# Kansas Administrative Regulations

## Department of Health and Environment

### Article 35.—Radiation—Part 1. Definitions.

**28-35-135l. Definitions.**

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

(a) "Lead equivalent" means the thickness of lead affording the same attenuation, under specified conditions, as the material in question.

(b) "Leakage radiation" means radiation emanating from the device source assembly, except for the following:

(1) The useful beam; and

(2) radiation produced when the exposure switch or timer is not activated for diagnosis or therapy.

(c) "Leakage technique factors" means the technique factors associated with the tube housing assembly that are used in measuring leakage radiation. The leakage technique factors shall be defined as follows:

(1) For diagnostic source assemblies intended for capacitor energy storage equipment, the maximum rated number of exposures in an hour for operation at the maximum rated peak tube potential, with the quantity of charge per exposure being 10 millicoulombs or the minimum obtainable from the unit, whichever is larger;

(2) for diagnostic source assemblies intended for field emission equipment rated for pulsed operation, the maximum rated number of X-ray pulses in an hour for operation at the maximum rated peak tube potential; and

(3) for all other diagnostic or therapeutic source assemblies, the maximum rated peak tube potential and the maximum rated continuous tube current for the maximum rated peak tube potential.

(d) "License" means a document issued in accordance with these regulations specifying the conditions of use of radioactive material.

(e) "Licensed or registered material" means radioactive material received, possessed, used, transferred, or disposed of under a general or specific license or registration issued by the department.

(f) "Licensee" means any person that is licensed in accordance with these regulations.

(g) "Licensing state" means any state that has been granted final designation by the conference of radiation control program directors, inc., for the regulatory control of NARM, as defined in K.A.R. 28-35-135n.

(h) "Light field" means that area of the intersection of the light beam from the beam-limiting device and one plane in the set of planes parallel to and including the plane of the image receptor in which the perimeter is the locus of points at which the illumination is one-fourth of the maximum in the intersection.

(i) "Line-voltage regulation" means the difference between the no-load and the load line potentials, expressed as a percent of the load line potential, using the following equation:

Percent line-voltage regulation = $100\ (V_n - V_1)/V_1$

where

$V_n$ = No-load line potential and

$V_1$ = Load line potential

(j) "Local component" means any part of an analytical X-ray system. This term shall include components that are struck by X-rays, including radiation source housings, port and shutter assemblies, collimators, sample holders, cameras, goniometers, detectors, and shielding.

This term shall not include power supplies, transformers, amplifiers, readout devices, and control panels.

(k) "Logging supervisor" means the individual who uses sources of radiation or provides personal supervision of the utilization of sources of radiation at a well site.

(l) "Logging tool" means a device used subsurface to perform well logging.

(m) "Lost or missing licensed or registered source of radiation" means a licensed or registered source of radiation whose location is unknown. This term shall include

licensed or registered material that has been shipped but has not reached the planned destination and whose location cannot be readily traced in the transportation system.

(n) "Lot tolerance percent defective" means the poorest quality, expressed as the percentage of defective units, in an individual inspection lot that may be accepted.

(o) "Low dose-rate remote afterloader" means a brachytherapy device that remotely delivers a dose rate of less than or equal to two grays per hour at the point or surface where the dose is prescribed.

(p) "Low specific activity material" and "LSA material" mean radioactive material with limited specific activity that is nonfissile material or is excepted under 10 C.F.R. 71.15 and that satisfies the descriptions and limits specified in these regulations. Shielding materials surrounding the LSA material shall not be considered in determining the estimated average specific activity of the package contents. The LSA material shall be classified in one of the following three groups:

(1) Group I, which shall consist of the following:

(A) Uranium and thorium ores, concentrates of uranium and thorium ores, and other ores containing naturally occurring radionuclides that are intended to be processed for the use of these radionuclides;

(B) natural uranium, depleted uranium, or natural thorium or the compounds or mixtures of natural uranium, depleted uranium, or natural thorium, if unirradiated and in solid or liquid form;

(C) radioactive material other than fissile material, for which the $A_2$ value is unlimited; and

(D) other radioactive material in which the activity is distributed throughout, and the estimated average specific activity does not exceed 30 times the value for exempt material activity concentration determined in accordance with 10 C.F.R. part 71, appendix A, which is adopted by reference in K.A.R. 28-35-221b;

(2) group II, which shall consist of the following:

(A) Water with tritium concentration no more than 0.8 TBq/liter (20.0 Ci/liter); and

(B) other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed $10^{-4}$ $A_2$/g for solids and gases and $10^{-5}$ $A_2$/g for liquids; or

(3) group III solids, which shall include consolidated wastes and activated materials that meet the requirements of 10 C.F.R. 71.77 but shall exclude powders that meet the following conditions:

(A) The radioactive material is distributed throughout the solid or a collection of solid objects or is essentially uniformly distributed in a solid compact binding agent, including concrete, bitumen, and ceramic;

(B) the radioactive material is relatively insoluble or it is intrinsically contained in a relatively insoluble material so that even under loss of packaging, the loss of radioactive material per package by leaching when placed in water for seven days will not exceed 0.1 $A_2$; and

(C) the estimated average specific activity of the solid, excluding any shielding material, does not exceed $2 \times 10^{-3}$ $A_2$/g.

(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 March 18, 2011; amended April 1, 2022.)

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