Kansas Administrative Regulations

Department of Health and Environment

Article 35.—Radiation—Part 1. Definitions.

28-35-135s. Definitions.

As used in these regulations, each of the following terms shall have the meaning specified in this regulation:

(a) "Sanitary sewerage" means a system of public sewers to carry off waste water and refuse. This term shall exclude sewage treatment facilities, septic tanks, and leach fields owned or operated by the licensee or registrant.

(b) "Scattered radiation" means radiation that, during its passage through matter, is deviated in direction.

(c) "Sealed source" means any radioactive material that is permanently encased in a capsule designed to prevent the leakage or escape of the radioactive material.

(d) "Secondary dose-monitoring system" means a system that terminates irradiation if the primary system fails.

(e) "Secondary protective barrier" means a barrier sufficient to attenuate stray radiation to the required degree.

(f) "Secretary" means secretary of the department of health and environment.

(g) "Seismic area" means any area where the probability of a horizontal acceleration in rock of more than 0.3 times the acceleration of gravity in 250 years is greater than 10 percent, as designated by the U.S. geological survey.

(h) "Shallow dose equivalent" and "H_s," which apply to the external exposure of the skin or an extremity, mean the dose equivalent at a tissue depth of 0.007 centimeter (7 mg/cm^2) averaged over an area of one square centimeter.

(i) "Sheltering" means using a structure for radiation protection from an airborne plume containing radioactive material.

(j) "Shielded position" means the location within the radiographic exposure device or storage container that, by the manufacturer's design, is the proper location for storage of the sealed source.

(k) "Shielded-room radiography using radiation machines" means industrial radiography using radiation machines that meets the following conditions:

(1) Is conducted in an enclosed room, the interior of which is not occupied during radiographic operations;

(2) is shielded so that every location on the exterior meets the conditions specified in K.A.R. 28-35-214a; and

(3) is accessible only through openings that are interlocked so that the radiation machine will not operate unless all openings are securely closed.

(l) "SI" means the abbreviation for the international system of units.

(m) "Shutter" means a device attached to an X-ray tube housing assembly that can totally intercept the useful beam and that has a lead equivalency not less than that of the tube housing assembly.

(n) "Sievert" means the SI unit of any of the quantities expressed as a dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rem).

(o) "Site area emergency" means an event that could occur, is in progress, or has occurred, that could lead to a significant release of radioactive material, and that could require a response by off-site response organizations to protect persons off-site.

(p) "Site boundary" means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee or registrant.

(q) "Source" means the focal spot of the X-ray tube.

(r) "Source assembly" means an assembly that consists of the sealed source and a connector that attaches the source to the control cable.

(s) "Source changer" means a device designed and used for replacement of sealed sources in radiographic exposure devices, including those devices also used for transporting and storing sealed sources.

(t) "Source holder" means a housing or assembly into which a radioactive source is placed for the purpose of facilitating the handling and use of the source in well-logging operations.

(u) "Source-image receptor distance" and "SID" mean the distance from the source to the center of the input surface of the image receptor.

(v) "Source material" means the following:

(1) Uranium or thorium, or any combination of these, in any physical or chemical form; or

(2) ores that contain, by weight, 0.05 percent or more of uranium, thorium, or any combination of these.

The term "source material" shall not include special nuclear material.

(w) "Source material milling" means any activity that results in the production of by-product material.

(x) "Source of radiation" means any material, device, or equipment that emits or is capable of producing radiation.

(y) "Source-to-skin distance" and "SSD" mean the distance between the source and the patient's skin.

(z) "Special form radioactive material" means radioactive material that meets the following conditions:

(1) The radioactive material is a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule. The piece or capsule has at least one dimension not less than 5 mm (0.2 in).

(2) The piece or capsule meets the requirements of 10 C.F.R. 71.75, as in effect on August 19, 2020.

(3) The piece or capsule can be exempted from the requirements of 10 C.F.R. 71.75 and can continue to be used by meeting one of the following requirements:

(A) Was constructed before July 1, 1985 and designed in accordance with the requirements of 10 C.F.R. 71.4, as in effect on June 30, 1983;

(B) was constructed before April 1, 1998 and designed in accordance with the requirements of 10 C.F.R. 71.4, as in effect on March 31, 1996; or

(C) was successfully tested before September 10, 2015 in accordance with the requirements of 10 C.F.R. 71.75(d), as in effect before September 10, 2015.

(aa) "Special nuclear material" means either of the following:

(1) Plutonium, uranium-223, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the department declares by order to be special nuclear material after the nuclear regulatory commission, pursuant to the provisions of section

51 of the atomic energy act of 1954, has determined the material to be special nuclear material, except for source material; or

(2) any material artificially enriched as specified in paragraph (aa)(1), except for source material.

(bb) "Special nuclear material in quantities not sufficient to form a critical mass" means any of the following:

(1) Uranium enriched in the isotope U-235, in quantities not exceeding 350 grams of contained U-235;

(2) uranium enriched in the isotope uranium-233, in quantities not exceeding 200 grams of contained U-233;

(3) plutonium not exceeding 200 grams; or

(4) any combination of these special nuclear materials in accordance with the following formula:

$$\frac{\text{grams of contained U} - 235}{350} + \frac{\text{grams of contained U} - 233}{200} + \frac{\text{gram of Pu}}{200} \leq 1$$

The sum of the ratios for all of the kinds of special nuclear material in combination shall not exceed one.

(cc) "Spot check" means a procedure that is performed to ensure that a previous calibration continues to be valid.

(dd) "Spot film" means a radiograph that is made during a fluoroscopic examination or radiation therapy treatment to permanently record conditions that exist during the procedure.

(ee) "Spot-film device" means a device intended either to transport and position a radiographic image receptor between the radiation source and image receptor or to position a radiographic image receptor between the radiation source and image receptor. This term shall include a device intended to hold a cassette over the input end of an image intensifier for the purpose of making a radiograph.

(ff) "Stationary beam therapy" means radiation therapy without relative displacement of the useful beam and the patient during irradiation.

(gg) "Stationary X-ray equipment" means X-ray equipment that is installed in a fixed location.
(hh) "Stereotactic radiosurgery" means the use of external radiation in conjunction with a stereotactic guidance device to very precisely deliver a therapeutic dose to a tissue volume.
(ii) "Stochastic effect" means a health effect that occurs randomly and for which the probability of the occurrence of the effect, rather than the severity of the effect, is assumed to be a linear function of dose without threshold. For purposes of these regulations, "probabilistic effect" shall be considered an equivalent term.
(jj) "Storage area" means any location, facility, or vehicle that is used to store, transport, or secure a radiographic exposure device, radiation machine, storage container, or sealed source when not in use. Each storage area shall be locked or have physical barriers to prevent accidental exposure, tampering, or unauthorized removal of the device, machine, sealed source, or container.
(kk) "Storage container" means a device in which radioactive materials are transported or stored.
(ll) "Stray radiation" means the sum of leakage radiation and scattered radiation.
(mm) "Structured educational program" means an educational program designed to impart particular knowledge and practical education through interrelated studies and supervised training.
(nn) "S-tube" means a tube through which the radioactive source travels when inside a radiographic exposure device.
(oo) "Subsurface studies" means the evaluation of parameters below the surface of the earth.
(pp) "Subsurface tracer study" means the release of a substance tagged with radioactive material for the purpose of tracing the movement or position of the tagged substance in the well bore or adjacent formation.
(qq) "Survey" means an evaluation of a radiation hazard resulting from the production, use, transfer, release, disposal, or presence of sources of radiation. This term shall include a physical survey of the location of materials or equipment, or both, and either

the measurements of levels of radiation or the concentrations or quantities of radioactive materials present.

(Authorized by K.S.A. 48-1607; implementing K.S.A. 2020 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended May 4, 2018; amended April 1, 2022.)

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