h	1.121 E −5	1375
^{246}Cm	4750 y	1.551 E −5	1054	^{255}Fm	20.1 h	8.721 E −5	1334
^{247}Cm	1.6 E + 7 *y*	7.217 E −5	2.675				

[a] As used in this table, μ is explained on page 165, equation (3). Data are exclusion of decay products except for Cs^{137}.