



Some Commonly Used Radioisotopes, Their Physical Characteristics and Their Relative Radiotoxicities*

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I. Low Hazard Radioisotopes: (The level of intermediate activity for laboratory use in this group is 1-30 millicuries.)

	Radioisotope	Half-Life	Type of Ionizing Radiation Emitted	Energy of Radiation
1	H-3 (Tritium)	12.35 years	Beta	0.014 MeV
2	C-14	5730 years	Beta	0.15 MeV

II. Medium Hazard Radioisotopes: (The level of intermediate activity for laboratory use in this group is 100 microcuries to 3 millicuries.)

	Radioisotope	Half-Life	Type of Ionizing Radiation Emitted	Energy of Radiation	MR/hr-mCi at 1 meter
1	Na-24	15 hours	Beta Gamma	1.39 MeV 2.75 MeV	1.84
2	K-42	12.4 hours	Beta Gamma	3.5 MeV	0.15
3	Hg-197	64 hours	Gamma	0.19 MeV	0.04
4	P-32	14.3 days	Beta	1.7 MeV	
5	S-35	87 days	Beta	0.167 MeV	
6	Cl-36	3 X 10 ⁵ years	Beta	0.714 MeV	
7	Fe-59	45 days	Beta Gamma	0.46 MeV 1.10 MeV	0.64
8	Rb-86	18.6 days	Beta Gamma	1.78 MeV 1.08 MeV	0.05
9	Sr-89	50 days	Beta	1.46 MeV	
10	Au-198	2.7 days	Beta Gamma	0.96 MeV 0.41 MeV	0.23
11	Hg-203	46 days	Beta Gamma	0.21 MeV 0.28 MeV	0.13
12	Cr-51	27.8 days	Gamma	0.32 MeV	0.018

13	P-33	25.2 days	Beta	0.248 MeV	
14	Ce-141	32.5 days	Beta Gamma	0.581 MeV 0.145 MeV	0.035
15	Nb-95	35 days	Gamma	0.765 MeV	0.42
16	Sr-85	64 days	Gamma	0.514 MeV	0.30

III. High Hazard Radioisotopes: (The level of intermediate activity for laboratory use in this group is 10 to 300 microcuries.)

	Radioisotope	Half-Life	Type of Ionizing Radiation Emitted	Energy of Radiation	MR/hr-mCi at 1 meter
1	Na-22	2.6 years	Positron Gamma	0.54 MeV 1.27 MeV	1.20
2	Ca-45	164 days	Beta	0.254 MeV	
3	Sc-46	84 days	Gamma Gamma	0.889 MeV 1.12 MeV	1.09
4	Co-60	5.24 years	Beta Gamma Gamma	0.312 MeV 1.17 MeV 1.33 MeV	1.32
5	Sr-90	28.4 years	Beta	0.545 MeV	
6	I-131	8 days	Beta Gamma	0.6 MeV 0.364 MeV	0.22
7	I-125	60 days	Gamma	0.035 MeV	0.07
8	Cs-137	30 years	Beta Gamma	0.514 MeV 0.667 MeV	0.33

IV. Very High Hazard Radioisotopes: (The level of intermediate activity for laboratory use in this group is 1 to 10 microcuries.)

	Radioisotope	Half-Life	Type of Ionizing Radiation Emitted	Energy of Radiation	MR/hr-mCi at 1 meter
1	Pb-210	22 years	Beta Gamma	0.017 MeV 0.0465 MeV	
2	Po-210	138 days	Alpha	5.3 MeV	
3	Ra-226	1620 years	Alpha	4.7 MeV	0.825