ILLINOIS EMERGENCY MANAGEMENT AGENCY

NOTICE OF ADOPTED AMENDMENTS

1) Heading of the Part: General Provisions for Radiation Protection

2) Code Citation: 32 Ill. Adm. Code 310

3)

Section Number:	Proposed Action:
310.10	Amendment
310.20	Amendment
310.40	Amendment

4) Statutory Authority: Implementing and authorized by Section 10 of the Radiation Protection Act of 1990 [420 ILCS 40].

5) Effective Date of Amendments:

6) Does this rulemaking contain an automatic repeal date? No

7) Does this rulemaking contain incorporations by reference? Yes

8) A copy of the adopted amendments, including any material incorporated by reference is on file at the Agency's headquarters located at 1035 Outer Park Drive, Springfield, Illinois and is available for public inspection

9) Notice of Proposal Published in the Illinois Register: 34 Ill. Reg. 16619, 10/29/10

10) Has JCAR issued a Statement of Objections to these Amendments? No

11) Differences between proposal and final version: Several grammatical and stylistic changes were made in accordance with JCAR's recommendation. In addition, the following changes were made:

1. In Section 310.20 under definition of "Act", struck "(the Act)"
2. In Section 310.20 under definition of "Special form radioactive material" struck "73 Fed. Reg. 63572, October 24, 2008" and added "60 Fed. Reg. 50264, September 28, 1995".
3. In Section 310.20 under definition of "Waste", struck "paragraph (2) of the definition of "byproduct material" in the Act and added "Section 4(2-5)(2) of the Act."

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12) Have all the changes agreed upon by the agency and JCAR been made as indicated in the agreement letter issued by JCAR? Yes

13) Will these amendments replace an emergency rule currently in effect? No

14) Are there any amendments pending on this Part? No

15) Summary and Purpose of amendments: This proposed rulemaking will ensure compatibility with the U.S. Nuclear Regulatory Commission's 10 CFR 20, 30, 32, and 35 regulations currently in place for use of radioactive materials. Agreement States such as Illinois are required to have these changes in place by December 17, 2010. NRC has assigned this rulemaking a compatibility category of A, which means that the Illinois rule must have language essentially identical to NRC's. This rulemaking will clarify standards for regulation of discrete sources of radium-226, accelerator-produced radioactive material, and discrete sources of naturally occurring radioactive material as required by the Energy Policy Act of 2005 (EPAct), which was signed into law on August 8, 2005. The EPAct expanded the Atomic Energy Act of 1954 definition of *Byproduct material* to include any discrete source of radium-226, any material made radioactive by use of a particle accelerator, or any discrete source of naturally occurring radioactive material other than source material. The proposed rulemaking will also clarify record retention and include a definition for "physician".

Section 31 of the Radiation Protection Act of 1990 [420 ILCS 40/31] provides that the Agency is exempt from rulemaking procedures in the Illinois Administrative Procedure Act when regulations that are identical in substance are necessary to implement, secure, or maintain federal authorization for a program. After consideration of comments from the appropriate federal agency, the Agency may adopt the verbatim text of the laws, regulations, or orders as necessary and appropriate for authorization or maintenance of the program. The NRC has reviewed the proposed amendments and has indicated that these amendments are needed to ensure compatibility with 10 CFR 20, 30, 32, and 35. Because this rulemaking is not subject to the Illinois Administrative Procedure Act, and in accordance with Section 31, this rulemaking will become effective following the first notice period immediately upon filing for adoption with the Secretary of State or at a date required or authorized by the relevant federal laws, regulations, or orders as stated in the notice of the rulemaking, and shall be published in the Illinois Register.

16) Information and questions regarding these adopted amendments shall be directed to:

Louise Michels

ILLINOIS EMERGENCY MANAGEMENT AGENCY

NOTICE OF ADOPTED AMENDMENTS

Staff Attorney
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, Illinois 62704
(217) 524-0770

The full text of the Adopted Amendments begin on the next page:

ILLINOIS EMERGENCY MANAGEMENT AGENCY

NOTICE OF ADOPTED AMENDMENTS

TITLE 32: ENERGY
CHAPTER II: ILLINOIS EMERGENCY MANAGEMENT AGENCY
SUBCHAPTER b: RADIATION PROTECTION

PART 310
GENERAL PROVISIONS FOR RADIATION PROTECTION

Section

AUTHORITY: Implementing and authorized by the Radiation Protection Act of 1990 [420 ILCS 40].

SOURCE: Filed April 20, 1974 by the Department of Public Health; transferred to the Department of Nuclear Safety by P.A. 81-1516, effective December 3, 1980; codified at 7 Ill. Reg. 15657; amended at 10 Ill. Reg. 17259, effective September 25, 1986; amended at 15 Ill.

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Reg. 10604, effective July 15, 1991; amended at 17 Ill. Reg. 18472, effective January 1, 1994; amended at 20 Ill. Reg. 15978, effective December 9, 1996; amended at 23 Ill. Reg. 14454, effective January 1, 2000; recodified from the Department of Nuclear Safety to the Illinois Emergency Management Agency at 27 Ill. Reg. 13641; amended at 29 Ill. Reg. 20748, effective December 16, 2005; amended at 31 Ill. Reg. 11573, effective July 26, 2007; amended at 35 Ill. Reg. _____, effective _____.

Section 310.10 Scope

Except as otherwise specifically provided, this Part applies to all persons who receive, possess, use, transfer, own or acquire any source of radiation within the State of Illinois; provided, however, that nothing in this Part or 32 Ill. Adm. Code 320, 326, 330, 331, 332, 335, 340, 341, 346, 350, 351, 400, 401, 405 or ~~and~~ 601 shall apply to any person to the extent such person is subject to regulation by the U.S. Nuclear Regulatory Commission (NRC).

AGENCY NOTE: ~~Attention is directed to the fact~~ that rRegulation by the State of source material, byproduct material and special nuclear material in quantities not sufficient to form a critical mass is subject to the provisions of an agreement between the State and the NRC and to 10 CFR 150 of the NRC's ~~Commission's~~ regulations.

(Source: Amended at 35 Ill. Reg. _____, effective _____)

Section 310.20 Definitions

As used in 32 Ill. Adm. Code: Chapter II, Subchapters b and d, these terms have the definitions set forth below. Additional definitions used only in a certain Part will be found in that Part.

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

"Accelerator" or "particle accelerator" means any machine capable of accelerating electrons, protons, deuterons or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 million electron volts (MeV).

"Accelerator-produced material" means any material made radioactive by a particle accelerator.

"Act" means the Radiation Protection Act of 1990 (the Act) [420 ILCS 40].

"Activity" means the rate of disintegration (transformation) or decay of radioactive material. The units of activity are the Bequerel (Bq) and the curie (Ci).

"Adult" means an individual 18 or more years of age.

"Agency" means the Illinois Emergency Management Agency.

"Agreement State" means any state with which the U. S. Nuclear Regulatory Commission or the U.S. Atomic Energy Commission has entered into an effective agreement under subsection 274b of the Atomic Energy Act of 1954, as amended (42 USC 2021(b) et seq.).

"Airborne radioactive material" means any radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors or gases.

"Airborne radioactivity area" means any room, enclosure or operating area in which airborne radioactive material, composed wholly or partly of licensed material, exists in concentrations:

in excess of the derived air concentrations (DACs) specified in appendix B to 10 CFR 20, published at 72 Fed. Reg. 55922, October 1, 2007~~effective January 1, 2004~~, exclusive of subsequent amendments or editions; or

to such a degree 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 annual limit on intake (ALI) or 12 DAC-hours.

"Annually" means at intervals not to exceed 1 year.

"As low as is reasonably achievable" or "ALARA" means making every reasonable effort to maintain exposures to radiation as far below the dose limits in 32 Ill. Adm. Code: Chapter II, Subchapters b and d as is practical consistent with the purpose for which the licensed or registered activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed or registered sources of

radiation in the public interest.

"Background radiation" means radiation from cosmic sources, naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material) and global fallout as it exists in the environment from the testing of nuclear explosive devices, or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee. Background radiation does not include radiation from radioactive materials regulated by the Agency.

"Becquerel" or "Bq" means the SI unit of activity. One becquerel (Bq) is equal to 1 disintegration (transformation) per second (dps or tps).

"Bioassay" or "radiobioassay" means the determination of kinds, quantities or concentrations and, in some cases, the locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed from the human body.

"Brachytherapy" means a method of radiation therapy in which sealed sources are used to deliver a radiation dose at a distance of up to a few centimeters, by surface, intracavitory, intraluminal or interstitial application.

"Brachytherapy source" means a radioactive source, a manufacturer-assembled source train or a combination of these sources that is designed to deliver a therapeutic dose within a distance of a few centimeters.

"By-product material" means:

any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear material; (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from underground solution extraction processes but not including underground ore bodies depleted by such solution extraction processes; (3) any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; (4) any material that has been made radioactive by use of a particle

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accelerator and is produced, extracted, or converted after extraction before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and (5) any discrete source of naturally occurring radioactive material, other than source material, that is extracted or converted after extraction for use in commercial, medical, or research activity before, on, or after August 8, 2005, and which the U.S. Nuclear Regulatory Commission, in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate Federal agency, determines would pose a threat to the public health and safety or the common defense and security similar to the threat posed by a discrete source or radium-226. [420 ILCS 40/4(a-5)]

~~"Byproduct material" means:~~

~~*any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear material; and*~~

~~*the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from underground solution extraction processes but not including underground ore bodies depleted by such solution extraction processes.* [420 ILCS 40/4(a-5)]~~

"Calendar quarter" means not less than 12 consecutive weeks nor more than 14 consecutive weeks. The first calendar quarter of each year shall begin in January and subsequent calendar quarters shall be so arranged such 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. No licensee or registrant shall change the method observed by him for determining calendar quarters except at the beginning of a year.

"Calibration" means the determination of:

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

the strength of a source of radiation relative to a standard.

"CFR" means Code of Federal Regulations.

"Chelating agent" means amine polycarboxylic acids (e.g., EDTA, DTPA), hydroxy-carboxylic acids, and polycarboxylic acids (e.g., citric acid, carbolic acid, and glucinic acid).

"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.

"Committed dose equivalent" or "$H_{T,50}$" means 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.

"Committed effective dose equivalent" or $H_{E,50}$ means 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 ($H_{E,50} = \Sigma\, w_T H_{T,50}$).

"Critical group" means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

"Curie" means a unit of quantity of radioactivity. One Curie (Ci) is that quantity of radioactive material which decays at the rate of 3.7×10^{10} disintegrations (transformations) per second (dps or tps).

"Decommission" means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits release of property for unrestricted use and termination of the license.

"Declared pregnant woman" means any woman who has voluntarily informed the licensee or registrant, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

"Dedicated check source" means a radioactive source that is used to assure the

constant operation of a radiation detection or measurement device over several months or years.

"Deep dose equivalent" or "H_d" means the dose equivalent at a tissue depth of 1 centimeter (1000 milligrams per square centimeter) from external whole-body exposure.

"Densitometer" means a device that is used to provide a quantitative measurement of the optical density of x-ray film to determine the response of the film to exposure and development.

"Depleted uranium" means the source material uranium in which the isotope uranium-235 is less than 0.711 weight percent of the total uranium present. Depleted uranium does not include special nuclear material.

"Director" means the Director of the Illinois Emergency Management Agency.

“Discrete source” means a radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical or research activities.

"Distinguishable from background" means the detectable radioactivity is statistically different from background in the vicinity of the site, or, in the case of structures, in similar materials using adequate measurement technology, survey and statistical techniques.

"Dose" or "radiation dose" means either absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, total organ dose equivalent or total effective dose equivalent.

"Dose equivalent" or"H_T" means the product of the absorbed dose in tissue, quality factor and all other necessary modifying factors (e.g., a distribution factor for non-uniform deposition) at the location of interest. The units of dose equivalent are the sievert (Sv) and the rem.

"Dose limits" or "limits" means the permissible upper bounds of radiation doses established by, or in accordance with, 32 Ill. Adm. Code: Chapter II, Subchapters b and d.

"Dosimetry processor" means an individual or an organization that processes and evaluates individual monitoring devices in order to determine the radiation dose delivered to such devices.

"Effective dose equivalent" or "H_E" means the sum of the products of the dose equivalent to each organ or tissue (H_T) and the weighting factor (W_T) applicable to each of the body organs or tissues that are irradiated ($H_E = \Sigma w_T H_T$).

"Embryo/fetus" means the developing human organism from conception until the time of birth.

"Entrance or access point" means any opening through which an individual or extremity of an individual could gain access to radiation areas or to licensed radioactive materials. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.

"Exposure" means:

the quotient of dQ divided by dm where "dQ" is the absolute value of the total charge of the ions of one sign produced in air when all the electrons (negatrons and positrons) liberated by photons in a volume element of air having mass "dm" are completely stopped in air. ~~(~~See Section 310.140 ~~of this Part~~ for SI unit coulomb per kilogram (C/kg) and the special unit roentgen (R).); or

irradiation by ionizing radiation or radioactive material.

AGENCY NOTE: The context makes clear which is the appropriate definition.

"Exposure rate" means the exposure per unit of time, such as roentgen per minute (R/min) and milliroentgen per hour (mR/h).

"External dose" means that portion of the dose equivalent received from any source of radiation outside the body.

"Extremity" means a hand, elbow, arm below the elbow, foot, knee and leg below the knee.

"Former U.S. Atomic Energy Commission (AEC) or U.S. Nuclear Regulatory

Commission (NRC) licensed facilities" means nuclear reactors, nuclear fuel reprocessing plants, uranium enrichment plants, or critical mass experimental facilities where AEC or NRC licenses have been terminated.

"Gray" or "Gy" means the SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 joule per kilogram (J/kg) (100 rad).

"Healing arts" means the art or science or group of arts or sciences dealing with the prevention and cure or alleviation of human ailments, diseases or infirmities, and has the same meaning as "medicine" when the latter term is used in its comprehensive sense.

"High radiation area" means any 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 (1 mSv) in 1 hour at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates.

"Human use" means the internal or external administration of radiation or radioactive materials to human beings.

"Individual" means any human being.

"Individual monitoring" means the assessment of:

Dose equivalent by the use of individual monitoring devices or by the use of survey data; or

Committed effective dose equivalent by bioassay or by determination of the time-weighted air concentrations to which an individual has been exposed (i.e., DAC-hours). (For the definition of DAC-hours, see 32 Ill. Adm. Code 340.30.)

"Individual monitoring devices" (personnel dosimeter or dosimeter) means devices designed to be worn by a single individual for the assessment of dose equivalent. Examples of individual monitoring devices are film badges, thermoluminescence dosimeters (TLDs), optically stimulated luminescence dosimeters (OSLs), pocket ionization chambers, personal air sampling devices and electronic dosimeters (e.g., silicon diode dosimeters).

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"Inspection" means an official examination or observation including, but not limited to, tests, surveys, and monitoring to determine compliance with rules, regulations, orders, requirements, and conditions of the Agency.

"Interlock" means a device arranged or connected such that the occurrence of an event or condition is required before a second event or condition can occur or continue to occur.

"Internal dose" means that portion of the dose equivalent received from radioactive material taken into the body.

"License" means any license issued by the Agency in accordance with 32 Ill. Adm. Code: Chapter II, Subchapters b and d.

"Licensed material" means radioactive material received, possessed, used, transferred or disposed of under a general or specific license issued by the Agency.

"Licensee" means any person who is licensed by the Agency in accordance with 32 Ill. Adm. Code: Chapter II, Subchapters b and d.

"Licensing State" means any state which has been provisionally or finally designated as such by the Conference of Radiation Control Program Directors, Inc., which reviews state regulations to establish equivalency with the Suggested State Regulations and ascertains whether a state has an effective program for control of naturally occurring or accelerator-produced radioactive material (NARM). The Conference will designate as licensing states those states with regulations for control of radiation relating to, and an effective program for the regulatory control of, NARM.

"Lost or missing source of radiation" means any licensed or registered source of radiation whose location is unknown. This definition includes, but is not limited to, radioactive material that has been shipped but has not reached its planned destination and whose location cannot be readily traced in the transportation system.

"Major processor" means a person, other than medical programs, universities, industrial radiography services, or wireline service operations, who is licensed to

process, handle, or manufacture radioactive material as unsealed sources in quantities exceeding the quantities specified in appendix C to 10 CFR 20, published at 60 Fed. Reg. 20186, April 25, 1995,~~effective January 1, 2004,~~ exclusive of subsequent amendments or editions, by a factor of at least 10^3, or radioactive material as sealed sources in quantities exceeding the quantities specified in appendix C to 10 CFR 20 by a factor of at least 10^{10}.

"Member of the public" means any individual, except an individual who is performing assigned duties for the licensee or registrant involving exposure to sources of radiation.

"Minor" means an individual less than 18 years of age.

"Monitoring" or "radiation monitoring" or "radiation protection monitoring" means the measurement of radiation, radioactive material concentrations, surface area activities or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.

"NARM" means any naturally occurring or accelerator-produced radioactive material. It does not include byproduct, source, or special nuclear material.

"Natural radioactivity" means radioactivity of naturally occurring nuclides.

"Nuclear Regulatory Commission" or "NRC" means the U.S. Nuclear Regulatory Commission or its duly authorized representatives.

"Occupational dose" means the dose received by an individual in the course of employment in which the individual's assigned duties for the licensee or registrant involve exposure to sources of radiation. Occupational dose does not include dose received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released as authorized by the Agency, from voluntary participation in medical research programs, or as a member of the public.

"Operator" means an individual, group of individuals, partnership, firm, corporation, association, or other entity conducting the business or activities carried on within a radiation installation. [420 ILCS 40/4(d-7)]

"Package" means the packaging, together with its radioactive contents, as

presented for transport.

"Packaging" means the assembly of components necessary to ensure compliance with the packaging requirements of 32 Ill. Adm. Code 341. It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding and devices for cooling or absorbing mechanical shocks. The vehicle, tie down system and auxiliary equipment may be designated as part of the packaging.

"Particle accelerator" means any machine capable of accelerating electrons, protons, deuterons or other charged particles in a vacuum and of discharging the resultant particulate or other radiation into a medium at energies usually in excess of 1 million electron volts (MeV). For purposes of this definition, "accelerator" is an equivalent term.

"Person" *means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other State or political subdivision or agency thereof, and any legal successor, representative, agent, or agency of the foregoing, other than the United States Nuclear Regulatory Commission, or any successor thereto, and other than federal government agencies licensed by the United States Nuclear Regulatory Commission, or any successor thereto. "Person" also includes a federal entity (and its contractors) if the federal entity agrees to be regulated by the State or as otherwise allowed under federal law.* [420 ILCS 40/4(e)]

"Personnel monitoring equipment" (see "Individual monitoring devices").

"PET" means positron emission tomography.

"Pharmacist" means an individual licensed by the State pursuant to the Pharmacy Practice Act of 1987 [225 ILCS 85] to compound and dispense drugs, prescriptions, and poisons.

"Physician" means an individual licensed to practice a treatment of human ailments by virtue of the Medical Practice Act of 1987 [225 ILCS 60], the Illinois Dental Practice Act [225 ILCS 25] or the Podiatric Medical Practice Act of 1987 [225 ILCS 100], who may use radiation for therapeutic, diagnostic or other medical purposes within the limits of the individual's licensure.

"Positron emission tomography radionuclide production facility" means a facility operating a particle accelerator for the purpose of producing PET radionuclides.

"Protective apron" means any apron made of radiation attenuating materials, at least 0.25 millimeter lead equivalent, that may be used to reduce exposure to radiation.

"Qualified engineering expert" means any person qualified under the Illinois Architecture Practice Act of 1989 [225 ILCS 305], the Structural Engineering Licensing Act of 1989 [225 ILCS 340] and/or any required combination thereof.

"Quality factor" or "Q" means the modifying factor (listed in Section 310.140, Tables 1 and 2 ~~of this Part~~) that is used to derive dose equivalent from absorbed dose.

"Quarterly" means at intervals not to exceed 3 months.

"Rad" means the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 ergs per gram or 0.01 joule per kilogram (J/kg) (0.01 Gy).

"Radiation" or "ionizing radiation" means *gamma rays and x-rays, alpha and beta particles, high-speed electrons, neutrons, protons, and other nuclear particles, or electromagnetic radiations capable of producing ions directly or indirectly in their passage through matter; but does not include sound or radio waves, or visible infrared or ultraviolet light.* [420 ILCS 40/4(f)]

"Radiation area" means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.05 mSv (0.005 rem) in 1 hour at 30 centimeters from the source of radiation or from any surface that the radiation penetrates.

"Radiation dose" (see "Dose").

"Radiation emergency" means *the uncontrolled release of radioactive material from a radiation installation which poses a potential threat to the public health, welfare and safety.* [420 ILCS 40/4(f-5)]

"Radiation Installation" *is any location or facility where radiation machines are used or where radioactive material is produced, transported, stored, disposed or*

used for any purpose [420 ILCS 40/4(g)], except where such radioactive materials or facility are subject to regulation by the NRC.

"Radiation machine" means *any device that produces radiation when in use* [420 ILCS 40/4(h)], except those that produce radiation only from radioactive materials.

"Radiation safety officer" means an individual who has the knowledge and responsibility to apply appropriate radiation protection regulations and has been assigned that responsibility by the licensee or registrant.

"Radioactive material" means *any solid, liquid, or gaseous substance which emits radiation spontaneously*. [420 ILCS 40/4(i)]. It includes material defined as "byproduct material" in the Act.

"Radioactivity" means the disintegration (transformation) of unstable atomic nuclei by the emission of radiation.

"Radiobioassay" (see "Bioassay").

"Registrant" means any person who is registered with the Agency and is legally obligated to register with the Agency pursuant to the Radiation Protection Act of 1990 [420 ILCS 40] and 32 Ill. Adm. Code 320.10.

"Registration" means registration with the Agency in accordance with 32 Ill. Adm. Code 320.10.

"Regulations of the U.S. Department of Transportation" or "regulations of USDOT" means the regulations in 49 CFR 100-189, revised October 1, 2008~~as of October 1, 2004~~, exclusive of ~~any~~ subsequent amendments or editions.

"Rem" means 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 multiplied by the quality factor (1 rem = 0.01 Sv).

"Research and development" means:

theoretical analysis, exploration, or experimentation; or

the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

Research and development does not include the internal or external administration of radiation or radioactive material to human beings.

"Residual radioactivity" means radioactivity in structures, materials, soils, groundwater and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 32 Ill. Adm. Code 340 or the equivalent provisions of 10 CFR 20.

"Restricted area" means any area access to which is limited by the licensee or registrant for purposes of protecting individuals against undue risks from exposure to sources of radiation. Restricted area shall not include areas used for residential quarters, but separate rooms in a residential building may be set apart as a restricted area.

"Roentgen" means the special unit of exposure. One roentgen (R) equals 2.58 x 10^{-4} coulombs per kilogram (C/kg). (See "Exposure" and Section 310.140 ~~of this Part~~.)

"Sealed source" means any device containing radioactive material to be used as a source of radiation which has been constructed in such a manner as to prevent the escape of any radioactive material.

"Sealed source and device registry" means the national registry that contains all the registration certificates generated by the Agency, U.S. Nuclear Regulatory Commission or an Agreement State that summarize the radiation safety information for the sealed sources and devices and describe the licensing and use conditions approved for the product.

"Sensitometer" means a device that is used to test the setup and stability of film processing procedures and equipment by providing a standard pattern of light

exposure of x-ray film.

"Shallow dose equivalent" or "H_s", which applies to the external exposure of the skin or an extremity, means the dose equivalent at a tissue depth of 0.007 centimeter (7 milligrams per square centimeter).

"SI" means the abbreviation for the International System of Units.

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

"Source material" means:

uranium or thorium, or any combination thereof, in any physical or chemical form; or

ores that contain by weight one-twentieth of one percent (0.05 percent) or more of uranium, thorium or any combination thereof.

Source material does not include special nuclear material.

"Source of radiation" means any radioactive material or any device or equipment emitting, or capable of producing, radiation.

"Special form radioactive material" means radioactive material that satisfies the following conditions:

It is either 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 millimeters (0.197 inch); and

It satisfies the test requirements specified in 10 CFR 71.75 and 71.77, published at 60 Fed. Reg. 50264, September 28, 1995~~January 26, 2004, with corrections published February 10, 2004,~~ exclusive of subsequent amendments or editions, except that special form radioactive material designed or constructed prior to July 1, 1985 need only meet the

requirements of 10 CFR 71.75 and 71.77 in effect on June 30, 1983.

"Special nuclear material" means:

plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235 and any other material which the Agency declares by order to be special nuclear material after the United States Nuclear Regulatory Commission, or any successor thereto, has determined the material to be such, but does not include source material; or

any material artificially enriched by any of the foregoing, but does not include source material. [420 ILCS 40/4(l)]

"Special nuclear material in quantities not sufficient to form a critical mass" means uranium enriched in the isotope U-235 in quantities not exceeding 350 grams of contained U-235; U-233 in quantities not exceeding 200 grams; plutonium in quantities not exceeding 200 grams; or any combination of them, except source material, in accordance with the following formula: For each kind of special nuclear material, determine the ratio between the quantity of that special nuclear material and the quantity specified above for the same kind of special nuclear material. The sum of such ratios for all of the kinds of special nuclear material in combination shall not exceed one. For example, the following quantities in combination would not exceed the limitation and are within the formula:

$$\frac{175\,(\text{grams contained U-235})}{350}+\frac{50\,(\text{grams U-233})}{200}+\frac{50\,(\text{grams Pu})}{200}=1$$

"Survey" means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of sources of radiation. Such an evaluation includes, but is not limited to, measurements or calculations of levels of radiation, or concentrations or quantities of radioactive material present.

"Test" means the process of verifying compliance with an applicable regulation.

"Total effective dose equivalent" or "TEDE" means the sum of the deep dose equivalent for external exposures and the committed effective dose equivalent for

internal exposures.

"Total organ dose equivalent" or "TODE" means the sum of the deep dose equivalent and the committed dose equivalent to the organ receiving the highest dose as described in 32 Ill. Adm. Code 340.1160(a)(6).

"Unrefined and unprocessed ore" means ore in its natural form prior to any processing, such as grinding, roasting, beneficiating or refining.

"Unrestricted area" means any area access to which is not controlled by the licensee or registrant for purposes of protection of individuals from exposure to radiation and radioactive material, and any area used for residential quarters. AGENCY NOTE: Licensees or registrants may control access to certain areas for purposes other than radiation protection, but such action does not affect whether the areas are unrestricted areas as defined in this Part.

"Uranium fuel cycle" means the operations of milling of uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity by a light-water-cooled nuclear power plant using uranium fuel and reprocessing of spent uranium fuel to the extent that these activities directly support the production of electrical power for public use. Uranium fuel cycle does not include mining operations, operations at waste disposal sites, transportation of radioactive material in support of these operations and the reuse of recovered non-uranium special nuclear and byproduct materials from the cycle.

"U.S. Department of Energy" means the agency created by the Department of Energy Organization Act (established by P.L. 95-91, 91 Stat. 565, 42 USC 7101 et seq.), to the extent that the Department of Energy, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c) and (d) of the Energy Reorganization Act of 1974 (P.L. 93-438, 88 Stat. 1233 at 1237, 42 USC 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (P.L. 95-91, 91 Stat. 565 at 577-578, 42 USC 7151).

"Very high radiation area" means 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 500 rads (5 grays) in 1 hour at 1 meter from a radiation source or 1 meter from any surface that the radiation penetrates.

AGENCY NOTE: For very high doses received at high dose rates, units of absorbed dose (e.g., gray and rad) are appropriate rather than units of dose equivalent (e.g., sievert and rem).

"Waste" means those low-level radioactive wastes containing source, special nuclear or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level radioactive waste means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in Section 4(a-5)(2) of the Act.

"Waste handling licensee" means a person licensed by ~~the NRC,~~ the Agency, the U.S. Nuclear Regulatory Commission or an Agreement State ~~or a Licensing State~~ to receive radioactive wastes for storage or treatment, or both storage and treatment, prior to disposal as well as any person licensed to receive radioactive waste for disposal away from the point of generation.

"Week" means 7 consecutive days starting on Sunday.

"Whole body" means, for purposes of external exposure, head, trunk (including male gonads), arms above the elbow or legs above the knee.

"Worker" means any individual engaged in work under a license or registration issued by the Agency and controlled by a licensee or registrant, but does not include the licensee or registrant.

"Working level" or "WL" means any combination of short-lived radon daughters in 1 liter of air that will result in the ultimate emission of 1.3×10^5 MeV of potential alpha particle energy. The short-lived radon daughters are for radon-222: polonium-218, lead-214, bismuth-214 and polonium-214; and for radon-220: polonium-216, lead-212, bismuth-212 and polonium-212.

"Working level month" or "WLM" means an exposure to 1 working level (WL) for 170 hours. (2,000 working hours per year divided by 12 months per year is

approximately equal to 170 hours per month.)

"Year" means the period of time beginning in January used to determine compliance with the provisions of 32 Ill. Adm. Code: Chapter II, Subchapters b and d. The licensee or registrant may change the starting date of the year used to determine compliance by the licensee or registrant provided that the decision to make the change is made not later than December 31 of the previous year. If a licensee or registrant changes a year, the licensee or registrant shall assure that no day is omitted or duplicated in consecutive years.

(Source: Amended at 35 Ill. Reg. _____, effective _____)

Section 310.40 Records

Each licensee and registrant shall maintain records showing the receipt, transfer, use, storage and disposal of all sources of radiation. Additional record requirements are specified elsewhere in 32 Ill. Adm. Code: Ch. II, Subchapters b and d. Each record required by this Part shall be legible throughout the specified retention period. The record shall be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel. The microform shall be capable of producing a clear copy throughout the required retention period. Records may be stored in electronic media with the capability for producing legible, accurate and complete records during the required retention period. Records such as letters, drawings and specifications shall include all pertinent information such as stamps, initials and signatures. The licensee or registrant shall maintain adequate safeguards against tampering with and loss of records.

(Source: Amended at 35 Ill. Reg. _____, effective _____)