28-35-135c. Definitions. As used in these regulations, each of the following terms shall have the meaning ~~assigned~~ specified in this regulation:

(a) "Cabinet radiography using radiation machines" means industrial radiography that is conducted in an enclosed, interlocked cabinet that prevents the radiation machine from operating unless all openings are securely closed and that is sufficiently shielded so that every location on the cabinet's exterior meets the conditions for an unrestricted area as specified in K.A.R. 28-35-214a.

(b) "Cabinet X-ray system" means an X-ray system with the X-ray tube installed in an enclosure, called a "cabinet," that is independent from existing architectural structures except the floor on which the cabinet could be placed. The cabinet is intended for the following purposes:

(1) To contain at least that portion of a material being irradiated;

(2) to provide radiation attenuation; and

(3) to exclude personnel from the interior of the cabinet during the generation of X-rays. This term shall include all X-ray systems designed primarily for the inspection of carry-on baggage at airline, railroad, and bus terminals, and in similar facilities. An X-ray tube that is used within a shielded part of a building, or X-ray equipment that may temporarily or occasionally incorporate portable shielding, shall not be considered a cabinet X-ray system.

(c) "Calendar quarter" means at least 12 but not more than 14 consecutive weeks. The first calendar quarter of each year shall begin in January. Subsequent calendar quarters shall be arranged so that no day is included in more than one calendar quarter and no day in any one year is omitted from inclusion within a calendar quarter. A licensee or registrant shall not change the method of determining and observing calendar quarters for purposes of these regulations except

at the beginning of a calendar year.

(d) "Calibration" means the determination of either of the following:

(1) The response or reading of an instrument relative to a series of known radiation values over the range of the instrument; or

(2) the strength of a source of radiation relative to a standard.

(e) "Camera" means a radiographic exposure device.

(f) "Central axis of the beam" means a line passing through the virtual source and the center of the plane figure formed by the edge of the first beam-limiting device.

(g) "Cephalometric device" means a device intended for the radiographic visualization and measurement of the dimensions of the human head.

(h) "Certifiable cabinet X-ray system" means an existing, uncertified X-ray system that has been modified to meet the certification requirements specified in 21 C.F.R. 1020.40, ~~as in effect on April 30, 1984~~ dated April 1, 2019, which is hereby adopted by reference.

(i) "Certificate holder" means a person that has been issued a certificate of compliance or other package approval by the commission.

(j) "Certificate of compliance" and "CoC" mean the certificate issued by the commission under subpart D of 10 C.F.R. 71, approving the design of a package for the transportation of radioactive material.

(k) "Certificate of registration" means a document issued by the department, the commission, or an agreement state given sealed source and device registry authority by the commission acknowledging the registration of a sealed source or device containing a sealed

source.

~~(i)~~ (l) "Certified cabinet X-ray system" means a cabinet X-ray system that has been certified as manufactured and assembled as specified in 21 C.F.R. 1020.40, ~~as in effect on April 30,~~ 1984 adopted by reference in subsection (h).

~~(j)~~ (m) "Certified components" means the components of X-ray systems that are subject to regulations promulgated under public law 90-602, the radiation control for health and safety act of 1968 as amended.

~~(k)~~ (n) "Certified system" means any X-ray system that has one or more certified components.

~~(l)~~ (o) "Certifying entity" means an independent certifying organization or state regulatory program meeting the requirements in K.A.R. 28-35-293.

~~(m)~~ (p) "Changeable filter" means any filter, exclusive of inherent filtration, that can be removed from the useful beam through any electronic, mechanical, or physical process.

~~(n)~~ (q) "Chelating agent" means amine polycarboxylic acids, hydroxycarboxylic acids, gluconic acids, and polycarboxylic acids.

~~(o)~~ (r) "Class" means a classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. For the purposes of these regulations, "lung class" and "inhalation class" shall be considered equivalent terms. Materials are classified as D, W, or Y, which applies to the following range of clearance half-times:

(1) For class D, fewer than 10 days;

(2) for class W, from 10 through 100 days; and

(3) for class Y, more than 100 days.

~~(p)~~ (s) "Coefficient of variation" and "C" mean the ratio of the standard deviation to the mean value of a population of observations. This ratio is estimated using the following equation:

$$C = \frac{s}{\bar{x}} = \frac{1}{\bar{x}}\left(\sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n-1}\right)^{1/2}$$

where

s = Estimated standard deviation of the population

$\bar{x}$ = Mean value of observations in sample

x_i = ith observation in sample

~~(q)~~ (t) "Collective dose" means the sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

~~(r)~~ (u) "Collimator" means a radiation shield that is placed at the end of a guide tube or directly onto a radiographic exposure device to restrict the size of the radiation beam when the sealed source is cranked into position to make a radiographic exposure.

~~(s)~~ (v) "Committed dose equivalent" and "$H_{T,50}$" mean the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

~~(t)~~ (w) "Committed effective dose equivalent" and "$HE,_{50}$" mean the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to each of these organs or tissues ($H_{E,50} = \sum w_T H_{T,50}$).

~~(u)~~ (x) "Computed tomography" means the production of a tomogram by the acquisition

and computer processing of X-ray transmission data.

~~(v)~~ (y) "Consortium" means an association of medical use licensees and a positron emission tomography (PET) radionuclide production facility in the same geographical area that jointly own or share the operation and maintenance cost of the PET radionuclide production facility that produces PET radionuclides for use in producing radioactive drugs within the consortium for noncommercial distributions among its associated members for medical use. The PET radionuclide production facility within the consortium shall be located at an educational institution or a federal facility or a medical institution.

~~(w)~~ (z) "Contact therapy" means therapy in which the X-ray tube port is put in contact with, or within five centimeters of, the surface being treated.

~~(x)~~ (aa) "Contact therapy system" means a therapeutic radiation machine with a short target-to-skin distance (TSD), usually less than five centimeters.

(bb) "Contamination" means the presence of a radioactive substance on a surface in quantities of more than 0.4 Bq/cm^2 ($1x10^{-5}$ $\mu Ci/cm^2$) for beta and gamma emitters and low toxicity alpha emitters, or 0.04 Bq/cm^2 ($1x10^{-6}$ $\mu Ci/cm^2$) for all other alpha emitters.

~~(y)~~ (cc) "Control cable" means the cable that is connected to the source assembly and used to drive the source to and from the exposure location.

~~(z)~~ (dd) "Control drive mechanism" means a device that enables the source assembly to be moved into and out of the exposure device.

~~(aa)~~ (ee) "Controlled area" means an area outside of a restricted area but inside the site boundary, access to which can be limited by the licensee or registrant for any reason.

~~(bb)~~ (ff) "Control panel" means that part of the X-ray system where the switches, knobs, push buttons, and other hardware necessary for manually setting the technique factors are mounted.

~~(cc)~~ (gg) "Control tube" means a protective sheath for guiding the control cable. The control tube connects the control drive mechanism to the radiographic exposure device.

~~(dd)~~ (hh) "Cooling curve" means the graphical relationship between the heat units stored and the cooling time.

(iii) "Criticality safety index" and "CSI" mean the dimensionless number, rounded up to the next tenth, assigned to and placed on the label of a fissile material package to designate the degree of control of accumulation of packages, overpacks, or freight containers containing fissile material during transportation. Determination of the criticality safety index is described in 10 C.F.R. 71.22, 71.23, and 71.59. The criticality safety index for an overpack, freight container, consignment, or conveyance containing fissile material packages is the arithmetic sum of the criticality safety indices of all the fissile material packages contained within the overpack, freight container, consignment, or conveyance.

~~(ee)~~ (jj) "Curie" means a unit of activity. One curie (Ci) is the quantity of radioactive material that decays at the rate of 3.7×10^{10} transformations per second (tps). Commonly used submultiples of the curie are the millicurie and the microcurie. One millicurie ($_{m}$Ci) = 0.001 curie = 3.7×10^{7} tps. One microcurie (μCi) = 0.000001 curie = 3.7×10^{4} tps. (Authorized by K.S.A. 48-1607; implementing K.S.A. ~~2017~~ 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended May 4, 2018; amended P-_____.)

28-35-135f. Definitions. As used in these regulations, each of the following terms shall have the meaning ~~assigned~~ specified in this regulation:

(a) "Facility" means the specific location at which a person is licensed or registered to use radioactive material or radiation-producing devices. Separate physical locations shall be considered to be separate facilities.

(b) "Fail-safe characteristic" means a design feature that causes beam port shutters to close, or otherwise prevents emergence of the primary beam, upon the failure of a safety or warning device.

(c) "Field emission equipment" means equipment that uses an X-ray tube in which electron emission from the cathode is due solely to the action of an electric field.

(d) "Field-flattening filter" means a filter used to provide dose uniformity over the area of a useful beam of X-rays at a specified depth.

(e) "Field size" means the dimensions along the major axes of an area in a plane perpendicular to the specified direction of the beam of incident radiation at the normal treatment distance. Field size is defined by the intersection of the major axes and the 50 percent isodose line. Material shall be placed in the beam so that the maximum dose is produced at the normal treatment distance when the field size is being determined.

(f) "Field station" means a facility where radioactive sources or radiation-processing devices are stored or used and from which equipment is dispatched to temporary job sites.

(g) "Filter" means material placed in the path of the useful beam of X-rays to selectively absorb the less penetrating radiation.

(h) "Fixed contamination" means contamination that cannot be removed from a surface

during normal conditions of transport.

(i) "Fluoroscopic imaging assembly" means a component that comprises a reception system in which X-ray photons produce a fluoroscopic image. This term shall include equipment housings, any electrical interlocks, the primary protective barrier, and structural material providing linkage between the image receptor and the diagnostic source assembly.

~~(i)~~ (j) "Focal spot" means the area projected on the anode of the X-ray tube by the electrons accelerated from the cathode and from which the useful beam originates.

~~(j)~~ (k) "Full-cost reimbursement" means reimbursement of the total cost of staff time and any contractual support services expended. (Authorized by K.S.A. 48-1607; implementing K.S.A. 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended P-_____.)

28-35-135l. Definitions. As used in these regulations, each of the following terms shall have the meaning ~~assigned~~ 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 ~~who~~ 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~~, whose~~ in which the perimeter is the locus of points ~~at which~~ that 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:

$$\text{Percent line} - \text{voltage regulation} = 100\frac{V_n - V_1}{V_1}$$

$$\text{where } V_n = \text{No} - \text{load line potential}$$

$$\text{and } V_1 = \text{Load line potential.}$$

(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~~ for which the location is unknown. This term shall include licensed or registered material that has been shipped but has not reached ~~its~~ the planned destination and ~~whose~~ for which the location of the shipped material 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, 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, but shall exclude powders that satisfy the following requirements:

(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.

(C) The estimated average specific activity of the solid, excluding any shielding material, does not exceed 2×10^{-3} A_2/g. (Authorized by K.S.A. 48-1607; implementing K.S.A. 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended P-_____.)

28-35-135n. Definitions. As used in these regulations, each of the following terms shall have the meaning ~~assigned~~ specified in this regulation:

(a) "NARM" means any naturally occurring or accelerator-produced radioactive material, not including ~~byproduct~~ by-product, source, or special nuclear material.

(b) "Nationally tracked source" means a sealed source containing any quantity of radioactive material equal to or greater than any threshold listed in the table in this subsection. For purposes of the definition of "nationally tracked source," "sealed source" shall be defined as radioactive material that is sealed in a capsule or closely bonded, that is in a solid form, and that is not exempt from regulatory control. For purposes of the definition of "nationally tracked source," "sealed source" shall not include any radioactive material encapsulated solely for disposal and any nuclear material contained in any fuel assembly, subassembly, fuel rod, or fuel pellet. Category I nationally tracked sources contain radioactive material in quantities equal to or greater than the category 1 threshold. Category 2 nationally tracked sources contain radioactive material in quantities equal to or greater than the category 2 threshold but less than the category 1 threshold.

Nationally tracked source thresholds

Radioactive material	Category 1 (TBq)*	Category 1 (Ci)**	Category 2 (TBq)*	Category 2 (Ci)**
Actinium-227	20	540	0.2	5.4
Americium-241	60	1,600	0.6	16
Americium-241/Be	60	1,600	0.6	16
Californium-252	20	540	0.2	5.4

Cobalt-60	30	810	0.3	8.1
Curium-244	50	1,400	0.5	14
Cesium-137	100	2,700	1	27
Gadolinium-153	1,000	27,000	10	270
Iridium-192	80	2,200	0.8	22
Plutonium-238	60	1,600	0.6	16
Plutonium-239/Be	60	1,600	0.6	16
Polonium-210	60	1,600	0.6	16
Promethium-147	40,000	1,100,000	400	11,000
Radium-226	40	1,100	0.4	11
Selenium-75	200	5,400	2	154
Strontium-90	1,000	27,000	10	270
Thorium-228	20	540	0.2	5.4
Thorium-229	20	540	0.2	5.4
Thulium-170	20,000	540,000	200	5,400
Ytterbium-169	300	8,100	3	81

* The Terabecquerel (TBq) values are the regulatory standard.

** The curie (Ci) values specified are obtained by converting from the TBq value. The curie values are provided for practical usefulness and are rounded after conversion.

(c) "Natural radioactivity" means the radioactivity of naturally occurring nuclides.

(d) "New equipment" means any system subject to K.A.R. 28-35-249 that was

manufactured after January 1, 1985.

(e) "Non-fixed contamination" means contamination that can be removed from a surface during normal conditions of transport.

(f) "Nonionizing radiation" means radiation not capable of producing ionization, including sound and radio waves and visible, infrared, or ultraviolet light.

~~(f)~~ (g) "Non-stochastic effect" means a health effect, the severity of which varies with the dose and for which a threshold is believed to exist. For purposes of these regulations, "deterministic effect" shall be considered an equivalent term.

~~(g)~~ (h) "Normal operating procedures" means operating procedures for conditions suitable for routine purposes with shielding and barriers in place, including routine alignment procedures. This term shall not include maintenance procedures and routine and emergency radiation safety considerations.

~~(h)~~ (i) "Normal treatment distance" means either of the following:

(1) For electron irradiation, the distance from the virtual source to the surface along the central axis of the useful beam, as specified by the manufacturer; or

(2) for X-ray irradiation, the distance from the virtual source to the isocenter along the central axis of the useful beam. For non-isocentric equipment, this distance shall be the distance specified by the manufacturer.

~~(i)~~ (j) "Nuclear regulatory commission ~~(NRC) means~~," "NRC," and "commission" mean the U.S. nuclear regulatory commission or its ~~duly~~ authorized representatives.

~~(j)~~ (k) "NVLAP" means the national voluntary laboratory accreditation program.

(Authorized by K.S.A. 48-1607; implementing K.S.A. 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended July 27, 2007; amended P-_____.)

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 ~~storaging~~ 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" means any licensed material that meets either of the following conditions:~~

~~(1)(A) Is in solid form;~~

~~(B) has at least one dimension measuring at least five millimeters;~~

~~(C) does not melt, sublime, or ignite in air at a temperature of 1,000° F;~~

~~(D) does not shatter or crumble if subjected to the percussion test described in K.A.R. 28-35-144; and~~

~~(E) is not dissolved or converted into dispensable form to the extent of more than 0.005 percent by weight by immersion for one week in water at 68°F or in air at 86°F; or~~

~~(2)(A) Is in any physical form securely contained in a capsule;~~

~~(B) has at least one dimension measuring at least five millimeters;~~

~~(C) will retain its contents if subjected to the tests described in K.A.R. 28-35-144; and~~

~~(D) is constructed of materials that do not melt, sublime, or ignite in air at 1,475°F and do not dissolve or convert into dispensable form to the extent of more than 0.005 percent by weight by immersion for one week in water at 68°F or in air at 86°F.~~ "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.

(4) Any other piece or capsule shall meet the specifications for special form radioactive material in this definition.

(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 ~~(NRC)~~, 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. ~~2017~~ 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended May 4, 2018, amended P-_____.)

28-35-135u. Definitions. As used in these regulations, each of the following terms shall have the meaning specified in this regulation:

(a) "Underwater irradiator" means an irradiator in which the sources always remain shielded underwater and humans do not have access to the sealed sources or the space that is subject to irradiation without entering the pool.

(b) "Underwater radiography" means industrial radiography performed when the radiographic exposure device or the related equipment is beneath the surface of the water.

(c) "Unit dose" means a dosage prepared for medical use for administration to a patient or human research subject as a single dosage, without any further manipulation of the dosage after the dosage is initially prepared.

(d) "Unrefined and unprocessed ore" means ore in its natural form before any processing, including grinding, roasting, beneficiating, and refining. "Processing" shall not include sieving or the encapsulation of ore or preparation of samples for laboratory analysis.

(e) "Unrestricted area" means an area to which access is neither limited nor controlled by the licensee or registrant. For purposes of these regulations, "uncontrolled area" shall be considered an equivalent term.

(f) "Uranium" means natural uranium, depleted uranium, or enriched uranium.

(1) "Natural uranium" shall mean uranium, which may be chemically separated, with the naturally occurring distribution of uranium isotopes approximately 0.711 weight percent uranium-235 and the remainder by weight essentially uranium-238.

(2) "Depleted uranium" shall mean uranium containing less uranium-235 than the naturally occurring distribution of uranium isotopes.

(3) "Enriched uranium" shall mean uranium containing more uranium-235 than the naturally occurring distribution of uranium isotopes.

(g) "Useful beam" means the part of the radiation that passes through a window, aperture, cone, or other collimating device. (Authorized by K.S.A. 48-1607; implementing K.S.A. ~~2017~~ 2019 Supp. 48-1603 and K.S.A. 48-1607; effective Dec. 30, 2005; amended May 4, 2018; amended P-_____.)

28-35-196a. Preparation of radioactive material for transport. (a) A licensee shall not deliver any radioactive material to a carrier for transport~~,~~ or transport radioactive material as a private carrier, unless the following requirements are met:

(1) The licensee ~~complies~~ has complied with the applicable requirements of the regulations of the U.S. department of transportation and incorporated sections of 10 C.F.R. part 71 that are appropriate to the mode of transport and that are related to the packing of radioactive material~~,~~ and to the monitoring, marking, and labeling ~~those packages;~~ packages containing radioactive material.

(2) The licensee has established procedures for opening and closing packages in which radioactive material is transported to provide safety and to ~~assure~~ ensure that, ~~prior to~~ before the delivery to a carrier for transport, each package is properly closed for transport~~; and~~ .

(3) ~~prior to delivery of a package to a carrier for transport,~~ The licensee has assured that any special instructions needed to safely open ~~the~~ a package are sent to, or are available to, the consignee before delivery of the package to a carrier for transport.

(4) The licensee has ascertained, before the first use of any packaging for the shipment of licensed radioactive material, that the determinations in 10 C.F.R. 71.85(a) through (c), as adopted in K.A.R. 28-35-504a, have been made.

(b) The requirements in subsection (a) ~~of this regulation~~ shall not apply to the transportation of licensed material, or to the delivery of licensed material to a carrier for transport, when the transportation is subject to regulations of the U.S. postal service.

(Authorized by and implementing K.S.A. ~~1984 Supp.~~ 48-1607; effective, T-86-37, Dec. 11, 1985; effective May 1, 1986; amended P-_____.)

28-35-500. General license: NRC-approved packages. (a) A general license shall be deemed to have been issued to any licensee to transport, or to deliver to a carrier for transport, any licensed or registered material in a package for which a license, certificate of compliance ~~(CoC)~~, or other approval has been issued by the NRC.

(b) Each general license specified in subsection (a) shall apply only to a licensee who has a quality assurance program approved by the NRC or the department.

(c) Each general license specified in subsection (a) shall apply only to a licensee who meets the following requirements:

(1) ~~Has~~ Possesses a copy of the specific license, certificate of compliance, or other approval by the NRC for the package and has the drawings and any other documents referenced in the approval relating to the use and maintenance of the package and to the actions to be taken before shipment;

(2) complies with the terms and conditions of the license, certificate of compliance, or other approval, as applicable, and with the applicable requirements of ~~this~~ part 15 of these regulations; and

(3) ~~has registered~~ registers with the NRC before the licensee's first use of the package.

(d) Each general license specified in subsection (a) shall apply only if the package approval authorizes the use of the package under this general license.

(e) Each general licensee specified in subsection (a) shall meet the requirements of K.A.R. 28-35-501 when using any type B or fissile material package approved by the NRC before April 1, 1996. (Authorized by and implementing K.S.A. 48-1607; effective Dec. 30, 2005; amended P-_____.)

28-35-500a. General license: use of foreign-approved package. (a) A general license shall be deemed to have been issued to any licensee to transport, or to deliver to a carrier for transport, any licensed or registered material in a package with a design approved in a foreign national competent authority certificate that has been revalidated by the U.S. department of transportation as meeting the applicable requirements of 49 C.F.R. 171.23.

(b) Except as otherwise provided in this regulation, a general license shall apply only to a licensee who has a quality assurance program approved by the NRC or the department as meeting the applicable provisions of K.A.R. 28-35-505.

(c) Each general license shall apply only to shipments made to or from locations outside the United States.

(d) Each licensee issued a general license under subsection (a) shall meet the following requirements:

(1) Have a copy of the specific license, certificate of compliance, or other NRC approval for a package and have the drawings and any other documents referenced in the NRC approval relating to the use and maintenance of the package and to the actions required before shipment; and

(2) comply with the terms and conditions of the license, certificate of compliance, or other approval, as applicable, and with the applicable requirements of part 15 of these regulations.

(Authorized by and implementing K.S.A. 48-1607; effective P-_____.)

28-35-504a. Records. (a) Each licensee shall maintain a record of each shipment of licensed material not exempt under 10 C.F.R. 71.14 for three years after shipment. Each record shall meet the following requirements:

(1) Identify the package by model number and serial number;

(2) verify that there are no defects in the packaging impacting the integrity, functionality, or safety of the package as shipped;

(3) specify the volume and identification of coolant;

(4) specify the type and quantity of licensed material in each package;

(5) specify the total quantity of each shipment;

(6) for each item of irradiated fissile material, meet the following requirements:

(A) Identify the package by model number and serial number;

(B) document the irradiation and decay history to the extent appropriate to demonstrate that the nuclear and thermal characteristics of the irradiated fissile material complies with license conditions; and

(C) document any abnormal or unusual condition relevant to radiation safety;

(7) document the date of the shipment;

(8) for fissile packages and for type B packages, document any special controls exercised;

(9) specify the name and address of the transferee;

(10) specify the address to which the shipment was made; and

(11) document the results of the determinations required by 10 C.F.R. 71.87 and by the conditions of the package approval.

(b) Each licensee, certificate holder, and applicant for a certificate of compliance shall

make all records required by part 15 of these regulations available to the nuclear regulatory commission for inspection upon reasonable notice. Each record shall be valid only if stamped, initialed, or signed and if dated by authorized personnel, or otherwise authenticated.

(c) Each licensee, certificate holder, and applicant for a certificate of compliance shall maintain written records as evidence of the quality of packaging. The records shall include the following:

(1) Results of the determinations required by 10 C.F.R. 71.85, dated January 1, 2019, which is hereby adopted by reference.

(2) design, fabrication, and assembly records;

(3) results of reviews, inspections, tests, audits, monitoring work performance, and materials analyses; and

(4) results of maintenance, modification, and repair activities.

(d) The inspection, test, and audit records maintained by the licensee, certificate holder, and applicant for a certificate of compliance shall include the following:

(1) Identification of the inspector or data recorder;

(2) the type of observation;

(3) the results;

(4) the acceptability; and

(5) the action taken in connection with any deficiencies noted.

(e) Records required by this regulation shall be retained for three years after the life of the

packaging to which the records apply. (Authorized by and implementing K.S.A. 48- 1607; effective P-_____.)

28-35-505. Quality assurance requirements. ~~Each program for transport container inspection and maintenance that is limited to radiographic exposure devices, source changers, or any package transporting these devices or changers and that meets the requirements of K.A.R. 28-35-282a or equivalent NRC or agreement state requirements shall be deemed to meet the requirement specified in K.A.R. 28-35-500(b).~~ The following provisions of 10 C.F.R. part 71 subpart H, dated January 1, 2019, are hereby adopted by reference with the changes specified in this regulation:

(a) The following sections shall be deleted:

(1) 71.101(c)(2), (d), and (e);

(2) 71.107;

(3) 71.109;

(4) 71.111;

(5) 71.113;

(6) 71.115;

(7) 71.117;

(8) 71.119;

(9) 71.121;

(10) 71.123; and

(11) 71.125.

(b) The following changes shall be made wherever the following text occurs within the portions of 10 C.F.R. part 71 adopted in this regulation:

(1) "ATTN: Document Control Desk, Director, Division of Fuel Management, Office of

Nuclear Material Safety and Safeguards" shall be replaced with "the department."

(2) "NRC Form 3" shall be replaced with "department form RH-3."

(3) "subpart H of this part" or "§§71.010 through 71.137" shall be replaced with "K.A.R. 28-35-505."

(4) "this chapter" shall be replaced with "10 C.F.R."

(c) Wherever the following terms occur within the portions of 10 C.F.R. part 71 adopted in this regulation, these terms shall be replaced with "department":

(1) "Administrator of the appropriate Regional Office";

(2) "Commission";

(3) "NRC";

(4) "Nuclear Regulatory Commission"; and

(5) "United States Nuclear Regulatory Commission."

(d) The following changes shall be made to the sections specified:

(1) In 10 C.F.R. 71.101(a), the sentence "Each certificate holder and applicant for a package approval is responsible for satisfying the quality assurance requirements that apply to design, fabrication, testing, and modification of packaging subject to this subpart" and the phrase "in accordance with §71.1" shall be deleted.

(2) In 10 C.F.R. 71.101(f), the sentence "The licensee, certificate holder, and applicant for a CoC shall identify the program by the date of submittal to the Commission, Docket Number, and date of Commission approval." shall be retained.

(3) 10 C.F.R. 71.101(g) shall be replaced by the following text:

"Each program for transport container inspection and maintenance that is limited to radiographic exposure devices, source changers, or any package transporting these devices or changers and that meets the requirements of K.A.R. 28-35-282a or equivalent NRC or agreement state requirements shall be deemed to meet the requirement specified in K.A.R. 28-35-500(b)."

(e) The terms "certificate of compliance," "certificate holder," and "applicant" shall apply to the NRC as the sole authority for issuing a package certificate of compliance.

(f) Each submittal required by this regulation shall be submitted to the department, with the exception of a certificate of compliance. (Authorized by and implementing K.S.A. 48-1607; effective Dec. 30, 2005; amended P-_____.)