

Common Radionuclides

These are the principal isotopes which occur from the fission of uranium, their longevity, type of radiation they emit, and their abundance at the time they leave the reactor.

Atomic # (electrons)	Element	Abbr	Isotope Mass # (protons + neutrons)	Half-Life	Radiation Type	Activity (curies per metric ton of uranium)
1	Hydrogen (Tritium)	H	3	12 years	Beta	71
4	Beryllium	Be	10	2 700 000 years	Beta	-
6	Carbon	C	14	5 770 years	Beta	-
20	Calcium	Ca	41	100 000 years	Positron	-
26	Iron	Fe	59	45 days	Beta	-
27	Cobalt	Co	60	5 years	Beta, Gamma	-
28	Nickel	Ni	59	80 000 years	Positron	-
30	Zinc	Zn	65	145 days	Beta, Gamma	-
34	Seelenium	Se	79	70 000 years	Beta	0 398
36	Krypton	Kr	85	10 years	Beta, Gamma	11 300
36	Krypton	Kr	90	33 sec	Beta, Gamma	-
37	Rubidium	Rb	87	47 000 000 000 years	Beta	-
38	Strontium	Sr	89	53 days	Beta	718 000
38	Strontium	Sr	90	28 years	Beta	77 600
39	Yttrium	Y	90	64 hours	Beta, Gamma	80 700
39	Yttrium	Y	91	58 days	Beta	938 000
40	Zirconium	Zr	93	950 000 years	Beta	1 89
40	Zirconium	Zr	95	65 days	Beta	1 370 000
41	Niobium	Nb	93m	4 years	Gamma	0 145
41	Niobium	Nb	95	35 days	Beta, Gamma	1 380 000
42	Molybdenum	Mo	93	10 000 years	Positron	-
43	Technetium	Tc	99	210 000 years	Beta, Gamma	14 3
44	Ruthenium	Ru	103	40 days	Beta	1 220 000
44	Ruthenium	Ru	106	1 year	Beta	545 000
46	Palladium	Pd	107	7 000 000 years	Beta, Gamma	0 11
47	Silver	Ag	110m	249 days	Beta, Gamma	3 680
50	Tin	Sn	126	100 000 years	Beta	0 546
51	Antimony	Sb	125	2 years	Beta	8 700
52	Tellurium	Te	127m	105 days	Gamma, Beta	15 400
52	Tellurium	Te	129	67 min	Beta	337 000
53	Iodine	I	129	17 200 000 years	Beta, Gamma	0 037
53	Iodine	I	131	8 days	Beta, Gamma	861 000
53	Iodine	I	134	52 min	Beta, Gamma	-
54	Xenon	Xe	133	5 days	Beta, Gamma	-
54	Xenon	Xe	137	4 min	Beta, Gamma	-
54	Xenon	Xe	138	14 minutes	Beta, Gamma	-
55	Cesium	Cs	134	2 years	Beta, Positron	240 000
55	Cesium	Cs	135	2 000 000 years	Beta, Gamma	0 285
55	Cesium	Cs	137	30 years	Beta, Gamma	108 000
58	Barium	Ba	144	285 days	Beta	1 110 000
61	Promethium	Pm	147	2 years	Beta, Gamma	102 000
63	Eurprium	Eu	154	16 years	Beta, Positron, Gamma	6 990
63	Eurprium	Eu	155	2 years	Beta	7 480
82	Lead	Pb	210	21 years	Beta, Alpha	-
83	Bismuth	Bi	210 m	3 000 000 years	Alpha	-
84	Polonium	Po	210	138 days	Alpha	-
86	Radon	Rn	220	1 min	Alpha, Positron	0 002
86	Radon	Rn	222	4 days	Alpha	-
88	Radium	Ra	224	4 days	Alpha	0 002
88	Radium	Ra	226	15 days	Beta	-
88	Radium	Ra	226	1 622 years	Alpha	-
90	Thorium	Th	228	2 years	Alpha	0 002
90	Thorium	Th	229	7 340 years	Alpha	-
90	Thorium	Th	230	80 000 years	Alpha	-
90	Thorium	Th	232	14 years	Alpha	-
90	Thorium	Th	234	24 days	Beta	0 314
91	Protactinium	Pa	226	2 min	Alpha, Positron	-
92	Uranium	U	233	162 000 years	Alpha	-
92	Uranium	U	234	248 000 years	Alpha	0 751
92	Uranium	U	235	713 000 000 years	Alpha	0 017
92	Uranium	U	236	23 900 000 years	Alpha	0 288
92	Uranium	U	238	4 510 000 000 years	Alpha	0 314
93	Neptunium	Np	237	2 200 000 years	Alpha	0 333
94	Plutonium	Pu	236	285 years	Alpha	0 350
94	Plutonium	Pu	238	86 years	Alpha	2 720
94	Plutonium	Pu	239	24 390 years	Alpha	318
94	Plutonium	Pu	240	6 580 years	Alpha	477
94	Plutonium	Pu	241	13 years	Beta, Alpha	105 000
94	Plutonium	Pu	242	379 000 years	Alpha	1 38
94	Plutonium	Pu	243	5 years	Alpha	-
94	Plutonium	Pu	244	76 000 000 years	Alpha	-
95	Americium	Am	241	458 years	Alpha	85 9
95	Americium	Am	242	16 hours	Beta, Positron, Alpha, Gamma	63 400
95	Americium	Am	243	7 950 years	Alpha	18 1
96	Curium	Cm	242	163 days	Alpha	30 400
96	Curium	Cm	243	35 years	Alpha	1 71
96	Curium	Cm	244	18 years	Alpha	2 44
96	Curium	Cm	247	40 000 000 years	Alpha	-

LOW-LEVEL RELEASE SCENARIO

IF A RADIOACTIVE PLUME IS OVERHEAD WHEN IT RAINS, THE POTENTIAL DOSAGE IF REPORTED IN PICOCURIES/LITER OF WATER OR MILK WILL TELL YOU WHAT DANGERS YOU MAY FACE (NOTE THE EFFECTS ON THE CHART ON THE REVERSE SIDE OFR CHILDREN). CONSIDERING THE READING AROUND THE COUNTRY AFTER CHERNOBYL, THE DANGERS FOR THE U.S ARE CLEARLY QUITE SMALL, EXCEPT FOR PREGNANT MOTHERS. DR. LEONARD STERNGLASS HAS SAID THAT LEVELS AS LOW AS 50 PICOCURIES/LITER MAY CAUSE MALFORMATIONS TO UNBORN CHILDREN STILL IN THE WOMB. SINCE THERE IS NO WAY OF KNOWING FOR SURE IF A PARTICULAR INDIVIDUAL WILL BE EFFECTED, WE SUGGEST THAT PREGNANT MOTHERS RESTRICT THEIR USE OF FRESH DAIRY PRODUCTS (CHEESE IS OKAY) AND USE DISTILLED OR FILTERED WATER UNTIL THE HALF-LIFE OF THE ISOTOPE IS BELOW THE STERNGLASS LEVEL.

IT IS CLEAR THAT CONCERN FOR PERSONAL SAFETY IS IMPORTANT. THE BEST WAY TO ASSURE THAT HIGHER DOSES DON'T EVER REACH YOU, IS BY ACTIVELY HELPING TO SHUT DOWN UNSAFE REACTORS IN THIS COUNTRY, SO THAT THE ISOTOPES LISTED TO THE LEFT AND THE HUNDREDS MORE THAT WOULD EFFECT AN AREA CLOSEST TO A MELT-DOWN NEVER HAVE A CHANCE TO ESCAPE.

CALL YOUR LOCAL MEDIA AND DEMAND AN EDUCATION FORUM WITH THE NON-ECONOMIC SIDE, THE HUMAN SIDE BEING PRESENTED. STAY IN TOUCH WITH GROUPS THAT WILL LET YOU KNOW WHAT YOU CAN DO.