

MAJOR - RADIATION EMISSIONS
from (PAG) Protective Action Guidelines of Listed NUCLIDES

Nuclide	Alpha	Alpha	Beta	Beta or Positron	Gamma or X-rays	%	Gamma or X-rays	%	Gamma or X-rays	%	Nex Beta	Nex Gen	Half Life
	Mev	Mev	Kev	Kev	Kev		Kev		Kev				
Nb-95			160		765	100					-	OP	35d
Mo-99			1230		740	12	140	90	(From TC-99m)		Y	Y	66h
Tc-99			292									OP	2 x 10 ⁵ y
Ru-103			210		497	88						OP	40d
Ru/Rh-106			3540	-39	512	21	622	11			Y	Y	368d-30sec
Ag-110m			530 (31%)	-87	650-1500	200					-	OP	255d
Ag-110			2870		658	4					Y	Y	24sec
Cd-109					88	100					-	-	453d
Cd-113m			580								L	L	14Y
In-114m					192	17	558	3.5	724	3.5	-	-	50d
Sn-113					255	2	(See In113m daughters)				-	-	115d
Sn-123			1420		1080	weak					Y	Y	125d
Sn-125			2340		342-2230	10					Y	Y	10d
Sn-126					60	100	67	100	92	100	-	-	10 ⁵ y
Sb-124			2310		603	97	1692	50	720	14	Y	Y	60d
Sb-126			1900		410	100	690	100			Y	Y	12d
Sb-127			1500		60-1340						Y	Y	93h
Te-127			700								Y	Y	9.4h
Te-129			1450		455	15	27	19			Y		68m
Te-129m			1600		690	6					Y		34d
Te-131m			2460 (5%)	(-)900	780	60	850	31	1206	11	Y	Y	30h
Te-132			220		230	90	53	17	(See I 132m)		-	OP	77h
I-132			2120		670	144	773	89	955	22	Y		2.2h
I-125					31	26	27	114	35	7	-	-	60d
I-129			150		40	9					-	OP	1.7 x 10 ⁷ y
I-131			606		364	82	637	7	(See Xe 131m)		Y		8d
Cs-134			662		605	98	796	99			Y		2y
Cs-136			341		818	100	1050	82	1250	20	-	OP	14d -2.5m
Cs/Ba-137			514	-1174 (7%)	662	85					Y	Y	30y
Ba-133					356	69	302	14	382	8	-	-	7.2y
Ba-140			1020		535	34			(See La-140)		Y	Y	13d
La-140			1360	-2175 (6%)	1596	96	487	40	815	19	Y	Y	40h
Ce-141			581		145	48	(Pr X-rays)				L	L	32d
Ce-143			1390		293	46	725	8			Y	Y	33h

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Nuclide	Alpha	Alpha	Beta	Beta or Positron	Gamma or X-rays	%	Gamma or X-rays	%	Fission per Decay	Neutrons per Decay	Nex Beta	Nex Gen	Half Life
	Mev	Mev	Kev	Kev	Kev		Kev						
Ra-226	4.78	4.6			186	4					-	Y	1600y
Ac-227	4.95(1%)		46		166		190				-	OPP	22y
Th-227	6.04	5.98,5.7			237	15	31	8			-	Y	18d
U-235	4.4	4.6			185	54	143	11	7.0 x 10 ⁻⁹ %	1.86	-	Y	7 x 10 ⁸ y
U-238	4.20	4.15			(Th-L-Xrays)				5.4 x 10 ⁻⁵ %	2.07	-	Y	4.5 x 10 ⁹ y
Np-237	4.78	4.65			86	14					-	Y	2 x 10 ⁶ y
Np-239			437	-713 (11%)	278	14	106	23			L	L	2d
Pu-236	5.77	5.72									-	Y	2.8y
Pu-238	5.50	5.46									-	Y	86y
Pu-239	5.16	5.11							4.4 x 10 ⁻¹⁰ %	2.16	-	Y	24400y
Pu-240	5.17	5.12							5.0 x 10 ⁻⁶ %	2.21	-	Y	6500y
Pu-241	4.9(10-3%)		21								-	Y	13y
Pu-242	4.9	4.86									-	Y	3.8 x 10 ⁵ y
Am-241	5.49	5.44			60	36					-	Y	460y
Am-242m	5.21 (0.4%)				49	0.20%					-	Y	152y
Am-243	5.28	5.23			75	50					-	Y	8000y
Cm-242	6.12	6.07									-	OPP	162d
Cm-243	5.74	6.08			228	12	278	14			-	Y	32y
Cm-244	5.81	5.77									-	Y	17.6y
Cm-245	5.36	5.31			173	14					-	Y	9300y
Cm-246	5.39	5.34									-	Y	5500y
Cf-252	6.12	6.08			(Cm-L X-Rays)				3.09%	3.73	-	Y	2.6y
					Y= Yes Standard								
					L= Requires Long Count Time								
					OPP/OP = Optional Feature								