

902 KAR 100:041. Quantities of radioactive materials requiring consideration of the need for an emergency plan.

RELATES TO: KRS 211.842-211.852, 211.990(4), 10 C.F.R. 30.32, 30.72, 42 U.S.C. 11001

STATUTORY AUTHORITY: KRS 13B.170, 194A.050, 211.090(3), 211.844, 42 U.S.C. 11001

NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 authorizes the Cabinet for Health Services to provide by administrative regulation for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation, and the handling and disposal of radioactive waste. This administrative regulation establishes requirements for emergency plans for responding to a release of radioactive material or waste, and shall apply to a person, applicant, or licensee required to submit an emergency plan.

Section 1. General Requirements. A license application to possess, or a license authorizing the possession of, radioactive materials in unsealed form, on foils or plated sources, or sealed in glass, in excess of the quantities established in Section 4(1) of this administrative regulation shall contain:

- (1) An evaluation showing the maximum dose to a person off site due to a release of radioactive materials would not exceed one (1) rem effective dose equivalent or five (5) rems to the thyroid; or
- (2) An emergency plan for responding to a release of radioactive material.

Section 2. Factors Supporting an Evaluation. One (1) or more of the following factors may be used to support an evaluation submitted pursuant to Section 1(1) of this administrative regulation:

- (1) The radioactive material is physically separated so that only a portion may be involved in an accident.
- (2) The radioactive material, or part of the radioactive material, would not be subject to release during an accident because of, the material's storage or packaging.
- (3) The release fraction in the respirable size range may be lower than the release fraction shown in Section 4(1) of this administrative regulation, due to the chemical or physical form of the material.
- (4) The solubility of the radioactive material may reduce the dose received.
- (5) Facility design or engineered safety features in the facility may cause the release fraction to be lower than the limits established in Section 4(1) of this administrative regulation.
- (6) Operating restrictions or procedures may prevent a release fraction as large as that shown in Section 4(1) of this administrative regulation.
- (7) Other relevant factors, as determined by the cabinet, may affect the evaluation appropriate for the specific facility.

Section 3. Emergency Plan Information.

- (1) An emergency plan for responding to a release of radioactive material submitted pursuant to Section 1(2) of this administrative regulation shall include:
 - (a) Facility description. A brief description of the licensee's facility and area near the site.
 - (b) Types of accidents. An identification of each type of radioactive materials accident for which protective actions may be needed.
 - (c) Classification of accidents. A classification system for classifying accidents as alerts or site area emergencies.

- (d) Detection of accidents. Identification of the means of detecting each type of accident in a timely manner.
- (e) Mitigation of consequences. A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers on site, and the program for maintaining the equipment.
- (f) Assessment of a release. A brief description of the methods and equipment to assess releases of radioactive materials.
- (g) Responsibilities. A brief description of the responsibilities of licensee personnel if an accident occurs, including identification of personnel responsible for promptly notifying off site response organizations and the Radiation Health and Toxic Agents Branch, and responsibilities for developing, maintaining, and updating the plan.
- (h) Notification and coordination. A brief description of the means to promptly notify off site response organizations and request off site assistance, including medical assistance for the treatment of contaminated or injured on site workers, if appropriate.
1. A control point shall be established.
 2. Unavailability of personnel, parts of a facility, and equipment shall not exempt the licensee from notification and coordination requirements.
 3. The licensee shall notify:
 - a. Appropriate off site response organizations immediately after the licensee declares an emergency; and
 - b. The Radiation Health and Toxic Agents Branch within one (1) hour.
- (i) Information to be communicated. A brief description of the information to be given to off site response organizations and the Radiation Health and Toxic Agents Branch, including:
1. Facility status;
 2. Radioactive releases; and
 3. Recommended protective action, if necessary.
- (j) Training. A brief description of the frequency, performance objectives, and licensee's plan for training workers to respond to an emergency, including special instructions and orientation tours offered by licensee to fire, police, medical, and other emergency personnel. Training shall:
1. Familiarize personnel with site-specific emergency procedures; and
 2. Thoroughly prepare site personnel for responsibilities in the event of accident scenarios postulated as most probable for the specific site, including the use of team training for the scenarios.
- (k) Safe shutdown. A brief description of the means of restoring the facility to a safe condition after an accident.
- (l) Exercises.
1. Provisions for conducting quarterly communication checks with off site response organizations, and biennial on site exercises to test response to simulated emergencies.
 - a. Quarterly communication checks with off site response organizations shall include the check and update of necessary telephone numbers.
 - b. The licensee shall invite off site response organizations to participate in the biennial exercises. Participation of off site response organizations in biennial exercises, although recommended, is not required.
 2. Exercises shall use accident scenarios postulated as most probable for the specific site, and the scenarios shall not be known to most exercise participants.
 3. The licensee shall critique each exercise using individuals without direct implementation responsibility for the plan. Critiques of exercises shall evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response.

4. Deficiencies found by the critiques shall be corrected.

(m) Hazardous chemicals. A certification stating the applicant has met responsibilities pursuant to 42 USC 11001, Emergency Planning and Community Right-to-Know Act of 1986, if applicable to the applicant's activities at the proposed place of use of the radioactive material.

(2) The licensee shall allow off site accident response organizations sixty (60) days to comment on the licensee's emergency plan before submitting the plan to Radiation Health and Toxic Agents Branch. The licensee shall provide comments received within the sixty (60) days to the Radiation Health and Toxic Agents Branch with the emergency plan.

Section 4. Quantities of Radioactive Materials.

(1) The following table establishes the quantities of radioactive materials requiring consideration of the need of an emergency plan for responding to a release:

| Radioactive Material | Release fraction | Quantity (curies) |
|----------------------|------------------|-------------------|
| Actinium-228 | 0.001 | 4,000 |
| Americium-241 | .001 | 2 |
| Americium-242 | .001 | 2 |
| Americium-243 | .001 | 2 |
| Antimony-124 | .01 | 4,000 |
| Antimony-126 | .01 | 6,000 |
| Barium-133 | .01 | 10,000 |
| Barium-140 | .01 | 30,000 |
| Bismuth-207 | .01 | 5,000 |
| Bismuth-210 | .01 | 600 |
| Cadmium-109 | .01 | 1,000 |
| Cadmium-113 | .01 | 80 |
| Calcium-45 | .01 | 20,000 |
| Californium-252 | .001 | 9(20 mg) |
| Carbon-14 Non CO | .01 | 50,000 |
| Cerium-141 | .01 | 10,000 |
| Cerium-144 | .01 | 300 |
| Cesium-134 | .01 | 2,000 |
| Cesium-137 | .01 | 3,000 |
| Chlorine-36 | .5 | 100 |
| Chromium-51 | .01 | 300,000 |
| Cobalt-60 | .001 | 5,000 |
| Copper-64 | .01 | 200,000 |
| Curium-242 | .001 | 60 |
| Curium-243 | .001 | 3 |
| Curium-244 | .001 | 4 |
| Curium-245 | .001 | 2 |
| Europium-152 | .01 | 500 |
| Europium-154 | .01 | 400 |

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|----------------|------|-----------|
| Europium-155 | .01 | 3,000 |
| Germanium-68 | .01 | 2,000 |
| Gadolinium-153 | .01 | 5,000 |
| Gold-198 | .01 | 30,000 |
| Hafnium-172 | .01 | 400 |
| Hafnium-181 | .01 | 7,000 |
| Holmium-166m | .01 | 100 |
| Hydrogen-3 | .5 | 20,000 |
| Iodine-125 | .5 | 10 |
| Iodine-131 | .5 | 10 |
| Indium-114m | .01 | 1,000 |
| Iridium-192 | .001 | 40,000 |
| Iron-55 | .01 | 40,000 |
| Iron-59 | .01 | 7,000 |
| Krypton-85 | 1.0 | 6,000,000 |
| Lead-210 | .01 | 8 |
| Manganese-56 | .01 | 60,000 |
| Mercury-203 | .01 | 10,000 |
| Molybdenum-99 | .01 | 30,000 |
| Neptunium-237 | .001 | 2 |
| Nickel-63 | .01 | 20,000 |
| Niobium-94 | .01 | 300 |
| Phosphorus-32 | .5 | 100 |
| Phosphorus-33 | .5 | 1,000 |
| Polonium-32 | .01 | 10 |
| Potassium-42 | .01 | 9,000 |
| Promethium-145 | .01 | 4,000 |
| Promethium-147 | .01 | 4,000 |
| Ruthenium-106 | .01 | 200 |
| Samarium-151 | .01 | 4,000 |
| Scandium-46 | .01 | 3,000 |
| Selenium-75 | .01 | 10,000 |
| Silver-110m | .01 | 1,000 |
| Sodium-22 | .01 | 9,000 |
| Sodium-24 | .01 | 10,000 |
| Strontium-89 | .01 | 3,000 |
| Strontium-90 | .01 | 90 |
| Sulfur-35 | .5 | 900 |
| Technetium-99 | .01 | 10,000 |
| Technetium-99m | .01 | 400,000 |
| Tellurium-127m | .01 | 5,000 |
| Tellurium-129m | .01 | 5,000 |

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| Terbium-160 | .01 | 4,000 |
| Thulium-170 | .01 | 4,000 |
| Tin-113 | .01 | 10,000 |
| Tin-123 | .01 | 3,000 |
| Tin-126 | .01 | 1,000 |
| Titanium-44 | .01 | 100 |
| Vanadium-48 | .01 | 7,000 |
| Xenon-133 | 1.0 | 900,000 |
| Yttrium-91 | .01 | 2,000 |
| Zinc-65 | .01 | 5,000 |
| Zirconium-93 | .01 | 400 |
| Zirconium-95 | .01 | 5,000 |
| Other beta-gamma emitter | .01 | 10,000 |
| Mixed corrosion products | .01 | 10,000 |
| Mixed fission products | .01 | 1,000 |
| Contaminated equipment beta gamma | .001 | 10,000 |
| Irradiated material, forms other than solid noncombustible | .01 | 1,000 |
| Irradiated material, solid noncombustible | .001 | 10,000 |
| Mixed radioactive waste, beta-gamma | .01 | 1,000 |
| Packaged mixed waste, beta-gamma | .001 | 10,000 |
| Other alpha emitter | .001 | 2 |
| Contaminated equipment, alpha | .0001 | 20 |
| Packaged waste, alpha | .0001 | 20 |

(2) For a combination of radioactive materials, consideration of the need for an emergency plan shall be required if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed for that material in subsection (1) of this section exceeds one (1).

(3) Waste packaged in Type B containers shall not require an emergency plan.

(20 Ky.R. 2511; eff. 4-11-1994; 26 Ky.R. 2389; 27 Ky.R. 800; eff. 9-11-2000; Crt eff. 8-16-2019.)