**44:03:01:01.  Definitions.** Terms defined in SDCL 34-21-2 have the same meaning when used in this chapter. In addition, terms used in this chapter mean:

 (1)  "Air kerma," the kinetic energy released per unit mass of air or the measurement of radiation energy in joules (J) absorbed per kilogram (kg) of air expressed as J/kg or Gray (Gy);

 (2)  "Aluminum equivalent," the thickness of type 1100 aluminum alloy affording the same attenuation, under specified conditions, as the material in question;

 (3)  "Automatic exposure control," a device that automatically controls one or more technique factors to obtain at a preselected location a required quantity of radiation, including phototimes and ion chambers;

 (4)  "C-arm X ray system," a mobile fluoroscopy imaging system;

 (5)  "Certified components," components of X ray systems that are subject to regulations by the Food and Drug Administration under the Safe Medical Devices Act of 1990, Pub. L. No. 01-629 (November 28, 1990);

 (6)  Computed tomography," the production of a tomogram by the acquisition and computer processing of X ray transmission data;

 (7)  "Control panel," the part of the X ray control upon which are mounted the switches, knobs, push buttons, and other hardware necessary for manually setting the technique factors;

 (8)  "Department," the Department of Health;

 (9)  "Diagnostic source assembly," the tube housing assembly with a beam-limiting device attached;

 (10)  "Diagnostic X ray system," an X ray system designed for irradiation of any part of the human or animal body for the purpose of diagnosis or visualization;

 (11)  "Dose," a quantity of radiation exposure to the whole human or animal body or any portion of the human or animal body;

 (12)  "Exposure survey," an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radiation that may include a physical survey of materials and equipment and measurements of levels of radiation or concentration of radioactive material present;

 (13)  "Fluoroscopy imaging assembly," a subsystem in which X ray photons produce a visible image simultaneously and continuously including the image receptor, image intensifier, spot imaging device, electrical interlocks, if any, or structural material providing linkage between the image receptor and diagnostic source assembly;

 (14)  "Healing arts," professional disciplines authorized by SDCL chapter 36-2 to use X ray or radioactive material in the diagnosis or treatment of human or animal disease;

 (15)  "Heat unit," a unit of energy equal to the product of the peak kilovoltage, milliamps (mAs), and seconds;

 (16)  "High radiation area," an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem, or one mSv in one hour at thirty centimeters from the radiation source or thirty centimeters from any surface that the radiation penetrates;

 (17)  "Image intensifier," a device, installed in its housing, that instantaneously converts an X ray pattern into a corresponding light image of higher intensity;

 (18)  "Image receptor," any device that transforms incident X ray photons either into a visible image or into another form that can be made into a visible image by further transformations;

 (19)  "Lead equivalent," the thickness of lead affording the same attenuation as the material in question;

 (20)  "Licensed practitioner of the healing arts," a person authorized in accordance with SDCL chapter 36-2 for the diagnostic or healing treatment of human and animal maladies licensed in South Dakota for the lawful practice of medicine;

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

 (22)  "Patient," an individual or animal subjected to healing arts examination, diagnosis, or treatment;

 (23)  "Peak tube potential," the maximum value of the potential difference across the X ray tube during an exposure;

 (24)  "Protective apron," an apron made of radiation absorbing materials used to reduce radiation exposure;

 (25)  "Protective glove," a glove made of radiation absorbing material used to reduce radiation exposure;

 (26)  "Qualified expert," an individual who possess the knowledge, training, and experience to measure ionizing radiation, to evaluate safety techniques, and to advise regarding radiation protection needs including a qualified physicist;

 (27)  "Qualified instructor," an individual who is certified or registered by the American Registry of Radiologic Technologists or is a qualified expert to teach fundamentals of radiation safety, equipment operation, film processing, digital radiography, emergency procedures, personnel dosimetry, anatomy and physiology, and radiographic positioning;

 (28)  "Qualified physicist," an individual who is competent to independently provide clinical professional services in one or more of the subfields of medical physics of diagnostic medical physics, nuclear medical physics, therapeutic medical physics, or medical health physics;

 (29)  "Radiation hazard," a condition under which a person might receive radiation in excess of the maximum permissible dose;

 (30)  "Rem," the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rad;

 (31)  "Shielding," a primary and secondary protective barrier used to reduce radiation exposure to the required degree;

 (32)  "Sievert," the International System of Units unit of measure for dose equivalent, equivalent dose, and effective dose. The dose equivalent and equivalent dose in sievert (Sv) is equal to the absorbed dose in Gray (Gy) multiplied by the radiation weighting factors;

 (33)  "Source-image receptor distance," the distance from the source to the center of the input surface of the image receptor;

 (34)  "Stray radiation," the sum of leakage radiation coming from within the source housing, except for the useful beam and radiation produced when the exposure switch or timer is not activated, and scattered radiation that, during passage through matter, has been deviated in direction;

 (35)  "Technique factors," the following conditions of operation:

 (a)  For capacitor energy storage equipment, peak tube potential in kV and quantity of charge in mAs;

 (b)  For field emission equipment rated for pulsed operation, peak tube potential in kV, and number of X ray pulses;

 (c)  For computer tomography (CT) X ray systems designed for pulsed operation, peak tube potential in kV, scan time in seconds, and either tube current in mA, X ray pulse width in seconds, and the number of X ray pulses per scan, or the product of tube current, X ray pulse width, and the number of X ray pulses in mAs;

 (d)  For CT X ray systems not designed for pulsed operation, peak tube potential in kV, and either tube current in mA and scan time in seconds, or the product of tube current and exposure time in mAs and the scan time if the scan time and exposure time are equivalent; and

 (e)  For all other equipment, peak tube potential in kV, and either tube current in mA and exposure time in seconds, or the product of tube current and exposure time in mAs;

 (36)  "Tube," any electron tube that is designed for the conversion of electrical energy into X ray energy;

 (37)  "Useful beam," radiation that passes through the patient to the image receptor;

 (38)  "Very high radiation area," an area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of five hundred rads or five grays in one hour at one meter from a radiation source or one meter from any surface the radiation penetrates;

 (39)  "X ray exposure control," a device, switch, or button by which an operator initiates or terminates, or both, the radiation exposure, including timers and back-up timers;

 (40)  "X ray equipment," an X ray system, subsystem, or component of the system;

 (41)  "X ray field," the area of the intersection of the useful beam and any one of the set of planes parallel to and including the plane of the image receptor, whose perimeter is the locus of points at which the exposure rate is one-fourth of the maximum in the intersection; and

 (42)  "X ray system," an assemblage of components for the controlled production of X rays. The term includes minimally an X ray high-voltage generator, an X ray control, a tube housing assembly, a beam-limiting device, and the necessary supporting structures.

 **Source:** SL 1975, ch 16, § 1; 6 SDR 93, effective July 1, 1980; 26 SDR 96, effective January 23, 2000; 50 SDR 41, effective October 11, 2023.

 **General Authority:** SDCL 34-21-4.1, 34-21-15.

 **Law Implemented:** SDCL 34-21-2, 34-21-18.