

Revisions to the Protective Action Guides Manual for Radiological Incidents  
2009

**Table 4-1.** Derived Response Levels (DRLs) Associated with a Committed Effective Dose (CED) of 0.5 rem Resulting from 1 Year of Ingestion

DRLs (pCi/L)			DRLs (pCi/L)			DRLs (pCi/L)		
Radionuclide	Without Radioactive Decay	With Radioactive Decay Only	Radionuclide	Without Radioactive Decay	With Radioactive Decay Only	Radionuclide	Without Radioactive Decay	With Radioactive Decay Only
H-3	4.42E+06	4.54E+06	Sb-124	7.29E+04	3.11E+05	Bi-210	1.41E+05	7.11E+06
C-14	3.19E+05	3.19E+05	Sb-126	7.53E+04	1.54E+06	Po-210	1.53E+02	3.33E+02
Na-22	5.80E+04	6.61E+04	Sb-127	1.11E+05	7.28E+06	Ra-226	6.59E+02	6.59E+02
P-32	7.71E+04	1.37E+06	Te-127	1.10E+06	7.12E+08	Ac-227	5.76E+02	5.85E+02
P-33	7.53E+05	7.50E+06	Te-129	2.94E+06	1.53E+10	Th-227	2.05E+04	2.77E+05
S-35	2.39E+05	7.31E+05	Te-129m	6.23E+04	4.68E+05	U-235	3.96E+03	3.96E+03
Cl-36	1.99E+05	1.99E+05	Te-131m	9.49E+04	1.92E+07	U-238	4.15E+03	4.15E+03
K-40	3.00E+04	3.00E+04	Te/I-132	4.86E+04	3.78E+06	Np-237	1.73E+03	1.73E+03
Ca-45	2.60E+05	5.13E+05	I-125	1.20E+04	5.12E+04	Np-239	2.32E+05	2.49E+07
Sc-46	1.25E+05	3.97E+05	I-129	1.75E+03	1.75E+03	Pu-236	2.13E+03	2.40E+03
Ti-44	3.19E+04	3.20E+04	I-131	8.49E+03	2.67E+05	Pu-238	8.12E+02	8.15E+02
V-48	9.34E+04	1.46E+06	Cs-134	9.63E+03	1.13E+04	Pu-239	7.37E+02	7.37E+02
Cr-51	4.79E+06	4.37E+07	Cs-136	6.01E+04	1.16E+06	Pu-240	7.37E+02	7.37E+02
Mn-54	2.57E+05	3.74E+05	Cs/Ba-137	1.36E+04	1.38E+04	Pu-241	3.89E+04	3.99E+04
Fe-55	5.57E+05	6.31E+05	Ba-133	1.21E+05	1.25E+05	Pu-242	7.77E+02	7.77E+02
Fe-59	1.03E+05	5.91E+05	Ba-140	7.12E+04	1.41E+06	Am-241	9.07E+02	9.08E+02
Co-58	2.47E+05	9.09E+05	La-140	9.16E+04	1.38E+07	Am-242m	9.69E+02	9.71E+02
Co-60	5.39E+04	5.76E+04	Ce-141	2.60E+05	2.03E+06	Am-243	9.12E+02	9.12E+02
Ni-63	1.22E+06	1.22E+06	Ce-143	1.65E+05	3.04E+07	Cm-242	1.58E+04	3.12E+04
Zn-65	4.69E+04	7.54E+04	Ce/Pr-144	3.53E+04	5.33E+04	Cm-243	1.24E+03	1.26E+03
Ge-68	1.44E+05	2.16E+05	Nd-147	1.71E+05	3.94E+06	Cm-244	1.51E+03	1.53E+03
Se-75	7.09E+04	1.70E+05	Pm-145	1.60E+06	1.63E+06	Cm-245	8.90E+02	8.90E+02
Rb-86	6.59E+04	8.92E+05	Pm-147	7.09E+05	8.07E+05	Cm-246	8.94E+02	8.94E+02
Sr-89	7.20E+04	3.63E+05	Pm-149	1.86E+05	2.13E+07	Cf-252	1.95E+03	2.21E+03
Sr-90	6.65E+03	6.73E+03	Pm-151	2.53E+05	5.41E+07			
Y-90	6.88E+04	6.53E+06	Sm-151	1.89E+06	1.89E+06			
Y-91	7.81E+04	3.41E+05	Eu-152	1.35E+05	1.39E+05			
Zr-93	1.67E+05	1.67E+05	Eu-154	9.07E+04	9.43E+04			
Zr-95	1.92E+05	7.73E+05	Eu-155	5.66E+05	6.07E+05			
Nb-94	1.06E+05	1.06E+05	Gd-153	6.65E+05	1.07E+06			
Nb-95	3.14E+05	2.26E+06	Tb-160	1.15E+05	4.15E+05			
Mo-99	3.06E+05	2.81E+07	Ho-166m	9.34E+04	9.35E+04			
Tc-99	2.88E+05	2.88E+05	Tm-170	1.40E+05	3.20E+05			
Ru-103	2.52E+05	1.62E+06	Yb-169	2.60E+05	2.06E+06			
Ru/Rh-106	2.64E+04	3.65E+04	Hf-181	1.65E+05	9.84E+05			
Ag-110m	6.65E+04	1.06E+05	Ta-182	1.20E+05	2.97E+05			
Cd-109	9.26E+04	1.20E+05	W-187	2.94E+05	7.47E+07			
Cd-113m	8.05E+03	8.26E+03	Ir-192	1.35E+05	4.77E+05			
In-114m	4.54E+04	2.33E+05	Au-198	1.80E+05	1.69E+07			
Sn-113	2.51E+05	6.20E+05	Hg-203	9.69E+04	5.29E+05			
Sn-123	8.82E+04	2.01E+05	Tl-204	1.56E+05	1.70E+05			
Sn-125	6.01E+04	1.58E+06	Pb-210	2.65E+02	2.70E+02			
Sn-126	3.87E+04	3.87E+04	Bi-207	1.46E+05	1.47E+05			