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ICRP Publication 123

Annals of the ICRP

Corrigenda

Corrigenda to ICRP *Publication 119*: Compendium of Dose Coefficients based on ICRP *Publication 60* [Ann. ICRP 41(s) 2012]

The authors regret that some errors were introduced into ICRP *Publication 119*. A corrected version of the supplementary data, reflecting the corrections below, will be made available through the ICRP website. Please accept our apologies for any inconvenience caused.

The corrections in this Publisher's Note are reflected in an erratum consisting of a full, corrected version of the original ICRP *Publication 119*, published as supplementary material to ICRP *Publication 123* [Ann. ICRP 42(4) 2013] and appearing on Science Direct.

Page: Table	Line	Should read:	Currently reads:
32: A.1	2 from bottom	Nb-98m	Nb-98
34: A.1	18 from bottom	Rh-102m	Rh-102
	15 from bottom	Rh-102	Rh-102m
46: A.1	10 from bottom	N/A	Ta-180 1.0E13y M … 8.4E-10
	9 from bottom	N/A	S 0.01 … 1.4E-08
	8 from bottom	Ta-180	Ta-180m
49: A.1	28	Ir-192n	Ir-192m
53: A.1	9 from bottom	1.405E10y	1.405E1y
57: A.1	8	Es-250m	Es-250
94: G.1	10 from bottom	Nb-98m	Nb-98
96: G.1	24 from bottom	Rh-102m	Rh-102
	21 from bottom	Rh-102	Rh-102m
108: G.1	14 from bottom	N/A	Ta-180 1.0E13y M … 6.4E-09
	13 from bottom	N/A	S 0.01 … 2.6E-08
	12 from bottom	Ta-180	Ta-180m
110: G.1	8 from bottom	Ir-192n	Ir-192m
115: G.1	19	1.405E10y	1.405E1y
119: G.1	14 from bottom	Es-250m	Es-250
123: I.1	7	RLAT	LLAT
		LLAT	RLAT
	12	7.82E-02	9.08E+00
125: J.1	5	RLAT	LLAT
		LLAT	RLAT
126: J.1	3	RLAT	LLAT
		LLAT	RLAT

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Corrected version of Table 2.3 is given below.

Table 2.3. Radionuclides for which *Publication 107* (ICRP, 2008) identifies ground and excited states.

CD1 Nuclide*	$T_{½}$	*Publication 107* Nuclide†
Nb-89s	66 m	Nb-89m
Nb-89l	122 m	Nb-89
Nb-98	51.5 m	Nb-98m
Rh-102	2.9 y	Rh-102m
Rh-102m	207 d	Rh-102
In-110s	69.1 m	In-110m
In-110l	4.9 h	In-110
Sb-120s	15.98 m	Sb-120
Sb-120l	5.76 d	Sb-120m
Sb-124ml	20.2 m	Sb-124n‡
Sb-128s	10.4 m	Sb-128m
Sb-128l	9.01 h	Sb-128
Eu-150s	12.62 h	Eu-150m
Eu-150l	34.2 y	Eu-150
Tb-156ms	5.0 h	Tb-156n‡
Tb-156ml	24.4 h	Tb-156m
Ta-178s	9.31 m	Ta-178
Ta-178l	2.2 h	Ta-178m
Ta-180m	8.1h	Ta-180
Ta-180	1.0E13 y	Ta-180m§
Re-182s	12.7 h	Re-182m
Re-182l	64.0 h	Re-182
Ir-186s	1.75 h	Ir-186m
Ir-186l	15.8 h	Ir-186
Ir-190ms	1.2 h	Ir-190m
Ir-190ml	3.1 h	Ir-190n‡
Ir-192m	241 y	Ir-192n‡
Np-236s	22.5 h	Np-236m
Np-236l	115E3 y	Np-236
Es-250	2.1 h	Es-250m

$T_{½}$, half-life; h, hours; d, days; m, months; y, years.

* Ad-hoc notations 's' and 'l' denote short and long physical half-lives employed in CD1 (ICRP, 1996c).

† W-176 and Re-177 are included in this compilation as addressed in CD1; however they were not addressed in *Publication 107*.

‡ This metastable state is of higher energy than the first metastable state, and is hence denoted by 'n'.

§ Half-life so long that the metastable state has never been observed to decay; Ta-180m is observationally stable and not addressed in *Publication 107*.

Corrected version of Table F.1 is given below.

ANNEX F. EFFECTIVE DOSE COEFFICIENTS FOR INGESTION OF RADIONUCLIDES FOR MEMBERS OF THE PUBLIC

Table F.1. Effective dose coefficients (e) for ingestion of radionuclides for members of the public to 70 years of age.

		Infant		f_1	e (Sv/Bq)				
Nuclide	$T_{½}$	f_1	e (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Hydrogen									
H-3	12.35 y	1.0*	1.2E−10	1.0	1.2E−10	7.3E−11	5.7E−11	4.2E−11	4.2E−11
		1.0†	6.4E−11	1.0	4.8E−11	3.1E−11	2.3E−11	1.8E−11	1.8E−11
Beryllium									
Be-7	53.3 d	0.02	1.8E−10	0.005	1.3E−10	7.7E−11	5.3E−11	3.5E−11	2.8E−11
Be-10	1.6E6 y	0.02	1.4E−08	0.005	8.0E−09	4.1E−09	2.4E−09	1.4E−09	1.1E−09
Carbon									
C-11	20.38 m	1.0	2.6E−10	1.0	1.5E−10	7.3E−11	4.3E−11	3.0E−11	2.4E−11
C-14	5730 y	1.0	1.4E−09	1.0	1.6E−09	9.9E−10	8.0E−10	5.7E−10	5.8E−10
Fluorine									
F-18	109.77 m	1.0	5.2E−10	1.0	3.0E−10	1.5E−10	9.1E−11	6.2E−11	4.9E−11
Sodium									
Na-22	2.602 y	1.0	2.1E−08	1.0	1.5E−08	8.4E−09	5.5E−09	3.7E−09	3.2E−09
Na-24	15.00 h	1.0	3.5E−09	1.0	2.3E−09	1.2E−09	7.7E−10	5.2E−10	4.3E−10
Magnesium									
Mg-28	20.91 h	1.0	1.2E−08	0.5	1.4E−08	7.4E−09	4.5E−09	2.7E−09	2.2E−09
Aluminium									
Al-26	7.16E5 y	0.02	3.4E−08	0.01	2.1E−08	1.1E−08	7.1E−09	4.3E−09	3.5E−09
Silicon									
Si-31	157.3 m	0.02	1.9E−09	0.01	1.0E−09	5.1E−10	3.0E−10	1.8E−10	1.6E−10
Si-32	450 y	0.02	7.3E−09	0.01	4.1E−09	2.0E−09	1.2E−09	7.0E−10	5.6E−10
Phosphorus									
P-32	14.29 d	1.0	3.1E−08	0.8	1.9E−08	9.4E−09	5.3E−09	3.1E−09	2.4E−09
P-33	25.4 d	1.0	2.7E−09	0.8	1.8E−09	9.1E−10	5.3E−10	3.1E−10	2.4E−10
Sulphur									
S-35	87.44 d	1.0‡	7.7E−09	1.0	5.4E−09	2.7E−09	1.6E−09	9.5E−10	7.7E−10
		1.0§	1.3E−09	1.0	8.7E−10	4.4E−10	2.7E−10	1.6E−10	1.3E−10
Chlorine									
Cl-36	3.01E5 y	1.0	9.8E−09	1.0	6.3E−09	3.2E−09	1.9E−09	1.2E−09	9.3E−10
Cl-38	37.21 m	1.0	1.4E−09	1.0	7.7E−10	3.8E−10	2.2E−10	1.5E−10	1.2E−10
Cl-39	55.6 m	1.0	9.7E−10	1.0	5.5E−10	2.7E−10	1.6E−10	1.1E−10	8.5E−11
Potassium									
K-40	1.28E9 y	1.0	6.2E−08	1.0	4.2E−08	2.1E−08	1.3E−08	7.6E−09	6.2E−09
K-42	12.36 h	1.0	5.1E−09	1.0	3.0E−09	1.5E−09	8.6E−10	5.4E−10	4.3E−10
K-43	22.6 h	1.0	2.3E−09	1.0	1.4E−09	7.6E−10	4.7E−10	3.0E−10	2.5E−10
K-44	22.13 m	1.0	1.0E−09	1.0	5.5E−10	2.7E−10	1.6E−10	1.1E−10	8.4E−11
K-45	20 m	1.0	6.2E−10	1.0	3.5E−10	1.7E−10	9.9E−11	6.8E−11	5.4E−11
Calcium									
Ca-41	1.4E5 y	0.6	1.2E−09	0.4¶	5.2E−10	3.9E−10	4.8E−10	5.0E−10	1.9E−10
Ca-45	163 d	0.6	1.1E−08	0.4¶	4.9E−09	2.6E−09	1.8E−09	1.3E−09	7.1E−10
Ca-47	4.53 d	0.6	1.3E−08	0.4¶	9.3E−09	4.9E−09	3.0E−09	1.8E−09	1.6E−09

(*continued on next page*)

† Tritiated water.
* Organically bound tritium.
§ Inorganic sulphur.
‡ Organic sulphur.
¶ For the adult, f_1 is 0.3.

Table F.1. (*continued*)

Nuclide	$T_{½}$	Infant		f_1	*e* (Sv/Bq)				
		f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Scandium									
Sc-43	3.891 h	0.001	1.8E−09	0.0001	1.2E−09	6.1E−10	3.7E−10	2.3E−10	1.9E−10
Sc-44	3.927 h	0.001	3.5E−09	0.0001	2.2E−09	1.2E−09	7.1E−10	4.4E−10	3.5E−10
Sc-44m	58.6 h	0.001	2.4E−08	0.0001	1.6E−08	8.3E−09	5.1E−09	3.1E−09	2.4E−09
Sc-46	83.83 d	0.001	1.1E−08	0.0001	7.9E−09	4.4E−09	2.9E−09	1.8E−09	1.5E−09
Sc-47	3.351 d	0.001	6.1E−09	0.0001	3.9E−09	2.0E−09	1.2E−09	6.8E−10	5.4E−10
Sc-48	43.7 h	0.001	1.3E−08	0.0001	9.3E−09	5.1E−09	3.3E−09	2.1E−09	1.7E−09
Sc-49	57.4 m	0.001	1.0E−09	0.0001	5.7E−10	2.8E−10	1.6E−10	1.0E−10	8.2E−11
Titanium									
Ti-44	47.3 y	0.02	5.5E−08	0.01	3.1E−08	1.7E−08	1.1E−08	6.9E−09	5.8E−09
Ti-45	3.08 h	0.02	1.6E−09	0.01	9.8E−10	5.0E−10	3.1E−10	1.9E−10	1.5E−10
Vanadium									
V-47	32.6 m	0.02	7.3E−10	0.01	4.1E−10	2.0E−10	1.2E−10	8.0E−11	6.3E−11
V-48	16.238 d	0.02	1.5E−08	0.01	1.1E−08	5.9E−09	3.9E−09	2.5E−09	2.0E−09
V-49	330 d	0.02	2.2E−10	0.01	1.4E−10	6.9E−11	4.0E−11	2.3E−11	1.8E−11
Chromium									
Cr-48	22.96 h	0.2	1.4E−09	0.1	9.9E−10	5.7E−10	3.8E−10	2.5E−10	2.0E−10
		0.02	1.4E−09	0.01	9.9E−10	5.7E−10	3.8E−10	2.5E−10	2.0E−10
Cr-49	42.09 m	0.2	6.8E−10	0.1	3.9E−10	2.0E−10	1.1E−10	7.7E−11	6.1E−11
		0.02	6.8E−10	0.01	3.9E−10	2.0E−10	1.1E−10	7.7E−11	6.1E−11
Cr-51	27.704 d	0.2	3.5E−10	0.1	2.3E−10	1.2E−10	7.8E−11	4.8E−11	3.8E−11
		0.02	3.3E−10	0.01	2.2E−10	1.2E−10	7.5E−11	4.6E−11	3.7E−11
Manganese									
Mn-51	46.2 m	0.2	1.1E−09	0.1	6.1E−10	3.0E−10	1.8E−10	1.2E−10	9.3E−11
Mn-52	5.591 d	0.2	1.2E−08	0.1	8.8E−09	5.1E−09	3.4E−09	2.2E−09	1.8E−09
Mn-52m	21.1 m	0.2	7.8E−10	0.1	4.4E−10	2.2E−10	1.3E−10	8.8E−11	6.9E−11
Mn-53	3.7E6 y	0.2	4.1E−10	0.1	2.2E−10	1.1E−10	6.5E−11	3.7E−11	3.0E−11
Mn-54	312.5 d	0.2	5.4E−09	0.1	3.1E−09	1.9E−09	1.3E−09	8.7E−10	7.1E−10
Mn-56	2.5785 h	0.2	2.7E−09	0.1	1.7E−09	8.5E−10	5.1E−10	3.2E−10	2.5E−10
Iron									
Fe-52	8.275 h	0.6	1.3E−08	0.2**	9.1E−09	4.6E−09	2.8E−09	1.7E−09	1.4E−09
Fe-55	2.7 y	0.6	7.6E−09	0.2**	2.4E−09	1.7E−09	1.1E−09	7.7E−10	3.3E−10
Fe-59	44.529 d	0.6	3.9E−08	0.2**	1.3E−08	7.5E−09	4.7E−09	3.1E−09	1.8E−09
Fe-60	1E5 y	0.6	7.9E−07	0.2**	2.7E−07	2.7E−07	2.5E−07	2.3E−07	1.1E−07
Cobalt									
Co-55	17.54 h	0.6	6.0E−09	0.3**	5.5E−09	2.9E−09	1.8E−09	1.1E−09	1.0E−09
Co-56	78.76 d	0.6	2.5E−08	0.3**	1.5E−08	8.8E−09	5.8E−09	3.8E−09	2.5E−09
Co-57	270.9 d	0.6	2.9E−09	0.3**	1.6E−09	8.9E−10	5.8E−10	3.7E−10	2.1E−10
Co-58	70.80 d	0.6	7.3E−09	0.3**	4.4E−09	2.6E−09	1.7E−09	1.1E−09	7.4E−10
Co-58m	9.15 h	0.6	2.0E−10	0.3**	1.5E−10	7.8E−11	4.7E−11	2.8E−11	2.4E−11
Co-60	5.271 y	0.6	5.4E−08	0.3**	2.7E−08	1.7E−08	1.1E−08	7.9E−09	3.4E−09
Co-60m	10.47 m	0.6	2.2E−11	0.3**	1.2E−11	5.7E−12	3.2E−12	2.2E−12	1.7E−12
Co-61	1.65 h	0.6	8.2E−10	0.3**	5.1E−10	2.5E−10	1.4E−10	9.2E−11	7.4E−11
Co-62m	13.91 m	0.6	5.3E−10	0.3**	3.0E−10	1.5E−10	8.7E−11	6.0E−11	4.7E−11
Nickel									
Ni-56	6.10 d	0.1	5.3E−09	0.05	4.0E−09	2.3E−09	1.6E−09	1.1E−09	8.6E−10
Ni-57	36.08 h	0.1	6.8E−09	0.05	4.9E−09	2.7E−09	1.7E−09	1.1E−09	8.7E−10
Ni-59	7.5E4 y	0.1	6.4E−10	0.05	3.4E−10	1.9E−10	1.1E−10	7.3E−11	6.3E−11
Ni-63	96 y	0.1	1.6E−09	0.05	8.4E−10	4.6E−10	2.8E−10	1.8E−10	1.5E−10
Ni-65	2.520 h	0.1	2.1E−09	0.05	1.3E−09	6.3E−10	3.8E−10	2.3E−10	1.8E−10
Ni-66	54.6 h	0.1	3.3E−08	0.05	2.2E−08	1.1E−08	6.6E−09	3.7E−09	3.0E−09

** For the adult, f_1 is 0.1.

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Copper									
Cu-60	23.2 m	1.0	7.0E−10	0.5	4.2E−10	2.2E−10	1.3E−10	8.9E−11	7.0E−11
Cu-61	3.408 h	1.0	7.1E−10	0.5	7.5E−10	3.9E−10	2.3E−10	1.5E−10	1.2E−10
Cu-64	12.701 h	1.0	5.2E−10	0.5	8.3E−10	4.2E−10	2.5E−10	1.5E−10	1.2E−10
Cu-67	61.86 h	1.0	2.1E−09	0.5	2.4E−09	1.2E−09	7.2E−10	4.2E−10	3.4E−10
Zinc									
Zn-62	9.26 h	1.0	4.2E−09	0.5	6.5E−09	3.3E−09	2.0E−09	1.2E−09	9.4E−10
Zn-63	38.1 m	1.0	8.7E−10	0.5	5.2E−10	2.6E−10	1.5E−10	1.0E−10	7.9E−11
Zn-65	243.9 d	1.0	3.6E−08	0.5	1.6E−08	9.7E−09	6.4E−09	4.5E−09	3.9E−09
Zn-69	57 m	1.0	3.5E−10	0.5	2.2E−10	1.1E−10	6.0E−11	3.9E−11	3.1E−11
Zn-69m	13.76 h	1.0	1.3E−09	0.5	2.3E−09	1.2E−09	7.0E−10	4.1E−10	3.3E−10
Zn-71m	3.92 h	1.0	1.4E−09	0.5	1.5E−09	7.8E−10	4.8E−10	3.0E−10	2.4E−10
Zn-72	46.5 h	1.0	8.7E−09	0.5	8.6E−09	4.5E−09	2.8E−09	1.7E−09	1.4E−09
Gallium									
Ga-65	15.2 m	0.01	4.3E−10	0.001	2.4E−10	1.2E−10	6.9E−11	4.7E−11	3.7E−11
Ga-66	9.40 h	0.01	1.2E−08	0.001	7.9E−09	4.0E−09	2.5E−09	1.5E−09	1.2E−09
Ga-67	78.26 h	0.01	1.8E−09	0.001	1.2E−09	6.4E−10	4.0E−10	2.4E−10	1.9E−10
Ga-68	68.0 m	0.01	1.2E−09	0.001	6.7E−10	3.4E−10	2.0E−10	1.3E−10	1.0E−10
Ga-70	21.15 m	0.01	3.9E−10	0.001	2.2E−10	1.0E−10	5.9E−11	4.0E−11	3.1E−11
Ga-72	14.1 h	0.01	1.0E−08	0.001	6.8E−09	3.6E−09	2.2E−09	1.4E−09	1.1E−09
Ga-73	4.91 h	0.01	3.0E−09	0.001	1.9E−09	9.3E−10	5.5E−10	3.3E−10	2.6E−10
Germanium									
Ge-66	2.27 h	1.0	8.3E−10	1.0	5.3E−10	2.9E−10	1.9E−10	1.3E−10	1.0E−10
Ge-67	18.7 m	1.0	7.7E−10	1.0	4.2E−10	2.1E−10	1.2E−10	8.2E−11	6.5E−11
Ge-68	288 d	1.0	1.2E−08	1.0	8.0E−09	4.2E−09	2.6E−09	1.6E−09	1.3E−09
Ge-69	39.05 h	1.0	2.0E−09	1.0	1.3E−09	7.1E−10	4.6E−10	3.0E−10	2.4E−10
Ge-71	11.8 d	1.0	1.2E−10	1.0	7.8E−11	4.0E−11	2.4E−11	1.5E−11	1.2E−11
Ge-75	82.78 m	1.0	5.5E−10	1.0	3.1E−10	1.5E−10	8.7E−11	5.9E−11	4.6E−11
Ge-77	11.30 h	1.0	3.0E−09	1.0	1.8E−09	9.9E−10	6.2E−10	4.1E−10	3.3E−10
Ge-78	87 m	1.0	1.2E−09	1.0	7.0E−10	3.6E−10	2.2E−10	1.5E−10	1.2E−10
Arsenic									
As-69	15.2 m	1.0	6.6E−10	0.5	3.7E−10	1.8E−10	1.1E−10	7.2E−11	5.7E−11
As-70	52.6 m	1.0	1.2E−09	0.5	7.8E−10	4.1E−10	2.5E−10	1.7E−10	1.3E−10
As-71	64.8 h	1.0	2.8E−09	0.5	2.8E−09	1.5E−09	9.3E−10	5.7E−10	4.6E−10
As-72	26.0 h	1.0	1.1E−08	0.5	1.2E−08	6.3E−09	3.8E−09	2.3E−09	1.8E−09
As-73	80.30 d	1.0	2.6E−09	0.5	1.9E−09	9.3E−10	5.6E−10	3.2E−10	2.6E−10
As-74	17.76 d	1.0	1.0E−08	0.5	8.2E−09	4.3E−09	2.6E−09	1.6E−09	1.3E−09
As-76	26.32 h	1.0	1.0E−08	0.5	1.1E−08	5.8E−09	3.4E−09	2.0E−09	1.6E−09
As-77	38.8 h	1.0	2.7E−09	0.5	2.9E−09	1.5E−09	8.7E−10	5.0E−10	4.0E−10
As-78	90.7 m	1.0	2.0E−09	0.5	1.4E−09	7.0E−10	4.1E−10	2.7E−10	2.1E−10
Selenium									
Se-70	41.0 m	1.0	1.0E−09	0.8	7.1E−10	3.6E−10	2.2E−10	1.5E−10	1.2E−10
Se-73	7.15 h	1.0	1.6E−09	0.8	1.4E−09	7.4E−10	4.8E−10	2.5E−10	2.1E−10
Se-73m	39 m	1.0	2.6E−10	0.8	1.8E−10	9.5E−11	5.9E−11	3.5E−11	2.8E−11
Se-75	119.8 d	1.0	2.0E−08	0.8	1.3E−08	8.3E−09	6.0E−09	3.1E−09	2.6E−09
Se-79	65000 y	1.0	4.1E−08	0.8	2.8E−08	1.9E−08	1.4E−08	4.1E−09	2.9E−09
Se-81	18.5 m	1.0	3.4E−10	0.8	1.9E−10	9.0E−11	5.1E−11	3.4E−11	2.7E−11
Se-81m	57.25 m	1.0	6.0E−10	0.8	3.7E−10	1.8E−10	1.1E−10	6.7E−11	5.3E−11
Se-83	22.5 m	1.0	4.6E−10	0.8	2.9E−10	1.5E−10	8.7E−11	5.9E−11	4.7E−11
Bromine									
Br-74	25.3 m	1.0	9.0E−10	1.0	5.2E−10	2.6E−10	1.5E−10	1.1E−10	8.4E−11
Br-74m	41.5 m	1.0	1.5E−09	1.0	8.5E−10	4.3E−10	2.5E−10	1.7E−10	1.4E−10
Br-75	98 m	1.0	8.5E−10	1.0	4.9E−10	2.5E−10	1.5E−10	9.9E−11	7.9E−11
Br-76	16.2 h	1.0	4.2E−09	1.0	2.7E−09	1.4E−09	8.7E−10	5.6E−10	4.6E−10
Br-77	56 h	1.0	6.3E−10	1.0	4.4E−10	2.5E−10	1.7E−10	1.1E−10	9.6E−11

(*continued on next page*)

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Br-80	17.4 m	1.0	3.9E−10	1.0	2.1E−10	1.0E−10	5.8E−11	3.9E−11	3.1E−11
Br-80m	4.42 h	1.0	1.4E−09	1.0	8.0E−10	3.9E−10	2.3E−10	1.4E−10	1.1E−10
Br-82	35.30 h	1.0	3.7E−09	1.0	2.6E−09	1.5E−09	9.5E−10	6.4E−10	5.4E−10
Br-83	2.39 h	1.0	5.3E−10	1.0	3.0E−10	1.4E−10	8.3E−11	5.5E−11	4.3E−11
Br-84	31.80 m	1.0	1.0E−09	1.0	5.8E−10	2.8E−10	1.6E−10	1.1E−10	8.8E−11
Rubidium									
Rb-79	22.9 m	1.0	5.7E−10	1.0	3.2E−10	1.6E−10	9.2E−11	6.3E−11	5.0E−11
Rb-81	4.58 h	1.0	5.4E−10	1.0	3.2E−10	1.6E−10	1.0E−10	6.7E−11	5.4E−11
Rb-81m	32 m	1.0	1.1E−10	1.0	6.2E−11	3.1E−11	1.8E−11	1.2E−11	9.7E−12
Rb-82m	6.2 h	1.0	8.7E−10	1.0	5.9E−10	3.4E−10	2.2E−10	1.5E−10	1.3E−10
Rb-83	86.2 d	1.0	1.1E−08	1.0	8.4E−09	4.9E−09	3.2E−09	2.2E−09	1.9E−09
Rb-84	32.77 d	1.0	2.0E−08	1.0	1.4E−08	7.9E−09	5.0E−09	3.3E−09	2.8E−09
Rb-86	18.66 d	1.0	3.1E−08	1.0	2.0E−08	9.9E−09	5.9E−09	3.5E−09	2.8E−09
Rb-87	4.7E10 y	1.0	1.5E−08	1.0	1.0E−08	5.2E−09	3.1E−09	1.8E−09	1.5E−09
Rb-88	17.8 m	1.0	1.1E−09	1.0	6.2E−10	3.0E−10	1.7E−10	1.2E−10	9.0E−11
Rb-89	15.2 m	1.0	5.4E−10	1.0	3.0E−10	1.5E−10	8.6E−11	5.9E−11	4.7E−11
Strontium									
Sr-80	100 m	0.6	3.7E−09	0.4¶	2.3E−09	1.1E−09	6.5E−10	4.2E−10	3.4E−10
Sr-81	25.5 m	0.6	8.4E−10	0.4¶	4.9E−10	2.4E−10	1.4E−10	9.6E−11	7.7E−11
Sr-82	25.0 d	0.6	7.2E−08	0.4¶	4.1E−08	2.1E−08	1.3E−08	8.7E−09	6.1E−09
Sr-83	32.4 h	0.6	3.4E−09	0.4¶	2.7E−09	1.4E−09	9.1E−10	5.7E−10	4.9E−10
Sr-85	64.84 d	0.6	7.7E−09	0.4¶	3.1E−09	1.7E−09	1.5E−09	1.3E−09	5.6E−10
Sr-85m	69.5 m	0.6	4.5E−11	0.4¶	3.0E−11	1.7E−11	1.1E−11	7.8E−12	6.1E−12
Sr-87m	2.805 h	0.6	2.4E−10	0.4¶	1.7E−10	9.0E−11	5.6E−11	3.6E−11	3.0E−11
Sr-89	50.5 d	0.6	3.6E−08	0.4¶	1.8E−08	8.9E−09	5.8E−09	4.0E−09	2.6E−09
Sr-90	29.12 y	0.6	2.3E−07	0.4¶	7.3E−08	4.7E−08	6.0E−08	8.0E−08	2.8E−08
Sr-91	9.5 h	0.6	5.2E−09	0.4¶	4.0E−09	2.1E−09	1.2E−09	7.4E−10	6.5E−10
Sr-92	2.71 h	0.6	3.4E−09	0.4¶	2.7E−09	1.4E−09	8.2E−10	4.8E−10	4.3E−10
Yttrium									
Y-86	14.74 h	0.001	7.6E−09	0.0001	5.2E−09	2.9E−09	1.9E−09	1.2E−09	9.6E−10
Y-86m	48 m	0.001	4.5E−10	0.0001	3.1E−10	1.7E−10	1.1E−10	7.1E−11	5.6E−11
Y-87	80.3 h	0.001	4.6E−09	0.0001	3.2E−09	1.8E−09	1.1E−09	7.0E−10	5.5E−10
Y-88	106.64 d	0.001	8.1E−09	0.0001	6.0E−09	3.5E−09	2.4E−09	1.6E−09	1.3E−09
Y-90	64.0 h	0.001	3.1E−08	0.0001	2.0E−08	1.0E−08	5.9E−09	3.3E−09	2.7E−09
Y-90m	3.19 h	0.001	1.8E−09	0.0001	1.2E−09	6.1E−10	3.7E−10	2.2E−10	1.7E−10
Y-91	58.51 d	0.001	2.8E−08	0.0001	1.8E−08	8.8E−09	5.2E−09	2.9E−09	2.4E−09
Y-91m	49.71 m	0.001	9.2E−11	0.0001	6.0E−11	3.3E−11	2.1E−11	1.4E−11	1.1E−11
Y-92	3.54 h	0.001	5.9E−09	0.0001	3.6E−09	1.8E−09	1.0E−09	6.2E−10	4.9E−10
Y-93	10.1 h	0.001	1.4E−08	0.0001	8.5E−09	4.3E−09	2.5E−09	1.4E−09	1.2E−09
Y-94	19.1 m	0.001	9.9E−10	0.0001	5.5E−10	2.7E−10	1.5E−10	1.0E−10	8.1E−11
Y-95	10.7 m	0.001	5.7E−10	0.0001	3.1E−10	1.5E−10	8.7E−11	5.9E−11	4.6E−11
Zirconium									
Zr-86	16.5 h	0.02	6.9E−09	0.01	4.8E−09	2.7E−09	1.7E−09	1.1E−09	8.6E−10
Zr-88	83.4 d	0.02	2.8E−09	0.01	2.0E−09	1.2E−09	8.0E−10	5.4E−10	4.5E−10
Zr-89	78.43 h	0.02	6.5E−09	0.01	4.5E−09	2.5E−09	1.6E−09	9.9E−10	7.9E−10
Zr-93	1.53E6 y	0.02	1.2E−09	0.01	7.6E−10	5.1E−10	5.8E−10	8.6E−10	1.1E−09
Zr-95	63.98 d	0.02	8.5E−09	0.01	5.6E−09	3.0E−09	1.9E−09	1.2E−09	9.5E−10
Zr-97	16.90 h	0.02	2.2E−08	0.01	1.4E−08	7.3E−09	4.4E−09	2.6E−09	2.1E−09
Niobium									
Nb-88	14.3 m	0.02	6.7E−10	0.01	3.8E−10	1.9E−10	1.1E−10	7.9E−11	6.3E−11
Nb-89	122 m	0.02	3.0E−09	0.01	2.0E−09	1.0E−09	6.0E−10	3.4E−10	2.7E−10
Nb-89m	66 m	0.02	1.5E−09	0.01	8.7E−10	4.4E−10	2.7E−10	1.8E−10	1.4E−10
Nb-90	14.60 h	0.02	1.1E−08	0.01	7.2E−09	3.9E−09	2.5E−09	1.6E−09	1.2E−09
Nb-93m	13.6 y	0.02	1.5E−09	0.01	9.1E−10	4.6E−10	2.7E−10	1.5E−10	1.2E−10
Nb-94	2.03E4 y	0.02	1.5E−08	0.01	9.7E−09	5.3E−09	3.4E−09	2.1E−09	1.7E−09
Nb-95	35.15 d	0.02	4.6E−09	0.01	3.2E−09	1.8E−09	1.1E−09	7.4E−10	5.8E−10

¶ For the adult, f_1 is 0.3.

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Nb-95m	86.6 h	0.02	6.4E−09	0.01	4.1E−09	2.1E−09	1.2E−09	7.1E−10	5.6E−10
Nb-96	23.35 h	0.02	9.2E−09	0.01	6.3E−09	3.4E−09	2.2E−09	1.4E−09	1.1E−09
Nb-97	72.1 m	0.02	7.7E−10	0.01	4.5E−10	2.3E−10	1.3E−10	8.7E−11	6.8E−11
Nb-98s	51.5 m	0.02	1.2E−09	0.01	7.1E−10	3.6E−10	2.2E−10	1.4E−10	1.1E−10
Molybdenum									
Mo-90	5.67 h	1.0	1.7E−09	1.0	1.2E−09	6.3E−10	4.0E−10	2.7E−10	2.2E−10
Mo-93	3.5E3 y	1.0	7.9E−09	1.0	6.9E−09	5.0E−09	4.0E−09	3.4E−09	3.1E−09
Mo-93m	6.85 h	1.0	8.0E−10	1.0	5.4E−10	3.1E−10	2.0E−10	1.4E−10	1.1E−10
Mo-99	66.0 h	1.0	5.5E−09	1.0	3.5E−09	1.8E−09	1.1E−09	7.6E−10	6.0E−10
Mo-101	14.62 m	1.0	4.8E−10	1.0	2.7E−10	1.3E−10	7.6E−11	5.2E−11	4.1E−11
Technetium									
Tc-93	2.75 h	1.0	2.7E−10	0.5	2.5E−10	1.5E−10	9.8E−11	6.8E−11	5.5E−11
Tc-93m	43.5 m	1.0	2.0E−10	0.5	1.3E−10	7.3E−11	4.6E−11	3.2E−11	2.5E−11
Tc-94	293 m	1.0	1.2E−09	0.5	1.0E−09	5.8E−10	3.7E−10	2.5E−10	2.0E−10
Tc-94m	52 m	1.0	1.3E−09	0.5	6.5E−10	3.3E−10	1.9E−10	1.3E−10	1.0E−10
Tc-95	20.0 h	1.0	9.9E−10	0.5	8.7E−10	5.0E−10	3.3E−10	2.3E−10	1.8E−10
Tc-95m	61 d	1.0	4.7E−09	0.5	2.8E−09	1.6E−09	1.0E−09	7.0E−10	5.6E−10
Tc-96	4.28 d	1.0	6.7E−09	0.5	5.1E−09	3.0E−09	2.0E−09	1.4E−09	1.1E−09
Tc-96m	51.5 m	1.0	1.0E−10	0.5	6.5E−11	3.6E−11	2.3E−11	1.6E−11	1.2E−11
Tc-97	2.6E6 y	1.0	9.9E−10	0.5	4.9E−10	2.4E−10	1.4E−10	8.8E−11	6.8E−11
Tc-97m	87 d	1.0	8.7E−09	0.5	4.1E−09	2.0E−09	1.1E−09	7.0E−10	5.5E−10
Tc-98	4.2E6 y	1.0	2.3E−08	0.5	1.2E−08	6.1E−09	3.7E−09	2.5E−09	2.0E−09
Tc-99	2.13E5 y	1.0	1.0E−08	0.5	4.8E−09	2.3E−09	1.3E−09	8.2E−10	6.4E−10
Tc-99m	6.02 h	1.0	2.0E−10	0.5	1.3E−10	7.2E−11	4.3E−11	2.8E−11	2.2E−11
Tc-101	14.2 m	1.0	2.4E−10	0.5	1.3E−10	6.1E−11	3.5E−11	2.4E−11	1.9E−11
Tc-104	18.2 m	1.0	1.0E−09	0.5	5.3E−10	2.6E−10	1.5E−10	1.0E−10	8.0E−11
Ruthenium									
Ru-94	51.8 m	0.1	9.3E−10	0.05	5.9E−10	3.1E−10	1.9E−10	1.2E−10	9.4E−11
Ru-97	2.9 d	0.1	1.2E−09	0.05	8.5E−10	4.7E−10	3.0E−10	1.9E−10	1.5E−10
Ru-103	39.28 d	0.1	7.1E−09	0.05	4.6E−09	2.4E−09	1.5E−09	9.2E−10	7.3E−10
Ru-105	4.44 h	0.1	2.7E−09	0.05	1.8E−09	9.1E−10	5.5E−10	3.3E−10	2.6E−10
Ru-106	368.2 d	0.1	8.4E−08	0.05	4.9E−08	2.5E−08	1.5E−08	8.6E−09	7.0E−09
Rhodium									
Rh-99	16 d	0.1	4.2E−09	0.05	2.9E−09	1.6E−09	1.0E−09	6.5E−10	5.1E−10
Rh-99m	4.7 h	0.1	4.9E−10	0.05	3.5E−10	2.0E−10	1.3E−10	8.3E−11	6.6E−11
Rh-100	20.8 h	0.1	4.9E−09	0.05	3.6E−09	2.0E−09	1.4E−09	8.8E−10	7.1E−10
Rh-101	3.2 y	0.1	4.9E−09	0.05	2.8E−09	1.6E−09	1.0E−09	6.7E−10	5.5E−10
Rh-101m	4.34 d	0.1	1.7E−09	0.05	1.2E−09	6.8E−10	4.4E−10	2.8E−10	2.2E−10
Rh-102m	2.9 y	0.1	1.9E−08	0.05	1.0E−08	6.4E−09	4.3E−09	3.0E−09	2.6E−09
Rh-102	207 d	0.1	1.2E−08	0.05	7.4E−09	3.9E−09	2.4E−09	1.4E−09	1.2E−09
Rh-103m	56.12 m	0.1	4.7E−11	0.05	2.7E−11	1.3E−11	7.4E−12	4.8E−12	3.8E−12
Rh-105	35.36 h	0.1	4.0E−09	0.05	2.7E−09	1.3E−09	8.0E−10	4.6E−10	3.7E−10
Rh-106m	132 m	0.1	1.4E−09	0.05	9.7E−10	5.3E−10	3.3E−10	2.0E−10	1.6E−10
Rh-107	21.7 m	0.1	2.9E−10	0.05	1.6E−10	7.9E−11	4.5E−11	3.1E−11	2.4E−11
Palladium									
Pd-100	3.63 d	0.05	7.4E−09	0.005	5.2E−09	2.9E−09	1.9E−09	1.2E−09	9.4E−10
Pd-101	8.27 h	0.05	8.2E−10	0.005	5.7E−10	3.1E−10	1.9E−10	1.2E−10	9.4E−11
Pd-103	16.96 d	0.05	2.2E−09	0.005	1.4E−09	7.2E−10	4.3E−10	2.4E−10	1.9E−10
Pd-107	6.5E6 y	0.05	4.4E−10	0.005	2.8E−10	1.4E−10	8.1E−11	4.6E−11	3.7E−11
Pd-109	13.427 h	0.05	6.3E−09	0.005	4.1E−09	2.0E−09	1.2E−09	6.8E−10	5.5E−10
Silver									
Ag-102	12.9 m	0.1	4.2E−10	0.05	2.4E−10	1.2E−10	7.3E−11	5.0E−11	4.0E−11
Ag-103	65.7 m	0.1	4.5E−10	0.05	2.7E−10	1.4E−10	8.3E−11	5.5E−11	4.3E−11
Ag-104	69.2 m	0.1	4.3E−10	0.05	2.9E−10	1.7E−10	1.1E−10	7.5E−11	6.0E−11
Ag-104m	33.5 m	0.1	5.6E−10	0.05	3.3E−10	1.7E−10	1.0E−10	6.8E−11	5.4E−11

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Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Ag-105	41.0 d	0.1	3.9E−09	0.05	2.5E−09	1.4E−09	9.1E−10	5.9E−10	4.7E−10
Ag-106	23.96 m	0.1	3.7E−10	0.05	2.1E−10	1.0E−10	6.0E−11	4.1E−11	3.2E−11
Ag-106m	8.41 d	0.1	9.7E−09	0.05	6.9E−09	4.1E−09	2.8E−09	1.8E−09	1.5E−09
Ag-108m	127 y	0.1	2.1E−08	0.05	1.1E−08	6.5E−09	4.3E−09	2.8E−09	2.3E−09
Ag-110m	249.9 d	0.1	2.4E−08	0.05	1.4E−08	7.8E−09	5.2E−09	3.4E−09	2.8E−09
Ag-111	7.45 d	0.1	1.4E−08	0.05	9.3E−09	4.6E−09	2.7E−09	1.6E−09	1.3E−09
Ag-112	3.12 h	0.1	4.9E−09	0.05	3.0E−09	1.5E−09	8.9E−10	5.4E−10	4.3E−10
Ag-115	20.0 m	0.1	7.2E−10	0.05	4.1E−10	2.0E−10	1.2E−10	7.7E−11	6.0E−11
Cadmium									
Cd-104	57.7 m	0.1	4.2E−10	0.05	2.9E−10	1.7E−10	1.1E−10	7.2E−11	5.4E−11
Cd-107	6.49 h	0.1	7.1E−10	0.05	4.6E−10	2.3E−10	1.3E−10	7.8E−11	6.2E−11
Cd-109	464 d	0.1	2.1E−08	0.05	9.5E−09	5.5E−09	3.5E−09	2.4E−09	2.0E−09
Cd-113	9.3E15 y	0.1	1.0E−07	0.05	4.8E−08	3.7E−08	3.0E−08	2.6E−08	2.5E−08
Cd-113m	13.6 y	0.1	1.2E−07	0.05	5.6E−08	3.9E−08	2.9E−08	2.4E−08	2.3E−08
Cd-115	53.46 h	0.1	1.4E−08	0.05	9.7E−09	4.9E−09	2.9E−09	1.7E−09	1.4E−09
Cd-115m	44.6 d	0.1	4.1E−08	0.05	1.9E−08	9.7E−09	6.9E−09	4.1E−09	3.3E−09
Cd-117	2.49 h	0.1	2.9E−09	0.05	1.9E−09	9.5E−10	5.7E−10	3.5E−10	2.8E−10
Cd-117m	3.36 h	0.1	2.6E−09	0.05	1.7E−09	9.0E−10	5.6E−10	3.5E−10	2.8E−10
Indium									
In-109	4.2 h	0.04	5.2E−10	0.02	3.6E−10	2.0E−10	1.3E−10	8.2E−11	6.6E−11
In-110	4.9 h	0.04	1.5E−09	0.02	1.1E−09	6.5E−10	4.4E−10	3.0E−10	2.4E−10
In-110m	69.1 m	0.04	1.1E−09	0.02	6.4E−10	3.2E−10	1.9E−10	1.3E−10	1.0E−10
In-111	2.83 d	0.04	2.4E−09	0.02	1.7E−09	9.1E−10	5.9E−10	3.7E−10	2.9E−10
In-112	14.4 m	0.04	1.2E−10	0.02	6.7E−11	3.3E−11	1.9E−11	1.3E−11	1.0E−11
In-113m	1.658 h	0.04	3.0E−10	0.02	1.8E−10	9.3E−11	6.2E−11	3.6E−11	2.8E−11
In-114m	49.51 d	0.04	5.6E−08	0.02	3.1E−08	1.5E−08	9.0E−09	5.2E−09	4.1E−09
In-115	5.1E15 y	0.04	1.3E−07	0.02	6.4E−08	4.8E−08	4.3E−08	3.6E−08	3.2E−08
In-115m	4.486 h	0.04	9.6E−10	0.02	6.0E−10	3.0E−10	1.8E−10	1.1E−10	8.6E−11
In-116m	54.15 m	0.04	5.8E−10	0.02	3.6E−10	1.9E−10	1.2E−10	8.0E−11	6.4E−11
In-117	43.8 m	0.04	3.3E−10	0.02	1.9E−10	9.7E−11	5.8E−11	3.9E−11	3.1E−11
In-117m	116.5 m	0.04	1.4E−09	0.02	8.6E−10	4.3E−10	2.5E−10	1.6E−10	1.2E−10
In-119m	18.0 m	0.04	5.9E−10	0.02	3.2E−10	1.6E−10	8.8E−11	6.0E−11	4.7E−11
Tin									
Sn-110	4.0 h	0.04	3.5E−09	0.02	2.3E−09	1.2E−09	7.4E−10	4.4E−10	3.5E−10
Sn-111	35.3 m	0.04	2.5E−10	0.02	1.5E−10	7.4E−11	4.4E−11	3.0E−11	2.3E−11
Sn-113	115.1 d	0.04	7.8E−09	0.02	5.0E−09	2.6E−09	1.6E−09	9.2E−10	7.3E−10
Sn-117m	13.61 d	0.04	7.7E−09	0.02	5.0E−09	2.5E−09	1.5E−09	8.8E−10	7.1E−10
Sn-119m	293.0 d	0.04	4.1E−09	0.02	2.5E−09	1.3E−09	7.5E−10	4.3E−10	3.4E−10
Sn-121	27.06 h	0.04	2.6E−09	0.02	1.7E−09	8.4E−10	5.0E−10	2.8E−10	2.3E−10
Sn-121m	55 y	0.04	4.6E−09	0.02	2.7E−09	1.4E−09	8.2E−10	4.7E−10	3.8E−10
Sn-123	129.2 d	0.04	2.5E−08	0.02	1.6E−08	7.8E−09	4.6E−09	2.6E−09	2.1E−09
Sn-123m	40.08 m	0.04	4.7E−10	0.02	2.6E−10	1.3E−10	7.3E−11	4.9E−11	3.8E−11
Sn-125	9.64 d	0.04	3.5E−08	0.02	2.2E−08	1.1E−08	6.7E−09	3.8E−09	3.1E−09
Sn-126	1.0E5 y	0.04	5.0E−08	0.02	3.0E−08	1.6E−08	9.8E−09	5.9E−09	4.7E−09
Sn-127	2.10 h	0.04	2.0E−09	0.02	1.3E−09	6.6E−10	4.0E−10	2.5E−10	2.0E−10
Sn-128	59.1 m	0.04	1.6E−09	0.02	9.7E−10	4.9E−10	3.0E−10	1.9E−10	1.5E−10
Antimony									
Sb-115	31.8 m	0.2	2.5E−10	0.1	1.5E−10	7.5E−11	4.5E−11	3.1E−11	2.4E−11
Sb-116	15.8 m	0.2	2.7E−10	0.1	1.6E−10	8.0E−11	4.8E−11	3.3E−11	2.6E−11
Sb-116m	60.3 m	0.2	5.0E−10	0.1	3.3E−10	1.9E−10	1.2E−10	8.3E−11	6.7E−11
Sb-117	2.80 h	0.2	1.6E−10	0.1	1.0E−10	5.6E−11	3.5E−11	2.2E−11	1.8E−11
Sb-118m	5.00 h	0.2	1.3E−09	0.1	1.0E−09	5.8E−10	3.9E−10	2.6E−10	2.1E−10
Sb-119	38.1 h	0.2	8.4E−10	0.1	5.8E−10	3.0E−10	1.8E−10	1.0E−10	8.0E−11
Sb-120m	5.76 d	0.2	8.1E−09	0.1	6.0E−09	3.5E−09	2.3E−09	1.6E−09	1.2E−09
Sb-120	15.89 m	0.2	1.7E−10	0.1	9.4E−11	4.6E−11	2.7E−11	1.8E−11	1.4E−11
Sb-122	2.70 d	0.2	1.8E−08	0.1	1.2E−08	6.1E−09	3.7E−09	2.1E−09	1.7E−09
Sb-124	60.20 d	0.2	2.5E−08	0.1	1.6E−08	8.4E−09	5.2E−09	3.2E−09	2.5E−09

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Sb-124n	20.2 m	0.2	8.5E−11	0.1	4.9E−11	2.5E−11	1.5E−11	1.0E−11	8.0E−12
Sb-125	2.77 y	0.2	1.1E−08	0.1	6.1E−09	3.4E−09	2.1E−09	1.4E−09	1.1E−09
Sb-126	12.4 d	0.2	2.0E−08	0.1	1.4E−08	7.6E−09	4.9E−09	3.1E−09	2.4E−09
Sb-126m	19.0 m	0.2	3.9E−10	0.1	2.2E−10	1.1E−10	6.6E−11	4.5E−11	3.6E−11
Sb-127	3.85 d	0.2	1.7E−08	0.1	1.2E−08	5.9E−09	3.6E−09	2.1E−09	1.7E−09
Sb-128	9.01 h	0.2	6.3E−09	0.1	4.5E−09	2.4E−09	1.5E−09	9.5E−10	7.6E−10
Sb-128m	10.4 m	0.2	3.7E−10	0.1	2.1E−10	1.0E−10	6.0E−11	4.1E−11	3.3E−11
Sb-129	4.32 h	0.2	4.3E−09	0.1	2.8E−09	1.5E−09	8.8E−10	5.3E−10	4.2E−10
Sb-130	40 m	0.2	9.1E−10	0.1	5.4E−10	2.8E−10	1.7E−10	1.2E−10	9.1E−11
Sb-131	23 m	0.2	1.1E−09	0.1	7.3E−10	3.9E−10	2.1E−10	1.4E−10	1.0E−10
Tellurium									
Te-116	2.49 h	0.6	1.4E−09	0.3	1.0E−09	5.5E−10	3.4E−10	2.1E−10	1.7E−10
Te-121	17 d	0.6	3.1E−09	0.3	2.0E−09	1.2E−09	8.0E−10	5.4E−10	4.3E−10
Te-121m	154 d	0.6	2.7E−08	0.3	1.2E−08	6.9E−09	4.2E−09	2.8E−09	2.3E−09
Te-123	1E13 y	0.6	2.0E−08	0.3	9.3E−09	6.9E−09	5.4E−09	4.7E−09	4.4E−09
Te-123m	119.7 d	0.6	1.9E−08	0.3	8.8E−09	4.9E−09	2.8E−09	1.7E−09	1.4E−09
Te-125m	58 d	0.6	1.3E−08	0.3	6.3E−09	3.3E−09	1.9E−09	1.1E−09	8.7E−10
Te-127	9.35 h	0.6	1.5E−09	0.3	1.2E−09	6.2E−10	3.6E−10	2.1E−10	1.7E−10
Te-127m	109 d	0.6	4.1E−08	0.3	1.8E−08	9.5E−09	5.2E−09	3.0E−09	2.3E−09
Te-129	69.6 m	0.6	7.5E−10	0.3	4.4E−10	2.1E−10	1.2E−10	8.0E−11	6.3E−11
Te-129m	33.6 d	0.6	4.4E−08	0.3	2.4E−08	1.2E−08	6.6E−09	3.9E−09	3.0E−09
Te-131	25.0 m	0.6	9.0E−10	0.3	6.6E−10	3.5E−10	1.9E−10	1.2E−10	8.7E−11
Te-131m	30 h	0.6	2.0E−08	0.3	1.4E−08	7.8E−09	4.3E−09	2.7E−09	1.9E−09
Te-132	78.2 h	0.6	4.8E−08	0.3	3.0E−08	1.6E−08	8.3E−09	5.3E−09	3.8E−09
Te-133	12.45 m	0.6	8.4E−10	0.3	6.3E−10	3.3E−10	1.6E−10	1.1E−10	7.2E−11
Te-133m	55.4 m	0.6	3.1E−09	0.3	2.4E−09	1.3E−09	6.3E−10	4.1E−10	2.8E−10
Te-134	41.8 m	0.6	1.1E−09	0.3	7.5E−10	3.9E−10	2.2E−10	1.4E−10	1.1E−10
Iodine									
I-120	81.0 m	1.0	3.9E−09	1.0	2.8E−09	1.4E−09	7.2E−10	4.8E−10	3.4E−10
I-120m	53 m	1.0	2.3E−09	1.0	1.5E−09	7.8E−10	4.2E−10	2.9E−10	2.1E−10
I-121	2.12 h	1.0	6.2E−10	1.0	5.3E−10	3.1E−10	1.7E−10	1.2E−10	8.2E−11
I-123	13.2 h	1.0	2.2E−09	1.0	1.9E−09	1.1E−09	4.9E−10	3.3E−10	2.1E−10
I-124	4.18 d	1.0	1.2E−07	1.0	1.1E−07	6.3E−08	3.1E−08	2.0E−08	1.3E−08
I-125	60.14 d	1.0	5.2E−08	1.0	5.7E−08	4.1E−08	3.1E−08	2.2E−08	1.5E−08
I-126	13.02 d	1.0	2.1E−07	1.0	2.1E−07	1.3E−07	6.8E−08	4.5E−08	2.9E−08
I-128	24.99 m	1.0	5.7E−10	1.0	3.3E−10	1.6E−10	8.9E−11	6.0E−11	4.6E−11
I-129	1.57E7 y	1.0	1.8E−07	1.0	2.2E−07	1.7E−07	1.9E−07	1.4E−07	1.1E−07
I-130	12.36 h	1.0	2.1E−08	1.0	1.8E−08	9.8E−09	4.6E−09	3.0E−09	2.0E−09
I-131	8.04 d	1.0	1.8E−07	1.0	1.8E−07	1.0E−07	5.2E−08	3.4E−08	2.2E−08
I-132	2.30 h	1.0	3.0E−09	1.0	2.4E−09	1.3E−09	6.2E−10	4.1E−10	2.9E−10
I-132m	83.6 m	1.0	2.4E−09	1.0	2.0E−09	1.1E−09	5.0E−10	3.3E−10	2.2E−10
I-133	20.8 h	1.0	4.9E−08	1.0	4.4E−08	2.3E−08	1.0E−08	6.8E−09	4.3E−09
I-134	52.6 m	1.0	1.1E−09	1.0	7.5E−10	3.9E−10	2.1E−10	1.4E−10	1.1E−10
I-135	6.61 h	1.0	1.0E−08	1.0	8.9E−09	4.7E−09	2.2E−09	1.4E−09	9.3E−10
Caesium									
Cs-125	45 m	1.0	3.9E−10	1.0	2.2E−10	1.1E−10	6.5E−11	4.4E−11	3.5E−11
Cs-127	6.25 h	1.0	1.8E−10	1.0	1.2E−10	6.6E−11	4.2E−11	2.9E−11	2.4E−11
Cs-129	32.06 h	1.0	4.4E−10	1.0	3.0E−10	1.7E−10	1.1E−10	7.2E−11	6.0E−11
Cs-130	29.9 m	1.0	3.3E−10	1.0	1.8E−10	9.0E−11	5.2E−11	3.6E−11	2.8E−11
Cs-131	9.69 d	1.0	4.6E−10	1.0	2.9E−10	1.6E−10	1.0E−10	6.9E−11	5.8E−11
Cs-132	6.475 d	1.0	2.7E−09	1.0	1.8E−09	1.1E−09	7.7E−10	5.7E−10	5.0E−10
Cs-134	2.062 y	1.0	2.6E−08	1.0	1.6E−08	1.3E−08	1.4E−08	1.9E−08	1.9E−08
Cs-134m	2.90 h	1.0	2.1E−10	1.0	1.2E−10	5.9E−11	3.5E−11	2.5E−11	2.0E−11
Cs-135	2.3E6 y	1.0	4.1E−09	1.0	2.3E−09	1.7E−09	1.7E−09	2.0E−09	2.0E−09
Cs-135m	53 m	1.0	1.3E−10	1.0	8.6E−11	4.9E−11	3.2E−11	2.3E−11	1.9E−11
Cs-136	13.1 d	1.0	1.5E−08	1.0	9.5E−09	6.1E−09	4.4E−09	3.4E−09	3.0E−09

(*continued on next page*)

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Cs-137	30.0 y	1.0	2.1E−08	1.0	1.2E−08	9.6E−09	1.0E−08	1.3E−08	1.3E−08
Cs-138	32.2 m	1.0	1.1E−09	1.0	5.9E−10	2.9E−10	1.7E−10	1.2E−10	9.2E−11
Barium									
Ba-126	96.5 m	0.6	2.7E−09	0.3[††]	1.7E−09	8.5E−10	5.0E−10	3.1E−10	2.6E−10
Ba-128	2.43 d	0.6	2.0E−08	0.3[††]	1.7E−08	9.0E−09	5.2E−09	3.0E−09	2.7E−09
Ba-131	11.8 d	0.6	4.2E−09	0.3[††]	2.6E−09	1.4E−09	9.4E−10	6.2E−10	4.5E−10
Ba-131m	14.6 m	0.6	5.8E−11	0.3[††]	3.2E−11	1.6E−11	9.3E−12	6.3E−12	4.9E−12
Ba-133	10.74 y	0.6	2.2E−08	0.3[††]	6.2E−09	3.9E−09	4.6E−09	7.3E−09	1.5E−09
Ba-133m	38.9 h	0.6	4.2E−09	0.3[††]	3.6E−09	1.8E−09	1.1E−09	5.9E−10	5.4E−10
Ba-135m	28.7 h	0.6	3.3E−09	0.3[††]	2.9E−09	1.5E−09	8.5E−10	4.7E−10	4.3E−10
Ba-139	82.7 m	0.6	1.4E−09	0.3[††]	8.4E−10	4.1E−10	2.4E−10	1.5E−10	1.2E−10
Ba-140	12.74 d	0.6	3.2E−08	0.3[††]	1.8E−08	9.2E−09	5.8E−09	3.7E−09	2.6E−09
Ba-141	18.27 m	0.6	7.6E−10	0.3[††]	4.7E−10	2.3E−10	1.3E−10	8.6E−11	7.0E−11
Ba-142	10.6 m	0.6	3.6E−10	0.3[††]	2.2E−10	1.1E−10	6.6E−11	4.3E−11	3.5E−11
Lanthanum									
La-131	59 m	0.005	3.5E−10	0.0005	2.1E−10	1.1E−10	6.6E−11	4.4E−11	3.5E−11
La-132	4.8 h	0.005	3.8E−09	0.0005	2.4E−09	1.3E−09	7.8E−10	4.8E−10	3.9E−10
La-135	19.5 h	0.005	2.8E−10	0.0005	1.9E−10	1.0E−10	6.4E−11	3.9E−11	3.0E−11
La-137	6E4 y	0.005	1.1E−09	0.0005	4.5E−10	2.5E−10	1.6E−10	1.0E−10	8.1E−11
La-138	1.35E11 y	0.005	1.3E−08	0.0005	4.6E−09	2.7E−09	1.9E−09	1.3E−09	1.1E−09
La-140	40.272 h	0.005	2.0E−08	0.0005	1.3E−08	6.8E−09	4.2E−09	2.5E−09	2.0E−09
La-141	3.93 h	0.005	4.3E−09	0.0005	2.6E−09	1.3E−09	7.6E−10	4.5E−10	3.6E−10
La-142	92.5 m	0.005	1.9E−09	0.0005	1.1E−09	5.8E−10	3.5E−10	2.3E−10	1.8E−10
La-143	14.23 m	0.005	6.9E−10	0.0005	3.9E−10	1.9E−10	1.1E−10	7.1E−11	5.6E−11
Cerium									
Ce-134	72.0 h	0.005	2.8E−08	0.0005	1.8E−08	9.1E−09	5.5E−09	3.2E−09	2.5E−09
Ce-135	17.6 h	0.005	7.0E−09	0.0005	4.7E−09	2.6E−09	1.6E−09	1.0E−09	7.9E−10
Ce-137	9.0 h	0.005	2.6E−10	0.0005	1.7E−10	8.8E−11	5.4E−11	3.2E−11	2.5E−11
Ce-137m	34.4 h	0.005	6.1E−09	0.0005	3.9E−09	2.0E−09	1.2E−09	6.8E−10	5.4E−10
Ce-139	137.66 d	0.005	2.6E−09	0.0005	1.6E−09	8.6E−10	5.4E−10	3.3E−10	2.6E−10
Ce-141	32.501 d	0.005	8.1E−09	0.0005	5.1E−09	2.6E−09	1.5E−09	8.8E−10	7.1E−10
Ce-143	33.0 h	0.005	1.2E−08	0.0005	8.0E−09	4.1E−09	2.4E−09	1.4E−09	1.1E−09
Ce-144	284.3 d	0.005	6.6E−08	0.0005	3.9E−08	1.9E−08	1.1E−08	6.5E−09	5.2E−09
Praseodymium									
Pr-136	13.1 m	0.005	3.7E−10	0.0005	2.1E−10	1.0E−10	6.1E−11	4.2E−11	3.3E−11
Pr-137	76.6 m	0.005	4.1E−10	0.0005	2.5E−10	1.3E−10	7.7E−11	5.0E−11	4.0E−11
Pr-138m	2.1 h	0.005	1.0E−09	0.0005	7.4E−10	4.1E−10	2.6E−10	1.6E−10	1.3E−10
Pr-139	4.51 h	0.005	3.2E−10	0.0005	2.0E−10	1.1E−10	6.5E−11	4.0E−11	3.1E−11
Pr-142	19.13 h	0.005	1.5E−08	0.0005	9.8E−09	4.9E−09	2.9E−09	1.6E−09	1.3E−09
Pr-142m	14.6 m	0.005	2.0E−10	0.0005	1.2E−10	6.2E−11	3.7E−11	2.1E−11	1.7E−11
Pr-143	13.56 d	0.005	1.4E−08	0.0005	8.7E−09	4.3E−09	2.6E−09	1.5E−09	1.2E−09
Pr-144	17.28 m	0.005	6.4E−10	0.0005	3.5E−10	1.7E−10	9.5E−11	6.5E−11	5.0E−11
Pr-145	5.98 h	0.005	4.7E−09	0.0005	2.9E−09	1.4E−09	8.5E−10	4.9E−10	3.9E−10
Pr-147	13.6 m	0.005	3.9E−10	0.0005	2.2E−10	1.1E−10	6.1E−11	4.2E−11	3.3E−11
Neodymium									
Nd-136	50.65 m	0.005	1.0E−09	0.0005	6.1E−10	3.1E−10	1.9E−10	1.2E−10	9.9E−11
Nd-138	5.04 h	0.005	7.2E−09	0.0005	4.5E−09	2.3E−09	1.3E−09	8.0E−10	6.4E−10
Nd-139	29.7 m	0.005	2.1E−10	0.0005	1.2E−10	6.3E−11	3.7E−11	2.5E−11	2.0E−11
Nd-139m	5.5 h	0.005	2.1E−09	0.0005	1.4E−09	7.8E−10	5.0E−10	3.1E−10	2.5E−10
Nd-141	2.49 h	0.005	7.8E−11	0.0005	5.0E−11	2.7E−11	1.6E−11	1.0E−11	8.3E−12
Nd-147	10.98 d	0.005	1.2E−08	0.0005	7.8E−09	3.9E−09	2.3E−09	1.3E−09	1.1E−09
Nd-149	1.73 h	0.005	1.4E−09	0.0005	8.7E−10	4.3E−10	2.6E−10	1.6E−10	1.2E−10
Nd-151	12.44 m	0.005	3.4E−10	0.0005	2.0E−10	9.7E−11	5.7E−11	3.8E−11	3.0E−11
Promethium									
Pm-141	20.90 m	0.005	4.2E−10	0.0005	2.4E−10	1.2E−10	6.8E−11	4.6E−11	3.6E−11
Pm-143	265 d	0.005	1.9E−09	0.0005	1.2E−09	6.7E−10	4.4E−10	2.9E−10	2.3E−10

[††] For the adult, f_1 is 0.2.

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Pm-144	363 d	0.005	7.6E−09	0.0005	4.7E−09	2.7E−09	1.8E−09	1.2E−09	9.7E−10
Pm-145	17.7 y	0.005	1.5E−09	0.0005	6.8E−10	3.7E−10	2.3E−10	1.4E−10	1.1E−10
Pm-146	2020 d	0.005	1.0E−08	0.0005	5.1E−09	2.8E−09	1.8E−09	1.1E−09	9.0E−10
Pm-147	2.6234 y	0.005	3.6E−09	0.0005	1.9E−09	9.6E−10	5.7E−10	3.2E−10	2.6E−10
Pm-148	5.37 d	0.005	3.0E−08	0.0005	1.9E−08	9.7E−09	5.8E−09	3.3E−09	2.7E−09
Pm-148m	41.3 d	0.005	1.5E−08	0.0005	1.0E−08	5.5E−09	3.5E−09	2.2E−09	1.7E−09
Pm-149	53.08 h	0.005	1.2E−08	0.0005	7.4E−09	3.7E−09	2.2E−09	1.2E−09	9.9E−10
Pm-150	2.68 h	0.005	2.8E−09	0.0005	1.7E−09	8.7E−10	5.2E−10	3.2E−10	2.6E−10
Pm-151	28.40 h	0.005	8.0E−09	0.0005	5.1E−09	2.6E−09	1.6E−09	9.1E−10	7.3E−10
Samarium									
Sm-141	10.2 m	0.005	4.5E−10	0.0005	2.5E−10	1.3E−10	7.3E−11	5.0E−11	3.9E−11
Sm-141m	22.6 m	0.005	7.0E−10	0.0005	4.0E−10	2.0E−10	1.2E−10	8.2E−11	6.5E−11
Sm-142	72.49 m	0.005	2.2E−09	0.0005	1.3E−09	6.2E−10	3.6E−10	2.4E−10	1.9E−10
Sm-145	340 d	0.005	2.4E−09	0.0005	1.4E−09	7.3E−10	4.5E−10	2.7E−10	2.1E−10
Sm-146	1.03E8 y	0.005	1.5E−06	0.0005	1.5E−07	1.0E−07	7.0E−08	5.8E−08	5.4E−08
Sm-147	1.06E11 y	0.005	1.4E−06	0.0005	1.4E−07	9.2E−08	6.4E−08	5.2E−08	4.9E−08
Sm-151	90 y	0.005	1.5E−09	0.0005	6.4E−10	3.3E−10	2.0E−10	1.2E−10	9.8E−11
Sm-153	46.7 h	0.005	8.4E−09	0.0005	5.4E−09	2.7E−09	1.6E−09	9.2E−10	7.4E−10
Sm-155	22.1 m	0.005	3.6E−10	0.0005	2.0E−10	9.7E−11	5.5E−11	3.7E−11	2.9E−11
Sm-156	9.4 h	0.005	2.8E−09	0.0005	1.8E−09	9.0E−10	5.4E−10	3.1E−10	2.5E−10
Europium									
Eu-145	5.94 d	0.005	5.1E−09	0.0005	3.7E−09	2.1E−09	1.4E−09	9.4E−10	7.5E−10
Eu-146	4.61 d	0.005	8.5E−09	0.0005	6.2E−09	3.6E−09	2.4E−09	1.6E−09	1.3E−09
Eu-147	24 d	0.005	3.7E−09	0.0005	2.5E−09	1.4E−09	8.9E−10	5.6E−10	4.4E−10
Eu-148	54.5 d	0.005	8.5E−09	0.0005	6.0E−09	3.5E−09	2.4E−09	1.6E−09	1.3E−09
Eu-149	93.1 d	0.005	9.7E−10	0.0005	6.3E−10	3.4E−10	2.1E−10	1.3E−10	1.0E−10
Eu-150	34.2 y	0.005	1.3E−08	0.0005	5.7E−09	3.4E−09	2.3E−09	1.5E−09	1.3E−09
Eu-150m	12.62 h	0.005	4.4E−09	0.0005	2.8E−09	1.4E−09	8.2E−10	4.7E−10	3.8E−10
Eu-152	13.33 y	0.005	1.6E−08	0.0005	7.4E−09	4.1E−09	2.6E−09	1.7E−09	1.4E−09
Eu-152m	9.32 h	0.005	5.7E−09	0.0005	3.6E−09	1.8E−09	1.1E−09	6.2E−10	5.0E−10
Eu-154	8.8 y	0.005	2.5E−08	0.0005	1.2E−08	6.5E−09	4.1E−09	2.5E−09	2.0E−09
Eu-155	4.96 y	0.005	4.3E−09	0.0005	2.2E−09	1.1E−09	6.8E−10	4.0E−10	3.2E−10
Eu-156	15.19 d	0.005	2.2E−08	0.0005	1.5E−08	7.5E−09	4.6E−09	2.7E−09	2.2E−09
Eu-157	15.15 h	0.005	6.7E−09	0.0005	4.3E−09	2.2E−09	1.3E−09	7.5E−10	6.0E−10
Eu-158	45.9 m	0.005	1.1E−09	0.0005	6.2E−10	3.1E−10	1.8E−10	1.2E−10	9.4E−11
Gadolinium									
Gd-145	22.9 m	0.005	4.5E−10	0.0005	2.6E−10	1.3E−10	8.1E−11	5.6E−11	4.4E−11
Gd-146	48.3 d	0.005	9.4E−09	0.0005	6.0E−09	3.2E−09	2.0E−09	1.2E−09	9.6E−10
Gd-147	38.1 h	0.005	4.5E−09	0.0005	3.2E−09	1.8E−09	1.2E−09	7.7E−10	6.1E−10
Gd-148	93 y	0.005	1.7E−06	0.0005	1.6E−07	1.1E−07	7.3E−08	5.9E−08	5.6E−08
Gd-149	9.4 d	0.005	4.0E−09	0.0005	2.7E−09	1.5E−09	9.3E−10	5.7E−10	4.5E−10
Gd-151	120 d	0.005	2.1E−09	0.0005	1.3E−09	6.8E−10	4.2E−10	2.4E−10	2.0E−10
Gd-152	1.08E14 y	0.005	1.2E−06	0.0005	1.2E−07	7.7E−08	5.3E−08	4.3E−08	4.1E−08
Gd-153	242 d	0.005	2.9E−09	0.0005	1.8E−09	9.4E−10	5.8E−10	3.4E−10	2.7E−10
Gd-159	18.56 h	0.005	5.7E−09	0.0005	3.6E−09	1.8E−09	1.1E−09	6.2E−10	4.9E−10
Terbium									
Tb-147	1.65 h	0.005	1.5E−09	0.0005	1.0E−09	5.4E−10	3.3E−10	2.0E−10	1.6E−10
Tb-149	4.15 h	0.005	2.4E−09	0.0005	1.5E−09	8.0E−10	5.0E−10	3.1E−10	2.5E−10
Tb-150	3.27 h	0.005	2.5E−09	0.0005	1.6E−09	8.3E−10	5.1E−10	3.2E−10	2.5E−10
Tb-151	17.6 h	0.005	2.7E−09	0.0005	1.9E−09	1.0E−09	6.7E−10	4.2E−10	3.4E−10
Tb-153	2.34 d	0.005	2.3E−09	0.0005	1.5E−09	8.2E−10	5.1E−10	3.1E−10	2.5E−10
Tb-154	21.4 h	0.005	4.7E−09	0.0005	3.4E−09	1.9E−09	1.3E−09	8.1E−10	6.5E−10
Tb-155	5.32 d	0.005	1.9E−09	0.0005	1.3E−09	6.8E−10	4.3E−10	2.6E−10	2.1E−10
Tb-156	5.34 d	0.005	9.0E−09	0.0005	6.3E−09	3.5E−09	2.3E−09	1.5E−09	1.2E−09
Tb-156n	5.0 h	0.005	8.0E−10	0.0005	5.2E−10	2.7E−10	1.7E−10	1.0E−10	8.1E−11
Tb-156m	24.4 h	0.005	1.5E−09	0.0005	1.0E−09	5.6E−10	3.5E−10	2.2E−10	1.7E−10

(*continued on next page*)

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Tb-157	150 y	0.005	4.9E−10	0.0005	2.2E−10	1.1E−10	6.8E−11	4.1E−11	3.4E−11
Tb-158	150 y	0.005	1.3E−08	0.0005	5.9E−09	3.3E−09	2.1E−09	1.4E−09	1.1E−09
Tb-160	72.3 d	0.005	1.6E−08	0.0005	1.0E−08	5.4E−09	3.3E−09	2.0E−09	1.6E−09
Tb-161	6.91 d	0.005	8.3E−09	0.0005	5.3E−09	2.7E−09	1.6E−09	9.0E−10	7.2E−10
Dysprosium									
Dy-155	10.0 h	0.005	9.7E−10	0.0005	6.8E−10	3.8E−10	2.5E−10	1.6E−10	1.3E−10
Dy-157	8.1 h	0.005	4.4E−10	0.0005	3.1E−10	1.8E−10	1.2E−10	7.7E−11	6.1E−11
Dy-159	144.4 d	0.005	1.0E−09	0.0005	6.4E−10	3.4E−10	2.1E−10	1.3E−10	1.0E−10
Dy-165	2.334 h	0.005	1.3E−09	0.0005	7.9E−10	3.9E−10	2.3E−10	1.4E−10	1.1E−10
Dy-166	81.6 h	0.005	1.9E−08	0.0005	1.2E−08	6.0E−09	3.6E−09	2.0E−09	1.6E−09
Holmium									
Ho-155	48 m	0.005	3.8E−10	0.0005	2.3E−10	1.2E−10	7.1E−11	4.7E−11	3.7E−11
Ho-157	12.6 m	0.005	5.8E−11	0.0005	3.6E−11	1.9E−11	1.2E−11	8.1E−12	6.5E−12
Ho-159	33 m	0.005	7.1E−11	0.0005	4.3E−11	2.3E−11	1.4E−11	9.9E−12	7.9E−12
Ho-161	2.5 h	0.005	1.4E−10	0.0005	8.1E−11	4.2E−11	2.5E−11	1.6E−11	1.3E−11
Ho-162	15 m	0.005	3.5E−11	0.0005	2.0E−11	1.0E−11	6.0E−12	4.2E−12	3.3E−12
Ho-162m	68 m	0.005	2.4E−10	0.0005	1.5E−10	7.9E−11	4.9E−11	3.3E−11	2.6E−11
Ho-164	29 m	0.005	1.2E−10	0.0005	6.5E−11	3.2E−11	1.8E−11	1.2E−11	9.5E−12
Ho-164m	37.5 m	0.005	2.0E−10	0.0005	1.1E−10	5.5E−11	3.2E−11	2.1E−11	1.6E−11
Ho-166	26.80 h	0.005	1.6E−08	0.0005	1.0E−08	5.2E−09	3.1E−09	1.7E−09	1.4E−09
Ho-166m	1.20E3 y	0.005	2.6E−08	0.0005	9.3E−09	5.3E−09	3.5E−09	2.4E−09	2.0E−09
Ho-167	3.1 h	0.005	8.8E−10	0.0005	5.5E−10	2.8E−10	1.7E−10	1.0E−10	8.3E−11
Erbium									
Er-161	3.24 h	0.005	6.5E−10	0.0005	4.4E−10	2.4E−10	1.6E−10	1.0E−10	8.0E−11
Er-165	10.36 h	0.005	1.7E−10	0.0005	1.1E−10	6.2E−11	3.9E−11	2.4E−11	1.9E−11
Er-169	9.3 d	0.005	4.4E−09	0.0005	2.8E−09	1.4E−09	8.2E−10	4.7E−10	3.7E−10
Er-171	7.52 h	0.005	4.0E−09	0.0005	2.5E−09	1.3E−09	7.6E−10	4.5E−10	3.6E−10
Er-172	49.3 h	0.005	1.0E−08	0.0005	6.8E−09	3.5E−09	2.1E−09	1.3E−09	1.0E−09
Thulium									
Tm-162	21.7 m	0.005	2.9E−10	0.0005	1.7E−10	8.7E−11	5.2E−11	3.6E−11	2.9E−11
Tm-166	7.70 h	0.005	2.1E−09	0.0005	1.5E−09	8.3E−10	5.5E−10	3.5E−10	2.8E−10
Tm-167	9.24 d	0.005	6.0E−09	0.0005	3.9E−09	2.0E−09	1.2E−09	7.0E−10	5.6E−10
Tm-170	128.6 d	0.005	1.6E−08	0.0005	9.8E−09	4.9E−09	2.9E−09	1.6E−09	1.3E−09
Tm-171	1.92 y	0.005	1.5E−09	0.0005	7.8E−10	3.9E−10	2.3E−10	1.3E−10	1.1E−10
Tm-172	63.6 h	0.005	1.9E−08	0.0005	1.2E−08	6.1E−09	3.7E−09	2.1E−09	1.7E−09
Tm-173	8.24 h	0.005	3.3E−09	0.0005	2.1E−09	1.1E−09	6.5E−10	3.8E−10	3.1E−10
Tm-175	15.2 m	0.005	3.1E−10	0.0005	1.7E−10	8.6E−11	5.0E−11	3.4E−11	2.7E−11
Ytterbium									
Yb-162	18.9 m	0.005	2.2E−10	0.0005	1.3E−10	6.9E−11	4.2E−11	2.9E−11	2.3E−11
Yb-166	56.7 h	0.005	7.7E−09	0.0005	5.4E−09	2.9E−09	1.9E−09	1.2E−09	9.5E−10
Yb-167	17.5 m	0.005	7.0E−11	0.0005	4.1E−11	2.1E−11	1.2E−11	8.4E−12	6.7E−12
Yb-169	32.01 d	0.005	7.1E−09	0.0005	4.6E−09	2.4E−09	1.5E−09	8.8E−10	7.1E−10
Yb-175	4.19 d	0.005	5.0E−09	0.0005	3.2E−09	1.6E−09	9.5E−10	5.4E−10	4.4E−10
Yb-177	1.9 h	0.005	1.0E−09	0.0005	6.8E−10	3.4E−10	2.0E−10	1.1E−10	8.8E−11
Yb-178	74 m	0.005	1.4E−09	0.0005	8.4E−10	4.2E−10	2.4E−10	1.5E−10	1.2E−10
Lutetium									
Lu-169	34.06 h	0.005	3.5E−09	0.0005	2.4E−09	1.4E−09	8.9E−10	5.7E−10	4.6E−10
Lu-170	2.00 d	0.005	7.4E−09	0.0005	5.2E−09	2.9E−09	1.9E−09	1.2E−09	9.9E−10
Lu-171	8.22 d	0.005	5.9E−09	0.0005	4.0E−09	2.2E−09	1.4E−09	8.5E−10	6.7E−10
Lu-172	6.70 d	0.005	1.0E−08	0.0005	7.0E−09	3.9E−09	2.5E−09	1.6E−09	1.3E−09
Lu-173	1.37 y	0.005	2.7E−09	0.0005	1.6E−09	8.6E−10	5.3E−10	3.2E−10	2.6E−10
Lu-174	3.31 y	0.005	3.2E−09	0.0005	1.7E−09	9.1E−10	5.6E−10	3.3E−10	2.7E−10
Lu-174m	142 d	0.005	6.2E−09	0.0005	3.8E−09	1.9E−09	1.1E−09	6.6E−10	5.3E−10
Lu-176	3.60E10 y	0.005	2.4E−08	0.0005	1.1E−08	5.7E−09	3.5E−09	2.2E−09	1.8E−09
Lu-176m	3.68 h	0.005	2.0E−09	0.0005	1.2E−09	6.0E−10	3.5E−10	2.1E−10	1.7E−10
Lu-177	6.71 d	0.005	6.1E−09	0.0005	3.9E−09	2.0E−09	1.2E−09	6.6E−10	5.3E−10

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Lu-177m	160.9 d	0.005	1.7E−08	0.0005	1.1E−08	5.8E−09	3.6E−09	2.1E−09	1.7E−09
Lu-178	28.4 m	0.005	5.9E−10	0.0005	3.3E−10	1.6E−10	9.0E−11	6.1E−11	4.7E−11
Lu-178m	22.7 m	0.005	4.3E−10	0.0005	2.4E−10	1.2E−10	7.1E−11	4.9E−11	3.8E−11
Lu-179	4.59 h	0.005	2.4E−09	0.0005	1.5E−09	7.5E−10	4.4E−10	2.6E−10	2.1E−10
Hafnium									
Hf-170	16.01 h	0.02	3.9E−09	0.002	2.7E−09	1.5E−09	9.5E−10	6.0E−10	4.8E−10
Hf-172	1.87 y	0.02	1.9E−08	0.002	6.1E−09	3.3E−09	2.0E−09	1.3E−09	1.0E−09
Hf-173	24.0 h	0.02	1.9E−09	0.002	1.3E−09	7.2E−10	4.6E−10	2.8E−10	2.3E−10
Hf-175	70 d	0.02	3.8E−09	0.002	2.4E−09	1.3E−09	8.4E−10	5.2E−10	4.1E−10
Hf-177m	51.4 m	0.02	7.8E−10	0.002	4.7E−10	2.5E−10	1.5E−10	1.0E−10	8.1E−11
Hf-178m	31 y	0.02	7.0E−08	0.002	1.9E−08	1.1E−08	7.8E−09	5.5E−09	4.7E−09
Hf-179m	25.1 d	0.02	1.2E−08	0.002	7.8E−09	4.1E−09	2.6E−09	1.6E−09	1.2E−09
Hf-180m	5.5 h	0.02	1.4E−09	0.002	9.7E−10	5.3E−10	3.3E−10	2.1E−10	1.7E−10
Hf-181	42.4 d	0.02	1.2E−08	0.002	7.4E−09	3.8E−09	2.3E−09	1.4E−09	1.1E−09
Hf-182	9E6 y	0.02	5.6E−08	0.002	7.9E−09	5.4E−09	4.0E−09	3.3E−09	3.0E−09
Hf-182m	61.5 m	0.02	4.1E−10	0.002	2.5E−10	1.3E−10	7.8E−11	5.2E−11	4.2E−11
Hf-183	64 m	0.02	8.1E−10	0.002	4.8E−10	2.4E−10	1.4E−10	9.3E−11	7.3E−11
Hf-184	4.12 h	0.02	5.5E−09	0.002	3.6E−09	1.8E−09	1.1E−09	6.6E−10	5.2E−10
Tantalum									
Ta-172	36.8 m	0.01	5.5E−10	0.001	3.2E−10	1.6E−10	9.8E−11	6.6E−11	5.3E−11
Ta-173	3.65 h	0.01	2.0E−09	0.001	1.3E−09	6.5E−10	3.9E−10	2.4E−10	1.9E−10
Ta-174	1.2 h	0.01	6.2E−10	0.001	3.7E−10	1.9E−10	1.1E−10	7.2E−11	5.7E−11
Ta-175	10.5 h	0.01	1.6E−09	0.001	1.1E−09	6.2E−10	4.0E−10	2.6E−10	2.1E−10
Ta-176	8.08 h	0.01	2.4E−09	0.001	1.7E−09	9.2E−10	6.1E−10	3.9E−10	3.1E−10
Ta-177	56.6 h	0.01	1.0E−09	0.001	6.9E−10	3.6E−10	2.2E−10	1.3E−10	1.1E−10
Ta-178m	2.2 h	0.01	6.3E−10	0.001	4.5E−10	2.4E−10	1.5E−10	9.1E−11	7.2E−11
Ta-179	664.9 d	0.01	6.2E−10	0.001	4.1E−10	2.2E−10	1.3E−10	8.1E−11	6.5E−11
Ta-180	8.1 h	0.01	5.8E−10	0.001	3.7E−10	1.9E−10	1.1E−10	6.7E−11	5.4E−11
Ta-182	115.0 d	0.01	1.4E−08	0.001	9.4E−09	5.0E−09	3.1E−09	1.9E−09	1.5E−09
Ta-182m	15.84 m	0.01	1.4E−10	0.001	7.5E−11	3.7E−11	2.1E−11	1.5E−11	1.2E−11
Ta-183	5.1 d	0.01	1.4E−08	0.001	9.3E−09	4.7E−09	2.8E−09	1.6E−09	1.3E−09
Ta-184	8.7 h	0.01	6.7E−09	0.001	4.4E−09	2.3E−09	1.4E−09	8.5E−10	6.8E−10
Ta-185	49 m	0.01	8.3E−10	0.001	4.6E−10	2.3E−10	1.3E−10	8.6E−11	6.8E−11
Ta-186	10.5 m	0.01	3.8E−10	0.001	2.1E−10	1.1E−10	6.1E−11	4.2E−11	3.3E−11
Tungsten									
W-176	2.3 h	0.6	6.8E−10	0.3	5.5E−10	3.0E−10	2.0E−10	1.3E−10	1.0E−10
W-177	135 m	0.6	4.4E−10	0.3	3.2E−10	1.7E−10	1.1E−10	7.2E−11	5.8E−11
W-178	21.7 d	0.6	1.8E−09	0.3	1.4E−09	7.3E−10	4.5E−10	2.7E−10	2.2E−10
W-179	37.5 m	0.6	3.4E−11	0.3	2.0E−11	1.0E−11	6.2E−12	4.2E−12	3.3E−12
W-181	121.2 d	0.6	6.3E−10	0.3	4.7E−10	2.5E−10	1.6E−10	9.5E−11	7.6E−11
W-185	75.1 d	0.6	4.4E−09	0.3	3.3E−09	1.6E−09	9.7E−10	5.5E−10	4.4E−10
W-187	23.9 h	0.6	5.5E−09	0.3	4.3E−09	2.2E−09	1.3E−09	7.8E−10	6.3E−10
W-188	69.4 d	0.6	2.1E−08	0.3	1.5E−08	7.7E−09	4.6E−09	2.6E−09	2.1E−09
Rhenium									
Re-177	14.0 m	1.0	2.5E−10	0.8	1.4E−10	7.2E−11	4.1E−11	2.8E−11	2.2E−11
Re-178	13.2 m	1.0	2.9E−10	0.8	1.6E−10	7.9E−11	4.6E−11	3.1E−11	2.5E−11
Re-181	20 h	1.0	4.2E−09	0.8	2.8E−09	1.4E−09	8.2E−10	5.4E−10	4.2E−10
Re-182	64.0 h	1.0	1.4E−08	0.8	8.9E−09	4.7E−09	2.8E−09	1.8E−09	1.4E−09
Re-182m	12.7 h	1.0	2.4E−09	0.8	1.7E−09	8.9E−10	5.2E−10	3.5E−10	2.7E−10
Re-184	38.0 d	1.0	8.9E−09	0.8	5.6E−09	3.0E−09	1.8E−09	1.3E−09	1.0E−09
Re-184m	165 d	1.0	1.7E−08	0.8	9.8E−09	4.9E−09	2.8E−09	1.9E−09	1.5E−09
Re-186	90.64 h	1.0	1.9E−08	0.8	1.1E−08	5.5E−09	3.0E−09	1.9E−09	1.5E−09
Re-186m	2.0E5 y	1.0	3.0E−08	0.8	1.6E−08	7.6E−09	4.4E−09	2.8E−09	2.2E−09
Re-187	5E10 y	1.0	6.8E−11	0.8	3.8E−11	1.8E−11	1.0E−11	6.6E−12	5.1E−12
Re-188	16.98 h	1.0	1.7E−08	0.8	1.1E−08	5.4E−09	2.9E−09	1.8E−09	1.4E−09

(*continued on next page*)

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Re-188m	18.6 m	1.0	3.8E−10	0.8	2.3E−10	1.1E−10	6.1E−11	4.0E−11	3.0E−11
Re-189	24.3 h	1.0	9.8E−09	0.8	6.2E−09	3.0E−09	1.6E−09	1.0E−09	7.8E−10
Osmium									
Os-180	22 m	0.02	1.6E−10	0.01	9.8E−11	5.1E−11	3.2E−11	2.2E−11	1.7E−11
Os-181	105 m	0.02	7.6E−10	0.01	5.0E−10	2.7E−10	1.7E−10	1.1E−10	8.9E−11
Os-182	22 h	0.02	4.6E−09	0.01	3.2E−09	1.7E−09	1.1E−09	7.0E−10	5.6E−10
Os-185	94 d	0.02	3.8E−09	0.01	2.6E−09	1.5E−09	9.8E−10	6.5E−10	5.1E−10
Os-189m	6.0 h	0.02	2.1E−10	0.01	1.3E−10	6.5E−11	3.8E−11	2.2E−11	1.8E−11
Os-191	15.4 d	0.02	6.3E−09	0.01	4.1E−09	2.1E−09	1.2E−09	7.0E−10	5.7E−10
Os-191m	13.03 h	0.02	1.1E−09	0.01	7.1E−10	3.5E−10	2.1E−10	1.2E−10	9.6E−11
Os-193	30.0 h	0.02	9.3E−09	0.01	6.0E−09	3.0E−09	1.8E−09	1.0E−09	8.1E−10
Os-194	6.0 y	0.02	2.9E−08	0.01	1.7E−08	8.8E−09	5.2E−09	3.0E−09	2.4E−09
Iridium									
Ir-182	15 m	0.02	5.3E−10	0.01	3.0E−10	1.5E−10	8.9E−11	6.0E−11	4.8E−11
Ir-184	3.02 h	0.02	1.5E−09	0.01	9.7E−10	5.2E−10	3.3E−10	2.1E−10	1.7E−10
Ir-185	14.0 h	0.02	2.4E−09	0.01	1.6E−09	8.6E−10	5.3E−10	3.3E−10	2.6E−10
Ir-186	15.8 h	0.02	3.8E−09	0.01	2.7E−09	1.5E−09	9.6E−10	6.1E−10	4.9E−10
Ir-186m	1.75 h	0.02	5.8E−10	0.01	3.6E−10	2.1E−10	1.3E−10	7.7E−11	6.1E−11
Ir-187	10.5 h	0.02	1.1E−09	0.01	7.3E−10	3.9E−10	2.5E−10	1.5E−10	1.2E−10
Ir-188	41.5 h	0.02	4.6E−09	0.01	3.3E−09	1.8E−09	1.2E−09	7.9E−10	6.3E−10
Ir-189	13.3 d	0.02	2.5E−09	0.01	1.7E−09	8.6E−10	5.2E−10	3.0E−10	2.4E−10
Ir-190	12.1 d	0.02	1.0E−08	0.01	7.1E−09	3.9E−09	2.5E−09	1.6E−09	1.2E−09
Ir-190n	3.1 h	0.02	9.4E−10	0.01	6.4E−10	3.5E−10	2.3E−10	1.5E−10	1.2E−10
Ir-190m	1.2 h	0.02	7.9E−11	0.01	5.0E−11	2.6E−11	1.6E−11	1.0E−11	8.0E−12
Ir-192	74.02 d	0.02	1.3E−08	0.01	8.7E−09	4.6E−09	2.8E−09	1.7E−09	1.4E−09
Ir-192n	241 y	0.02	2.8E−09	0.01	1.4E−09	8.3E−10	5.5E−10	3.7E−10	3.1E−10
Ir-193m	11.9 d	0.02	3.2E−09	0.01	2.0E−09	1.0E−09	6.0E−10	3.4E−10	2.7E−10
Ir-194	19.15 h	0.02	1.5E−08	0.01	9.8E−09	4.9E−09	2.9E−09	1.7E−09	1.3E−09
Ir-194m	171 d	0.02	1.7E−08	0.01	1.1E−08	6.4E−09	4.1E−09	2.6E−09	2.1E−09
Ir-195	2.5 h	0.02	1.2E−09	0.01	7.3E−10	3.6E−10	2.1E−10	1.3E−10	1.0E−10
Ir-195m	3.8 h	0.02	2.3E−09	0.01	1.5E−09	7.3E−10	4.3E−10	2.6E−10	2.1E−10
Platinum									
Pt-186	2.0 h	0.02	7.8E−10	0.01	5.3E−10	2.9E−10	1.8E−10	1.2E−10	9.3E−11
Pt-188	10.2 d	0.02	6.7E−09	0.01	4.5E−09	2.4E−09	1.5E−09	9.5E−10	7.6E−10
Pt-189	10.87 h	0.02	1.1E−09	0.01	7.4E−10	3.9E−10	2.5E−10	1.5E−10	1.2E−10
Pt-191	2.8 d	0.02	3.1E−09	0.01	2.1E−09	1.1E−09	6.9E−10	4.2E−10	3.4E−10
Pt-193	50 y	0.02	3.7E−10	0.01	2.4E−10	1.2E−10	6.9E−11	3.9E−11	3.1E−11
Pt-193m	4.33 d	0.02	5.2E−09	0.01	3.4E−09	1.7E−09	9.9E−10	5.6E−10	4.5E−10
Pt-195m	4.02 d	0.02	7.1E−09	0.01	4.6E−09	2.3E−09	1.4E−09	7.9E−10	6.3E−10
Pt-197	18.3 h	0.02	4.7E−09	0.01	3.0E−09	1.5E−09	8.8E−10	5.1E−10	4.0E−10
Pt-197m	94.4 m	0.02	1.0E−09	0.01	6.1E−10	3.0E−10	1.8E−10	1.1E−10	8.4E−11
Pt-199	30.8 m	0.02	4.7E−10	0.01	2.7E−10	1.3E−10	7.5E−11	5.0E−11	3.9E−11
Pt-200	12.5 h	0.02	1.4E−08	0.01	8.8E−09	4.4E−09	2.6E−09	1.5E−09	1.2E−09
Gold									
Au-193	17.65 h	0.2	1.2E−09	0.1	8.8E−10	4.6E−10	2.8E−10	1.7E−10	1.3E−10
Au-194	39.5 h	0.2	2.9E−09	0.1	2.2E−09	1.2E−09	8.1E−10	5.3E−10	4.2E−10
Au-195	183 d	0.2	2.4E−09	0.1	1.7E−09	8.9E−10	5.4E−10	3.2E−10	2.5E−10
Au-198	2.696 d	0.2	1.0E−08	0.1	7.2E−09	3.7E−09	2.2E−09	1.3E−09	1.0E−09
Au-198m	2.30 d	0.2	1.2E−08	0.1	8.5E−09	4.4E−09	2.7E−09	1.6E−09	1.3E−09
Au-199	3.139 d	0.2	4.5E−09	0.1	3.1E−09	1.6E−09	9.5E−10	5.5E−10	4.4E−10
Au-200	48.4 m	0.2	8.3E−10	0.1	4.7E−10	2.3E−10	1.3E−10	8.7E−11	6.8E−11
Au-200m	18.7 h	0.2	9.2E−09	0.1	6.6E−09	3.5E−09	2.2E−09	1.3E−09	1.1E−09
Au-201	26.4 m	0.2	3.1E−10	0.1	1.7E−10	8.2E−11	4.6E−11	3.1E−11	2.4E−11
Mercury									
Hg-193	3.5 h	0.04[‡‡]	8.5E−10	0.02	5.5E−10	2.8E−10	1.7E−10	1.0E−10	8.2E−11
		1.0[§§]	3.3E−10	1.0	1.9E−10	9.8E−11	5.8E−11	3.9E−11	3.1E−11

[‡‡] Inorganic mercury.
[§§] Methyl mercury.

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
		0.8[¶¶]	4.7E−10	0.4	4.4E−10	2.2E−10	1.4E−10	8.3E−11	6.6E−11
Hg-193m	11.1 h	0.04[‡‡]	3.6E−09	0.02	2.4E−09	1.3E−09	8.1E−10	5.0E−10	4.0E−10
		1.0[§§]	1.1E−09	1.0	6.8E−10	3.7E−10	2.3E−10	1.5E−10	1.3E−10
		0.8[¶¶]	1.6E−09	0.4	1.8E−09	9.5E−10	6.0E−10	3.7E−10	3.0E−10
Hg-194	260 y	0.04[‡‡]	7.2E−09	0.02	3.6E−09	2.6E−09	1.9E−09	1.5E−09	1.4E−09
		1.0[§§]	1.3E−07	1.0	1.2E−07	8.4E−08	6.6E−08	5.5E−08	5.1E−08
		0.8[¶¶]	1.1E−07	0.4	4.8E−08	3.5E−08	2.7E−08	2.3E−08	2.1E−08
Hg-195	9.9 h	0.04[‡‡]	9.5E−10	0.02	6.3E−10	3.3E−10	2.0E−10	1.2E−10	9.7E−11
		1.0[§§]	3.0E−10	1.0	2.0E−10	1.0E−10	6.4E−11	4.2E−11	3.4E−11
		0.8[¶¶]	4.6E−10	0.4	4.8E−10	2.5E−10	1.5E−10	9.3E−11	7.5E−11
Hg-195m	41.6 h	0.04[‡‡]	5.8E−09	0.02	3.8E−09	2.0E−09	1.2E−09	7.0E−10	5.6E−10
		1.0[§§]	2.1E−09	1.0	1.3E−09	6.8E−10	4.2E−10	2.7E−10	2.2E−10
		0.8[¶¶]	2.6E−09	0.4	2.8E−09	1.4E−09	8.7E−10	5.1E−10	4.1E−10
Hg-197	64.1 h	0.04[‡‡]	2.5E−09	0.02	1.6E−09	8.3E−10	5.0E−10	2.9E−10	2.3E−10
		1.0[§§]	9.7E−10	1.0	6.2E−10	3.1E−10	1.9E−10	1.2E−10	9.9E−11
		0.8[¶¶]	1.3E−09	0.4	1.2E−09	6.1E−10	3.7E−10	2.2E−10	1.7E−10
Hg-197m	23.8 h	0.04[‡‡]	5.2E−09	0.02	3.4E−09	1.7E−09	1.0E−09	5.9E−10	4.7E−10
		1.0[§§]	1.5E−09	1.0	9.5E−10	4.8E−10	2.9E−10	1.8E−10	1.5E−10
		0.8[¶¶]	2.2E−09	0.4	2.5E−09	1.2E−09	7.3E−10	4.2E−10	3.4E−10
Hg-199m	42.6 m	0.04[‡‡]	3.7E−10	0.02	2.1E−10	1.0E−10	5.9E−11	3.9E−11	3.1E−11
		1.0[§§]	3.4E−10	1.0	1.9E−10	9.3E−11	5.3E−11	3.6E−11	2.8E−11
		0.8[¶¶]	3.6E−10	0.4	2.1E−10	1.0E−10	5.8E−11	3.9E−11	3.1E−11
Hg-203	46.60 d	0.04[‡‡]	5.5E−09	0.02	3.6E−09	1.8E−09	1.1E−09	6.7E−10	5.4E−10
		1.0[§§]	1.5E−08	1.0	1.1E−08	5.7E−09	3.6E−09	2.3E−09	1.9E−09
		0.8[¶¶]	1.3E−08	0.4	6.4E−09	3.4E−09	2.1E−09	1.3E−09	1.1E−09
Thallium									
Tl-194	33 m	1.0	6.1E−11	1.0	3.9E−11	2.2E−11	1.4E−11	1.0E−11	8.1E−12
Tl-194m	32.8 m	1.0	3.8E−10	1.0	2.2E−10	1.2E−10	7.0E−11	4.9E−11	4.0E−11
Tl-195	1.16 h	1.0	2.3E−10	1.0	1.4E−10	7.5E−11	4.7E−11	3.3E−11	2.7E−11
Tl-197	2.84 h	1.0	2.1E−10	1.0	1.3E−10	6.7E−11	4.2E−11	2.8E−11	2.3E−11
Tl-198	5.3 h	1.0	4.7E−10	1.0	3.3E−10	1.9E−10	1.2E−10	8.7E−11	7.3E−11
Tl-198m	1.87 h	1.0	4.8E−10	1.0	3.0E−10	1.6E−10	9.7E−11	6.7E−11	5.4E−11
Tl-199	7.42 h	1.0	2.3E−10	1.0	1.5E−10	7.7E−11	4.8E−11	3.2E−11	2.6E−11
Tl-200	26.1 h	1.0	1.3E−09	1.0	9.1E−10	5.3E−10	3.5E−10	2.4E−10	2.0E−10
Tl-201	3.044 d	1.0	8.4E−10	1.0	5.5E−10	2.9E−10	1.8E−10	1.2E−10	9.5E−11
Tl-202	12.23 d	1.0	2.9E−09	1.0	2.1E−09	1.2E−09	7.9E−10	5.4E−10	4.5E−10
Tl-204	3.779 y	1.0	1.3E−08	1.0	8.5E−09	4.2E−09	2.5E−09	1.5E−09	1.2E−09
Lead									
Pb-195m	15.8 m	0.6	2.6E−10	0.4[††]	1.6E−10	8.4E−11	5.2E−11	3.5E−11	2.9E−11
Pb-198	2.4 h	0.6	5.9E−10	0.4[††]	4.8E−10	2.7E−10	1.7E−10	1.1E−10	1.0E−10
Pb-199	90 m	0.6	3.5E−10	0.4[††]	2.6E−10	1.5E−10	9.4E−11	6.3E−11	5.4E−11
Pb-200	21.5 h	0.6	2.5E−09	0.4[††]	2.0E−09	1.1E−09	7.0E−10	4.4E−10	4.0E−10
Pb-201	9.4 h	0.6	9.4E−10	0.4[††]	7.8E−10	4.3E−10	2.7E−10	1.8E−10	1.6E−10
Pb-202	3E5 y	0.6	3.4E−08	0.4[††]	1.6E−08	1.3E−08	1.9E−08	2.7E−08	8.8E−09
Pb-202m	3.62 h	0.6	7.6E−10	0.4[††]	6.1E−10	3.5E−10	2.3E−10	1.5E−10	1.3E−10
Pb-203	52.05 h	0.6	1.6E−09	0.4[††]	1.3E−09	6.8E−10	4.3E−10	2.7E−10	2.4E−10
Pb-205	1.43E7 y	0.6	2.1E−09	0.4[††]	9.9E−10	6.2E−10	6.1E−10	6.5E−10	2.8E−10
Pb-209	3.253 h	0.6	5.7E−10	0.4[††]	3.8E−10	1.9E−10	1.1E−10	6.6E−11	5.7E−11
Pb-210	22.3 y	0.6	8.4E−06	0.4[††]	3.6E−06	2.2E−06	1.9E−06	1.9E−06	6.9E−07
Pb-211	36.1 m	0.6	3.1E−09	0.4[††]	1.4E−09	7.1E−10	4.1E−10	2.7E−10	1.8E−10
Pb-212	10.64 h	0.6	1.5E−07	0.4[††]	6.3E−08	3.3E−08	2.0E−08	1.3E−08	6.0E−09
Pb-214	26.8 m	0.6	2.7E−09	0.4[††]	1.0E−09	5.2E−10	3.1E−10	2.0E−10	1.4E−10

(*continued on next page*)

[¶¶] Other organic forms.
[§§] Methyl mercury.
[‡‡] Inorganic mercury.
[††] For the adult, f_1 is 0.2.

Table F.1. (*continued*)

Nuclide	$T_{½}$	Infant		f_1	*e* (Sv/Bq)				
		f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Bismuth									
Bi-200	36.4 m	0.1	4.2E−10	0.05	2.7E−10	1.5E−10	9.5E−11	6.4E−11	5.1E−11
Bi-201	108 m	0.1	1.0E−09	0.05	6.7E−10	3.6E−10	2.2E−10	1.4E−10	1.2E−10
Bi-202	1.67 h	0.1	6.4E−10	0.05	4.4E−10	2.5E−10	1.6E−10	1.1E−10	8.9E−11
Bi-203	11.76 h	0.1	3.5E−09	0.05	2.5E−09	1.4E−09	9.3E−10	6.0E−10	4.8E−10
Bi-205	15.31 d	0.1	6.1E−09	0.05	4.5E−09	2.6E−09	1.7E−09	1.1E−09	9.0E−10
Bi-206	6.243 d	0.1	1.4E−08	0.05	1.0E−08	5.7E−09	3.7E−09	2.4E−09	1.9E−09
Bi-207	38 y	0.1	1.0E−08	0.05	7.1E−09	3.9E−09	2.5E−09	1.6E−09	1.3E−09
Bi-210	5.012 d	0.1	1.5E−08	0.05	9.7E−09	4.8E−09	2.9E−09	1.6E−09	1.3E−09
Bi-210m	3.0E6 y	0.1	2.1E−07	0.05	9.1E−08	4.7E−08	3.0E−08	1.9E−08	1.5E−08
Bi-212	60.55 m	0.1	3.2E−09	0.05	1.8E−09	8.7E−10	5.0E−10	3.3E−10	2.6E−10
Bi-213	45.65 m	0.1	2.5E−09	0.05	1.4E−09	6.7E−10	3.9E−10	2.5E−10	2.0E−10
Bi-214	19.9 m	0.1	1.4E−09	0.05	7.4E−10	3.6E−10	2.1E−10	1.4E−10	1.1E−10
Polonium									
Po-203	36.7 m	1.0	2.9E−10	0.5	2.4E−10	1.3E−10	8.5E−11	5.8E−11	4.6E−11
Po-205	1.80 h	1.0	3.5E−10	0.5	2.8E−10	1.6E−10	1.1E−10	7.2E−11	5.8E−11
Po-207	350 m	1.0	4.4E−10	0.5	5.7E−10	3.2E−10	2.1E−10	1.4E−10	1.1E−10
Po-210	138.38 d	1.0	2.6E−05	0.5	8.8E−06	4.4E−06	2.6E−06	1.6E−06	1.2E−06
Astatine									
At-207	1.80 h	1.0	2.5E−09	1.0	1.6E−09	8.0E−10	4.8E−10	2.9E−10	2.4E−10
At-211	7.214 h	1.0	1.2E−07	1.0	7.8E−08	3.8E−08	2.3E−08	1.3E−08	1.1E−08
Francium									
Fr-222	14.4 m	1.0	6.2E−09	1.0	3.9E−09	2.0E−09	1.3E−09	8.5E−10	7.2E−10
Fr-223	21.8 m	1.0	2.6E−08	1.0	1.7E−08	8.3E−09	5.0E−09	2.9E−09	2.4E−09
Radium									
Ra-223	11.434 d	0.6	5.3E−06	0.3[††]	1.1E−06	5.7E−07	4.5E−07	3.7E−07	1.0E−07
Ra-224	3.66 d	0.6	2.7E−06	0.3[††]	6.6E−07	3.5E−07	2.6E−07	2.0E−07	6.5E−08
Ra-225	14.8 d	0.6	7.1E−06	0.3[††]	1.2E−06	6.1E−07	5.0E−07	4.4E−07	9.9E−08
Ra-226	1600 y	0.6	4.7E−06	0.3[††]	9.6E−07	6.2E−07	8.0E−07	1.5E−06	2.8E−07
Ra-227	42.2 m	0.6	1.1E−09	0.3[††]	4.3E−10	2.5E−10	1.7E−10	1.3E−10	8.1E−11
Ra-228	5.75 y	0.6	3.0E−05	0.3[††]	5.7E−06	3.4E−06	3.9E−06	5.3E−06	6.9E−07
Actinium									
Ac-224	2.9 h	0.005	1.0E−08	0.0005	5.2E−09	2.6E−09	1.5E−09	8.8E−10	7.0E−10
Ac-225	10.0 d	0.005	4.6E−07	0.0005	1.8E−07	9.1E−08	5.4E−08	3.0E−08	2.4E−08
Ac-226	29 h	0.005	1.4E−07	0.0005	7.6E−08	3.8E−08	2.3E−08	1.3E−08	1.0E−08
Ac-227	21.773 y	0.005	3.3E−05	0.0005	3.1E−06	2.2E−06	1.5E−06	1.2E−06	1.1E−06
Ac-228	6.13 h	0.005	7.4E−09	0.0005	2.8E−09	1.4E−09	8.7E−10	5.3E−10	4.3E−10
Thorium									
Th-226	30.9 m	0.005	4.4E−09	0.0005	2.4E−09	1.2E−09	6.7E−10	4.5E−10	3.5E−10
Th-227	18.718 d	0.005	3.0E−07	0.0005	7.0E−08	3.6E−08	2.3E−08	1.5E−08	8.8E−09
Th-228	1.9131 y	0.005	3.7E−06	0.0005	3.7E−07	2.2E−07	1.4E−07	9.4E−08	7.2E−08
Th-229	7340 y	0.005	1.1E−05	0.0005	1.0E−06	7.8E−07	6.2E−07	5.3E−07	4.9E−07
Th-230	7.7E4 y	0.005	4.1E−06	0.0005	4.1E−07	3.1E−07	2.4E−07	2.2E−07	2.1E−07
Th-231	25.52 h	0.005	3.9E−09	0.0005	2.5E−09	1.2E−09	7.4E−10	4.2E−10	3.4E−10
Th-232	1.405E10 y	0.005	4.6E−06	0.0005	4.5E−07	3.5E−07	2.9E−07	2.5E−07	2.3E−07
Th-234	24.10 d	0.005	4.0E−08	0.0005	2.5E−08	1.3E−08	7.4E−09	4.2E−09	3.4E−09
Protactinium									
Pa-227	38.3 m	0.005	5.8E−09	0.0005	3.2E−09	1.5E−09	8.7E−10	5.8E−10	4.5E−10
Pa-228	22 h	0.005	1.2E−08	0.0005	4.8E−09	2.6E−09	1.6E−09	9.7E−10	7.8E−10
Pa-230	17.4 d	0.005	2.6E−08	0.0005	5.7E−09	3.1E−09	1.9E−09	1.1E−09	9.2E−10
Pa-231	3.276E4 y	0.005	1.3E−05	0.0005	1.3E−06	1.1E−06	9.2E−07	8.0E−07	7.1E−07
Pa-232	1.31 d	0.005	7.2E−09	0.0005	4.3E−09	2.3E−09	1.4E−09	8.9E−10	7.2E−10
Pa-233	27.0 d	0.005	9.7E−09	0.0005	6.2E−09	3.2E−09	1.9E−09	1.1E−09	8.7E−10
Pa-234	6.70 h	0.005	5.0E−09	0.0005	3.2E−09	1.7E−09	1.0E−09	6.4E−10	5.1E−10

[††] For the adult, f_1 is 0.2.

Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Uranium									
U-230	20.8 d	0.04	7.9E−07	0.02	3.0E−07	1.5E−07	1.0E−07	6.6E−08	5.6E−08
U-231	4.2 d	0.04	3.1E−09	0.02	2.0E−09	1.0E−09	6.1E−10	3.6E−10	2.8E−10
U-232	72 y	0.04	2.5E−06	0.02	8.2E−07	5.8E−07	5.7E−07	6.4E−07	3.3E−07
U-233	1.585E5 y	0.04	3.8E−07	0.02	1.4E−07	9.2E−08	7.8E−08	7.8E−08	5.1E−08
U-234	2.445E5 y	0.04	3.7E−07	0.02	1.3E−07	8.8E−08	7.4E−08	7.4E−08	4.9E−08
U-235	703.8E6 y	0.04	3.5E−07	0.02	1.3E−07	8.5E−08	7.1E−08	7.0E−08	4.7E−08
U-236	2.3415E7 y	0.04	3.5E−07	0.02	1.3E−07	8.4E−08	7.0E−08	7.0E−08	4.7E−08
U-237	6.75 d	0.04	8.3E−09	0.02	5.4E−09	2.8E−09	1.6E−09	9.5E−10	7.6E−10
U-238	4.468E9 y	0.04	3.4E−07	0.02	1.2E−07	8.0E−08	6.8E−08	6.7E−08	4.5E−08
U-239	23.54 m	0.04	3.4E−10	0.02	1.9E−10	9.3E−11	5.4E−11	3.5E−11	2.7E−11
U-240	14.1 h	0.04	1.3E−08	0.02	8.1E−09	4.1E−09	2.4E−09	1.4E−09	1.1E−09
Neptunium									
Np-232	14.7 m	0.005	8.7E−11	0.0005	5.1E−11	2.7E−11	1.7E−11	1.2E−11	9.7E−12
Np-233	36.2 m	0.005	2.1E−11	0.0005	1.3E−11	6.6E−12	4.0E−12	2.8E−12	2.2E−12
Np-234	4.4 d	0.005	6.2E−09	0.0005	4.4E−09	2.4E−09	1.6E−09	1.0E−09	8.1E−10
Np-235	396.1 d	0.005	7.1E−10	0.0005	4.1E−10	2.0E−10	1.2E−10	6.8E−11	5.3E−11
Np-236	115E3 y	0.005	1.9E−07	0.0005	2.4E−08	1.8E−08	1.8E−08	1.8E−08	1.7E−08
Np-236m	22.5 h	0.005	2.5E−09	0.0005	1.3E−09	6.6E−10	4.0E−10	2.4E−10	1.9E−10
Np-237	2.14E6 y	0.005	2.0E−06	0.0005	2.1E−07	1.4E−07	1.1E−07	1.1E−07	1.1E−07
Np-238	2.117 d	0.005	9.5E−09	0.0005	6.2E−09	3.2E−09	1.9E−09	1.1E−09	9.1E−10
Np-239	2.355 d	0.005	8.9E−09	0.0005	5.7E−09	2.9E−09	1.7E−09	1.0E−09	8.0E−10
Np-240	65 m	0.005	8.7E−10	0.0005	5.2E−10	2.6E−10	1.6E−10	1.0E−10	8.2E−11
Plutonium									
Pu-234	8.8 h	0.005	2.1E−09	0.0005	1.1E−09	5.5E−10	3.3E−10	2.0E−10	1.6E−10
Pu-235	25.3 m	0.005	2.2E−11	0.0005	1.3E−11	6.5E−12	3.9E−12	2.7E−12	2.1E−12
Pu-236	2.851 y	0.005	2.1E−06	0.0005	2.2E−07	1.4E−07	1.0E−07	8.5E−08	8.7E−08
Pu-237	45.3 d	0.005	1.1E−09	0.0005	6.9E−10	3.6E−10	2.2E−10	1.3E−10	1.0E−10
Pu-238	87.74 y	0.005	4.0E−06	0.0005	4.0E−07	3.1E−07	2.4E−07	2.2E−07	2.3E−07
Pu-239	24065 y	0.005	4.2E−06	0.0005	4.2E−07	3.3E−07	2.7E−07	2.4E−07	2.5E−07
Pu-240	6537 y	0.005	4.2E−06	0.0005	4.2E−07	3.3E−07	2.7E−07	2.4E−07	2.5E−07
Pu-241	14.4 y	0.005	5.6E−08	0.0005	5.7E−09	5.5E−09	5.1E−09	4.8E−09	4.8E−09
Pu-242	3.763E5 y	0.005	4.0E−06	0.0005	4.0E−07	3.2E−07	2.6E−07	2.3E−07	2.4E−07
Pu-243	4.956 h	0.005	1.0E−09	0.0005	6.2E−10	3.1E−10	1.8E−10	1.1E−10	8.5E−11
Pu-244	8.26E7 y	0.005	4.0E−06	0.0005	4.1E−07	3.2E−07	2.6E−07	2.3E−07	2.4E−07
Pu-245	10.5 h	0.005	8.0E−09	0.0005	5.1E−09	2.6E−09	1.5E−09	8.9E−10	7.2E−10
Pu-246	10.85 d	0.005	3.6E−08	0.0005	2.3E−08	1.2E−08	7.1E−09	4.1E−09	3.3E−09
Americium									
Am-237	73.0 m	0.005	1.7E−10	0.0005	1.0E−10	5.5E−11	3.3E−11	2.2E−11	1.8E−11
Am-238	98 m	0.005	2.5E−10	0.0005	1.6E−10	9.1E−11	5.9E−11	4.0E−11	3.2E−11
Am-239	11.9 h	0.005	2.6E−09	0.0005	1.7E−09	8.4E−10	5.1E−10	3.0E−10	2.4E−10
Am-240	50.8 h	0.005	4.7E−09	0.0005	3.3E−09	1.8E−09	1.2E−09	7.3E−10	5.8E−10
Am-241	432.2 y	0.005	3.7E−06	0.0005	3.7E−07	2.7E−07	2.2E−07	2.0E−07	2.0E−07
Am-242	16.02 h	0.005	5.0E−09	0.0005	2.2E−09	1.1E−09	6.4E−10	3.7E−10	3.0E−10
Am-242m	152 y	0.005	3.1E−06	0.0005	3.0E−07	2.3E−07	2.0E−07	1.9E−07	1.9E−07
Am-243	7380 y	0.005	3.6E−06	0.0005	3.7E−07	2.7E−07	2.2E−07	2.0E−07	2.0E−07
Am-244	10.1 h	0.005	4.9E−09	0.0005	3.1E−09	1.6E−09	9.6E−10	5.8E−10	4.6E−10
Am-244m	26 m	0.005	3.7E−10	0.0005	2.0E−10	9.6E−11	5.5E−11	3.7E−11	2.9E−11
Am-245	2.05 h	0.005	6.8E−10	0.0005	4.5E−10	2.2E−10	1.3E−10	7.9E−11	6.2E−11
Am-246	39 m	0.005	6.7E−10	0.0005	3.8E−10	1.9E−10	1.1E−10	7.3E−11	5.8E−11
Am-246m	25.0 m	0.005	3.9E−10	0.0005	2.2E−10	1.1E−10	6.4E−11	4.4E−11	3.4E−11
Curium									
Cm-238	2.4 h	0.005	7.8E−10	0.0005	4.9E−10	2.6E−10	1.6E−10	1.0E−10	8.0E−11
Cm-240	27 d	0.005	2.2E−07	0.0005	4.8E−08	2.5E−08	1.5E−08	9.2E−09	7.6E−09
Cm-241	32.8 d	0.005	1.1E−08	0.0005	5.7E−09	3.0E−09	1.9E−09	1.1E−09	9.1E−10

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Table F.1. (*continued*)

		Infant		f_1	*e* (Sv/Bq)				
Nuclide	$T_{½}$	f_1	*e* (Sv/Bq)	≥1 year	1 year	5 years	10 years	15 years	Adult
Cm-242	162.8 d	0.005	5.9E−07	0.0005	7.6E−08	3.9E−08	2.4E−08	1.5E−08	1.2E−08
Cm-243	28.5 y	0.005	3.2E−06	0.0005	3.3E−07	2.2E−07	1.6E−07	1.4E−07	1.5E−07
Cm-244	18.11 y	0.005	2.9E−06	0.0005	2.9E−07	1.9E−07	1.4E−07	1.2E−07	1.2E−07
Cm-245	8500 y	0.005	3.7E−06	0.0005	3.7E−07	2.8E−07	2.3E−07	2.1E−07	2.1E−07
Cm-246	4730 y	0.005	3.7E−06	0.0005	3.7E−07	2.8E−07	2.2E−07	2.1E−07	2.1E−07
Cm-247	1.56E7 y	0.005	3.4E−06	0.0005	3.5E−07	2.6E−07	2.1E−07	1.9E−07	1.9E−07
Cm-248	3.39E5 y	0.005	1.4E−05	0.0005	1.4E−06	1.0E−06	8.4E−07	7.7E−07	7.7E−07
Cm-249	64.15 m	0.005	3.9E−10	0.0005	2.2E−10	1.1E−10	6.1E−11	4.0E−11	3.1E−11
Cm-250	6900 y	0.005	7.8E−05	0.0005	8.2E−06	6.0E−06	4.9E−06	4.4E−06	4.4E−06
Berkelium									
Bk-245	4.94 d	0.005	6.1E−09	0.0005	3.9E−09	2.0E−09	1.2E−09	7.2E−10	5.7E−10
Bk-246	1.83 d	0.005	3.7E−09	0.0005	2.6E−09	1.4E−09	9.4E−10	6.0E−10	4.8E−10
Bk-247	1380 y	0.005	8.9E−06	0.0005	8.6E−07	6.3E−07	4.6E−07	3.8E−07	3.5E−07
Bk-249	320 d	0.005	2.2E−08	0.0005	2.9E−09	1.9E−09	1.4E−09	1.1E−09	9.7E−10
Bk-250	3.222 h	0.005	1.5E−09	0.0005	8.5E−10	4.4E−10	2.7E−10	1.7E−10	1.4E−10
Californium									
Cf-244	19.4 m	0.005	9.8E−10	0.0005	4.8E−10	2.4E−10	1.3E−10	8.9E−11	7.0E−11
Cf-246	35.7 h	0.005	5.0E−08	0.0005	2.4E−08	1.2E−08	7.3E−09	4.1E−09	3.3E−09
Cf-248	333.5 d	0.005	1.5E−06	0.0005	1.6E−07	9.9E−08	6.0E−08	3.3E−08	2.8E−08
Cf-249	350.6 y	0.005	9.0E−06	0.0005	8.7E−07	6.4E−07	4.7E−07	3.8E−07	3.5E−07
Cf-250	13.08 y	0.005	5.7E−06	0.0005	5.5E−07	3.7E−07	2.3E−07	1.7E−07	1.6E−07
Cf-251	898 y	0.005	9.1E−06	0.0005	8.8E−07	6.5E−07	4.7E−07	3.9E−07	3.6E−07
Cf-252	2.638 y	0.005	5.0E−06	0.0005	5.1E−07	3.2E−07	1.9E−07	1.0E−07	9.0E−08
Cf-253	17.81 d	0.005	1.0E−07	0.0005	1.1E−08	6.0E−09	3.7E−09	1.8E−09	1.4E−09
Cf-254	60.5 d	0.005	1.1E−05	0.0005	2.6E−06	1.4E−06	8.4E−07	5.0E−07	4.0E−07
Einsteinium									
Es-250m	2.1 h	0.005	2.3E−10	0.0005	9.9E−11	5.7E−11	3.7E−11	2.6E−11	2.1E−11
Es-251	33 h	0.005	1.9E−09	0.0005	1.2E−09	6.1E−10	3.7E−10	2.2E−10	1.7E−10
Es-253	20.47 d	0.005	1.7E−07	0.0005	4.5E−08	2.3E−08	1.4E−08	7.6E−09	6.1E−09
Es-254	275.7 d	0.005	1.4E−06	0.0005	1.6E−07	9.8E−08	6.0E−08	3.3E−08	2.8E−08
Es-254m	39.3 h	0.005	5.7E−08	0.0005	3.0E−08	1.5E−08	9.1E−09	5.2E−09	4.2E−09
Fermium									
Fm-252	22.7 h	0.005	3.8E−08	0.0005	2.0E−08	9.9E−09	5.9E−09	3.3E−09	2.7E−09
Fm-253	3.00 d	0.005	2.5E−08	0.0005	6.7E−09	3.4E−09	2.1E−09	1.1E−09	9.1E−10
Fm-254	3.240 h	0.005	5.6E−09	0.0005	3.2E−09	1.6E−09	9.3E−10	5.6E−10	4.4E−10
Fm-255	20.07 h	0.005	3.3E−08	0.0005	1.9E−08	9.5E−09	5.6E−09	3.2E−09	2.5E−09
Fm-257	100.5 d	0.005	9.8E−07	0.0005	1.1E−07	6.5E−08	4.0E−08	1.9E−08	1.5E−08
Mendelevium									
Md-257	5.2 h	0.005	3.1E−09	0.0005	8.8E−10	4.5E−10	2.7E−10	1.5E−10	1.2E−10
Md-258	55 d	0.005	6.3E−07	0.0005	8.9E−08	5.0E−08	3.0E−08	1.6E−08	1.3E−08

$T_{½}$, half-life; f_1, fractional absorption in the gastrointestinal tract; h, hours; d, days; m, months; y, years.