

APPENDIX B

Selected Radioactive Isotopes

Decay modes are α , β^- , β^+ , electron capture (EC) and isomeric transition (IT). EC results in the same daughter nucleus as would β^+ decay. IT is a transition from a metastable excited state. Energies for $\beta^\pm$ decays are the maxima; average energies are roughly one-half the maxima.

Isotope	$t_{1/2}$	DecayMode(s)	Energy(MeV)	Percent	γ -Ray Energy(MeV)	Percent
^3H	12.33 y	β^-	0.0186	100%		
^{14}C	5730 y	β^-	0.156	100%		
^{13}N	9.96 min	β^+	1.20	100%		
^{22}Na	2.602 y	β^+	0.55	90%	γ 1.27	100%
^{32}P	14.28 d	β^-	1.71	100%		
^{35}S	87.4 d	β^-	0.167	100%		
^{36}Cl	3.00×10^5 y	β^-	0.710	100%		
^{40}K	1.28×10^9 y	β^-	1.31	89%		
^{43}K	22.3 h	β^-	0.827	87%	γ S 0.373	87%
					0.618	87%
^{45}Ca	165 d	β^-	0.257	100%		
^{51}Cr	27.70 d	EC			γ 0.320	10%
^{52}Mn	5.59d	β^+	3.69	28%	γ S 1.33	28%
					1.43	28%
^{52}Fe	8.27 h	β^+	1.80	43%	0.169	43%
					0.378	43%
^{59}Fe	44.6 d	β^- S	0.273	45%	γ S 1.10	57%
			0.466	55%	1.29	43%
^{60}Co	5.271 y	β^-	0.318	100%	γ S 1.17	100%
					1.33	100%

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Isotope	$t_{1/2}$	DecayMode(s)	Energy(MeV)	Percent		γ -Ray Energy(MeV)	Percent
^{65}Zn	244.1 d	EC			γ	1.12	51%
^{67}Ga	78.3 h	EC			γ s	0.0933	70%
						0.185	35%
						0.300	19%
						others	
^{75}Se	118.5 d	EC			γ s	0.121	20%
						0.136	65%
						0.265	68%
						0.280	20%
						others	
^{86}Rb	18.8 d	β^- s	0.69	9%	γ	1.08	9%
			1.77	91%			
^{85}Sr	64.8 d	EC			γ	0.514	100%
^{90}Sr	28.8 y	β^-	0.546	100%			
^{90}Y	64.1 h	β^-	2.28	100%			
$^{99\text{m}}\text{Tc}$	6.02 h	IT			γ	0.142	100%
$^{113\text{m}}\text{In}$	99.5 min	IT			γ	0.392	100%
^{123}I	13.0 h	EC			γ	0.159	$\approx 100\%$
^{131}I	8.040 d	β^- s	0.248	7%	γ s	0.364	85%
			0.607	93%		others	
			others				
^{129}Cs	32.3 h	EC			γ s	0.0400	35%
						0.372	32%
						0.411	25%

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						others	
^{137}Cs	30.17 y	β^- s	0.511	95%	γ	0.662	95%
			1.17	5%			
^{140}Ba	12.79 d	β^-	1.035	$\approx 100\%$	γ s	0.030	25%
						0.044	65%
						0.537	24%
						others	
^{198}Au	2.696 d	β^-	1.161	$\approx 100\%$	γ	0.412	$\approx 100\%$
^{197}Hg	64.1 h	EC			γ	0.0733	100%
^{210}Po	138.38 d	α	5.41	100%			
^{226}Ra	1.60×10^3 y	α s	4.68	5%	γ	0.186	100%
			4.87	95%			
^{235}U	7.038×10^8 y	α	4.68	$\approx 100\%$	γ s	numerous	<0.400%
^{238}U	4.468×10^9 y	α s	4.22	23%	γ	0.050	23%
			4.27	77%			
^{237}Np	2.14×10^6 y	α s	numerous		γ s	numerous	<0.250%
			4.96 (max.)				
^{239}Pu	2.41×10^4 y	α s	5.19	11%	γ s	7.5×10^{-5}	73%
			5.23	15%		0.013	15%
			5.24	73%		0.052	10%
						others	
^{243}Am	7.37×10^3 y	α s	Max. 5.44		γ s	0.075	
			5.37	88%		others	
			5.32	11%			

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