Kansas Administrative Regulations

Department of Health and Environment

Article 35.—Radiation—Part 1. Definitions.

28-35-135a. Definitions.

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

(a) "A_1" means the maximum activity of special form radioactive material permitted in a type A package.

(b) "A_2" means the maximum activity of radioactive material, other than special form radioactive material, permitted in a type A package. These values are listed in or may be derived as specified in 10 C.F.R. part 71, appendix A, which is adopted by reference in K.A.R. 28-35-221b.

(c) "Absorbed dose" means the energy imparted to matter by ionizing radiation per unit mass of irradiated material at the place of interest. The units of absorbed dose are the rad and the gray (Gy).

(d) "Absorbed dose rate" means the absorbed dose per unit of time or, for linear accelerators, the dose monitor unit per unit of time.

(e) "Accelerator-produced material" means any material made radioactive by exposing it in a particle accelerator.

(f) "Accessible surface" means the surface of equipment or of an equipment part that can be easily or accidentally touched by persons without the use of a tool.

(g) "Accident" means an unintended event, including an operating error, equipment failure, and other mishap, that could result in either of the following:

(1) A dose in excess of regulatory limits on site or for the public; or

(2) consequences or potential consequences that cannot be ignored from the point of view of protection or safety, including an actual or potential substantial degradation of the level of protection or safety of the facility or the release of radioactive material in sufficient quantity to warrant consideration of protective actions.

(h) "Act" means the "nuclear energy development and radiation control act," K.S.A. 48-1601 et seq., and amendments thereto.

(i) "Activity" means the rate of disintegration, transformation, or decay of radioactive material. Activity is expressed in the SI unit of becquerel (Bq) or in the special unit of curie (Ci), or the multiples of either unit.

(j) "Added filter" means the filter added to the inherent filtration.

(k) "Address of use" means the building or buildings that are identified on the license and each location where radioactive material could be produced, prepared, received, used, or stored.

(l) "Adult" means an individual who is 18 or more years of age.

(m) "Aggregated" means accessible by the breach of a single physical barrier that could allow access to radioactive material in any form, including any devices that contain the radioactive material, when the total activity equals or exceeds a category 2 quantity of radioactive material.

(n)(1) "Agreement state" means any state with which the nuclear regulatory commission enters, or has entered, into an effective agreement pursuant to subsection 274b of the atomic energy act of 1954, 68 Stat. 919, as amended.

(2) "Non-agreement state" means any other state.

(o) "Airborne radioactive area" means the following:

(1) Any room, enclosure, or operating area in which airborne radioactive material exists in concentrations in excess of the derived air concentrations (DAC) specified in the department's "appendices to part 4: standards for protection against radiation," effective April 1994, which is hereby adopted by reference; or

(2) any room, enclosure, or operating area in which airborne radioactive material exists in concentrations such that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the ALI or 12 DAC-hours.

(p) "Airborne radioactive material" means any radioactive material dispersed in the air in the form of dust, fumes, mists, vapors, or gases.

(q) "Air kerma" means the kinetic energy released in air by ionizing radiation. Kerma is determined by dividing dE by dM, where dE is the sum of the initial kinetic energies of

all the charged ionizing particles liberated by uncharged ionizing particles in air of mass dM. The SI unit of air kerma is joule per kilogram, and the special name for the unit of kerma is the gray (Gy).

(r) "Alert" means a period during which one of the following could lead to a release of radioactive material that is not expected to require a response by off-site response organizations to protect persons off-site:

(1) Conditions have arisen that could cause an event.

(2) An event is in progress.

(3) An event has occurred.

(s) "Aluminum equivalent" means the thickness of type 1100 aluminum alloy that affords the same attenuation, under specified conditions, as that of the material in question. The nominal chemical composition of type 1100 aluminum alloy is a minimum of 99.00 percent aluminum and 0.12 percent copper.

(t) "Amendment" means any change to a license or registration issued under these regulations.

(u) "Analytical X-ray system" means a group of local and remote components utilizing X-rays to determine the elemental composition or to examine the microstructure of materials.

(1) Local components shall include those components that are struck by X-rays, including radiation source housings, port and shutter assemblies, collimators, sample holders, cameras, goniometers, detectors, and shielding.

(2) Remote components may include power supplies, transformers, amplifiers, readout devices, and control panels.

(v) "Annual limit on intake" and "ALI" mean the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 5 rem (0.05 Sv) or a committed dose equivalent of 50 rem (0.5 Sv) to any individual organ or tissue. ALI values for intake by ingestion and by inhalation of selected radionuclides are specified in appendix B, table I, published in "appendices to part 4: standards for protection against radiation," which is adopted by reference in this regulation.

(w) "Annual refresher safety training" means a review conducted or provided by the licensee or registrant for its employees on radiation safety aspects of industrial radiography. The review shall include, at a minimum, any results of internal inspections, new procedures or equipment, new or revised regulations, and accidents or errors that have been observed. The review shall also provide opportunities for employees to ask safety questions.

(x) "American national standards institute" and "ANSI" mean the organization that provides a framework for fair standards development and quality conformity assessment systems, safeguards the integrity of the standards, and publishes standards documents. The address of ANSI is provided in 10 C.F.R. 34.20(a)(1).

(y) "Applicator" means a structure that determines the extent of the treatment field at a given distance from the virtual source.

(z) "Area of use" means a portion of a physical structure that has been set aside for the purpose of producing, preparing, receiving, using, or storing radioactive material.

(aa) "As low as is reasonably achievable" and "ALARA," when used to describe exposures to radiation workers, mean that every reasonable effort has been made to maintain exposures to radiation workers as far below the dose limits specified in these regulations as is practical, consistent with the purpose for which the licensed or registered activity is undertaken, taking the following into account:

(1) The state of technology;

(2) the economics of improvements in relation to the state of technology;

(3) the economics of improvements in relation to benefits to public health and safety and to other societal and socioeconomic considerations; and

(4) the economics of improvements in relation to the utilization of nuclear energy and licensed or registered sources of radiation in the public interest.

(bb) "Assembler" means any person engaged in the business of assembling, replacing, or installing one or more components into an X-ray system or subsystem. The term shall include the owner of an X-ray system and any employee or agent of the owner who assembles components into an X-ray system that is subsequently used to provide professional or commercial services.

(cc) "Associate radiation safety officer" means an individual who meets the requirements specified in 10 C.F.R. 35.50 and 35.59, as adopted in K.A.R. 28-35-264, and is currently approved by the department for the types of use of by-product material for which the individual has been assigned duties and tasks by the radiation safety officer. Each associate radiation safety officer shall obtain one of the following:

(1) A specific medical use license issued by the commission or an agreement state;

(2) a medical use permit issued by the commission; or

(3) a master materials license issued by the commission.

(dd) "Associated equipment" means equipment that is used in conjunction with a radiographic exposure device that makes radiographic exposures and that drives, guides, or comes in contact with the source.

(ee) "Attenuation block" means a block or stack, with dimensions of 20 cm by 20 cm by 3.8 cm, made of type 1100 aluminum alloy or other materials having equivalent attenuation.

(ff) "Authorized user" means an individual who is approved by the department and listed on a license issued by the department for the use of radioactive material or an individual who is designated by a registered facility as a user of X-ray machines or accelerators. This term shall not apply to part 6 of these regulations.

(gg) "Automatic exposure control" means a device that automatically controls one or more technique factors in order to obtain a required quantity of radiation, at one or more preselected locations.

(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 July 27, 2007; amended May 4, 2018; amended April 1, 2022.)

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