Kansas Administrative Regulations

Department of Health and Environment

Article 35.—Radiation—Part 13. Contingency Planning for Response to Radioactive Material Emergencies.

28-35-411. Table of quantities of radioactive material; need for contingency plan.

Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release

Radioactive Material[1]	Release Fraction	Quantity (GBq)	Quantity (Ci)
Actinium-228	0.001	148,000	4,000
Americium-241	0.001	74	2
Americium-242	0.001	74	2
Americium-243	0.001	74	2
Antimony-124	0.01	148,000	4,000
Antimony-126	0.01	222,000	6,000
Barium-133	0.01	370,000	10,000
Barium-140	0.01	1,110,000	30,000
Bismuth-207	0.01	185,000	5,000
Bismuth-210	0.01	22,200	600
Cadmium-109	0.01	37,000	1,000
Cadmium-113	0.01	2,960	80
Calcium-45	0.01	740,000	20,000
Californium-252	0.001	333	9 (20 mg)
Carbon-14 (Non-CO)	0.01	1,850,000	50,000
Cerium-141	0.01	370,000	10,000
Cerium-144	0.01	11,100	300
Cesium-134	0.01	74,000	2,000

Cesium-137	0.01	111,000	3,000
Chlorine-36	0.5	3,700	100
Chromium-51	0.01	11,100,000	300,000
Cobalt-60	0.001	185,000	5,000
Copper-64	0.01	7,400,000	200,000
Curium-242	0.001	2,220	60
Curium-243	0.001	110	3
Curium-244	0.001	148	4
Curium-245	0.001	74	2
Europium-152	0.01	18,500	500
Europium-154	0.01	14,800	400
Europium-155	0.01	111,000	3,000
Gadolinium-153	0.01	185,000	5,000
Gold-198	0.01	1,110,000	30,000
Hafnium-172	0.01	14,800	400
Hafnium-181	0.01	259,000	7,000
Holmium-166m	0.01	3,700	100
Hydrogen-3	0.5	740,000	20,000
Indium-114m	0.01	37,000	1,000
Iodine-124	0.5	370	10
Iodine-125	0.5	370	10
Iodine-131	0.5	370	10
Indium-114m	0.01	37,000	1,000
Iridium-192	0.001	1,480,000	40,000
Iron-55	0.01	1,480,000	40,000
Iron-59	0.01	259,000	7,000
Krypton-85	1.0	222,000,000	6,000,000
Lead-210	0.01	296	8
Manganese-56	0.01	2,220,000	60,000
Mercury-203	0.01	370,000	10,000
Molybdenum-99	0.01	1,110,000	30,000
Neptunium-237	0.001	74	2

Nickel-63	0.01	740,000	20,000
Niobium-94	0.01	11,100	300
Phosphorus-32	0.5	3,700	100
Phosphorus-33	0.5	37,000	1,000
Polonium-210	0.01	370	10
Potassium-42	0.01	333,000	9,000
Promethium-145	0.01	148,000	4,000
Promethium-147	0.01	148,000	4,000
Radium-226	0.001	3,700	100
Ruthenium-106	0.01	7,400	200
Samarium-151	0.01	148,000	4,000
Scandium-46	0.01	111,000	3,000
Selenium-75	0.01	370,000	10,000
Silver-110m	0.01	37,000	1,000
Sodium-22	0.01	333,000	9,000
Sodium-24	0.01	370,000	10,000
Strontium-89	0.01	111,000	3,000
Strontium-90	0.01	3,330	90
Sulfur-35	0.5	3,330	900
Technetium-99	0.01	370,000	10,000
Technetium-99m	0.01	14,800,000	400,000
Tellurium-127m	0.01	185,000	5,000
Tellurium-129m	0.01	185,000	5,000
Terbium-160	0.01	148,000	4,000
Thulium-170	0.01	148,000	4,000
Tin-113	0.01	370,000	10,000
Tin-123	0.01	111,000	3,000
Tin-126	0.01	37,000	1,000
Titanium-44	0.01	3,700	100
Vanadium-48	0.01	259,000	7,000
Xenon-133	1.0	33,300,000	900,000
Yttrium-91	0.01	74,000	2,000

Zinc-65	0.01	185,000	5,000
Zirconium-93	0.01	14,800	400
Zirconium-95	0.01	185,000	5,000
Any other betagamma emitter	0.01	370,000	10,000
Mixed fission products	0.01	37,000	1,000
Contaminated equipment: beta-gamma emitters	0.001	370,000	10,000
Irradiated material, in any form other than solid noncombustible	0.01	370,000	10,000
Irradiated material that is solid and noncombustible	0.001	370,000	10,000
Mixed radioactive waste: beta-gamma emitters	0.01	37,000	1,000
Packaged mixed waste[2]: beta-gamma emitters	0.001	370,000	10,000
Any other alpha emitter	0.001	74	2
Contaminated equipment: alpha emitters	0.0001	740	20
Packaged waste[2]: alpha emitters	0.0001	740	20

[1] For combinations of radioactive materials, the licensee shall be required to consider whether a contingency plan is needed if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed in this table for that

material exceeds one.

[2] Waste packaged in type B containers shall not require a contingency plan.

(Authorized by K.S.A. 48-1607; implementing K.S.A. 48-1602; effective Dec. 30, 2005; amended March 18, 2011.)

***** Authenticated Kansas Administrative Regulation *****