Radiation Safety Glossary

Absorbed dose	The energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the Gray (Gy).
Activity	The rate of disintegration (transformation) or decay of radioactive material per unit time. The units of activity (also known as radioactivity) are the curie (Ci) and the becquerel (Bq). Credit: The Nuclear Regulatory Commission (NRC)
Airborne radioactive material	Radioactive material dispersed in the air in the form of • dusts, • fumes, • particulates, • mists, • vapors, or • gases.
Airborne radioactivity area	A room, enclosure, or area in which airborne radioactive materials exist in concentrations: • In excess of the derived air concentrations (DACs) in the Alabama Radiation Control Rules (ARCR). • 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 % of the annual limit on intake (ALI) or 12 DAC-hours.
ALARA	ALARA stands for **A**s **L**ow **A**s **R**easonable **A**chievable and means making every reasonable effort to maintain exposures to radiation as far below the dose limits as is practical: 1. Consistent with the purpose for which the licensed or registered activity is undertaken, 2. 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 3. In relation to utilization of nuclear energy and licensed or registered sources of radiation in the public interest. ALARA Calculator: http://www.radprocalculator.com/ALARA.aspx

Alpha emitters	When the ratio of neutrons to protons in the nucleus is too low, certain atoms restore the balance by emitting alpha particles. For example: Polonium-210 has 126 neutrons and 84 protons, a ratio of 1.50 to 1. Following radioactive decay by the emission of an alpha particle, the ratio becomes 124 neutrons to 82 protons, or 1.51 to 1. Alpha emitting atoms tend to be very large atoms (that is, they have high atomic numbers). With some exceptions, naturally occurring alpha emitters have atomic numbers of at least 82 (the element lead). Credit: The U.S. Environmental Protection Agency (EPA)
Alpha particle	A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2. It has low penetrating power and a short range (a few centimeters in air). The most energetic alpha particle will generally fail to penetrate the dead layers of cells covering the skin, and can be easily stopped by a sheet of paper. Alpha particles are hazardous when an alpha-emitting isotope is inside the body. Credit: The Nuclear Regulatory Commission (NRC)
Annual limit on intake (ALI)	The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 0.05 Sv (5 rems) or a committed dose equivalent of 0.5 Sv (50 rems) to any individual organ or tissue. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in Table I, Columns 1 and 2 of Appendix B of the ARCR.
Area of use	A portion of a physical structure that has been set aside for the purpose of receiving, using, preparing, or storing radioactive material.
Atom	The smallest particle of an element that cannot be divided or broken up by chemical means. It consists of a central core (or nucleus), containing protons and neutrons, with electrons revolving in orbits in the region surrounding the nucleus. Credit: The Nuclear Regulatory Commission (NRC)
Atomic number	The number of positively charged protons in the nucleus of an atom Credit: The Nuclear Regulatory Commission (NRC)

Authorized Physician User	A practitioner of the healing arts who is identified as an authorized user on a State of Alabama license or particle accelerator registration, or on a permit issued by a State of Alabama specific license or particle accelerator registration of broad scope, that authorizes the medical use of radioactive material or a particle accelerator.
Authorized User	Persons authorized to use radioactive materials. The authorization to use these radioactive materials is given to UAB radioactive materials licensees or to individuals working under their supervision.
Background radiation	Radiation from cosmic sources; naturally occurring radioactive materials, including radon, except as a decay product of source or special nuclear material, and including global fallout as it exists in the environment from the testing of nuclear explosive devices. "Background radiation" does not include radiation from licensed or registered sources regulated by the State of Alabama or Jefferson County, Alabama.
Becquerel (Bq)	The SI unit of activity One Becquerel is equal to 1 disintegration or transformation per second (dps or tps)
Beta emitter	Beta particle emission occurs when the ratio of neutrons to protons in the nucleus is too high. In this case, an excess neutron transforms into a proton and an electron. The proton stays in the nucleus and the electron is ejected energetically. This process decreases the number of neutrons by one and increases the number of protons by one. Since the number of protons in the nucleus of an atom determines the element, the conversion of a neutron to a proton actually changes the radionuclide to a different element. Often, gamma ray emission accompanies the emission of a beta particle. When the beta particle ejection doesn't rid the nucleus of the extra energy, the nucleus releases the remaining excess energy in the form of a gamma photon. Examples: Iodine-131, Tritium Credit: The U.S. EPA
Beta particle	A charged particle (with a mass equal to 1/1837 that of a proton) that is emitted from the nucleus of a radioactive element during radioactive decay (or disintegration) of an unstable atom. A negatively charged beta particle is identical to an electron, while a positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Beta particles may be stopped by thin sheets of metal or plastic. Credit: The NRC

Bioassay	The determination of kinds, quantities or concentrations, and, in some cases, quantities 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. "Radiobioassay" is an equivalent term.
Brachytherapy	A method of radiation therapy in which sealed sources are utilized to deliver a radiation dose at a distance of up to a few centimeters, by surface, intracavitary, or interstitial application
Bremsstrahlung	Bremsstrahlung is a type of "secondary radiation." It is produced as a result of stopping (or slowing) the primary radiation (beta particles). The Bremsstrahlung produced by shielding this radiation with the normally used dense materials (e.g. lead) is dangerous. In such cases, shielding must be accomplished with low density materials, like Plexiglas or plastic because the rate of deceleration of the electron is slower, the radiation given off has a longer wavelength and is therefore less penetrating. Credit: Wikipedia
Class	A classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: • for Class D, Days, of less than 10 days, • for Class W, Weeks, from 10 to 100 days, and • for Class Y, Years, of greater than 100 days. "Lung class" and "inhalation class" are equivalent terms.
Clean area	An area free from all sources of radiation except naturally occurring radioactivity - synonymous with the concept of background as used within these procedures
Collective dose	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 (HT,50)	The dose equivalent to organs or tissues of reference (T) that is received from an intake of radioactive material by an individual during the 50-year period following the intake
Concentration	The ratio of the amount of a specific substance in a given volume or mass of solution to the mass or volume of solvent. (Activity / volume)
Controlled area	An area, outside of a restricted area but inside the site boundary, access to which can be limited by the UAB radioactive materials licensee or particle accelerator registrant for any reason

Curie	One of three units used to measure the intensity of radioactivity in a sample of material. This value refers to the amount of ionizing radiation released when an element (such as uranium) spontaneously emits energy as a result of the radioactive decay (or disintegration) of an unstable atom. Credit: The NRC
Decay rate	The spontaneous transformation of an unstable atomic nucleus into a lighter one, in which radiation is released in the form of alpha particles, beta particles, gamma rays, and other particles. Credit: The American Heritage ® Science Dictionary 2005 Houghton Mifflin Company
Declared pregnant woman	A woman who has voluntarily informed her employer, 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	A radioactive source that is used to assure the consistent response of a radiation detection or measurement device over several months or years
Deep dose equivalent (Hd)	Applies to external whole body exposure, means the dose equivalent at a tissue depth of 1 centimeter (1000 mg/cm2)
Deminimus Level	A quantity of radioactivity that falls within those amounts established in the Schedule of Deminimus Levels of Radioactivity given in Appendix M of the manual. This term is used to describe those amounts of radioactivity for which area survey, use, transfer, and waste disposal records are not required, in accordance with the restrictions given on page 35 of the manual.
Derived air concentration-hour (DAC-hour)	The product of the concentration of radioactive material in air, expressed as a fraction or multiple of the derived air concentration for each radionuclide, and the time of exposure to that radionuclide, in hours. A UAB radioactive materials licensee may take 2,000 DAC-hours to represent one ALI, equivalent to a committed effective dose equivalent of 0.05 Sv (5 rem).
Derived air concentration (DAC)	The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work, results in an intake of one ALI. The condition of light work is an inhalation rate of 1.2 cubic meters of air per hour for 2,000 hours in a year. DAC values are given in Table I, Column 3, of Appendix B of the ARCR.
Deterministic effect	This is an equivalent term to nonstochastic effect. (See Nonstochastic effect for more information.)

Disintegrations per second	The strength of a radiation source can be defined as the number of disintegrations per time (usually per second) - known as the source activity. (One disintegration is one decay event.) Credit: www.thinkquest.library.org
Dose	The absorbed dose, given in rads (or in SI units, grays), that represents the energy absorbed from the radiation in a gram of any material. Furthermore, the biological dose or dose equivalent, given in rem or sieverts, is a measure of the biological damage to living tissue from radiation exposure. Credit: The NRC
Dose equivalent (HT)	The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the Sievert (Sv) and rem.
Editorial Changes in the Procedures	Changes in the procedures (including the radioactive materials application) that do not affect the management of this radiation safety program and the radiation safety surrounding the use, transfer, and disposition of radioactive materials possessed at this facility (i.e., approved providers of film badge service, of instrument calibration service and of radioactive waste disposal service, changes in appropriate instrumentation, the inclusion of clarifying definitions not covered by the Alabama Radiation Control Regulations, etc.)
Effective dose equivalent	(HE) means the sum of the products of the dose equivalent to each organ or tissue (HT) and the weighting factor (wT) applicable to each of the body organs or tissues that are irradiated (HE = Σ wTHT).
Electron	An elementary particle with a negative charge and a mass 1/1837 that of the proton. Electrons surround the positively charged nucleus and determine the chemical properties of the atom. Credit: The NRC
Enhanced Radioactivity	Radioactivity at levels above background (naturally occurring) levels
Erg	A unit of work or energy A dose of one rad is equivalent to the absorption of 100 ergs (which is a small but measurable amount of energy) per gram of absorbing tissue.
Exempt Concentration	A special type of It is that concentration for a type of radioactive material that falls within those concentrations established in the Schedule of Deminimus Levels of Radioactivity given in Appendix M of the manual. See page 35 of the manual for more information regarding exempt concentrations.

Exempt Quantity	A special type of It is that quantity of a type of radioactive material that falls within those amounts established in the Schedule of Deminimus Levels of Radioactivity given in Appendix M the manual See page 35 of the manual for more information regarding exempt quantities.
Exposure	Absorption of ionizing radiation or ingestion of a radioisotope Credit: the NRC
External dose	Exposure to ionizing radiation when the radiation source is located outside the body Credit: The NRC
Extremity	Refers to the hand, elbow, arm below the elbow, foot, knee, and leg below the knee
Eye dose equivalent	The external dose equivalent to the lens of the eye at a tissue depth of 0.3 centimeter (300 mg/cm2)
Full-scale reading	The reading of highest demarcation on a scale
Gamma emitters	Gamma radiation emission occurs when the nucleus of a radioactive atom has too much energy. It often follows the emission of a beta particle. Gamma emitting radionuclides are the most widely used radiation sources. The penetrating power of gamma photons has many applications. The three radionuclides by far most useful are cobalt-60, cesium-137, and technetium-99m. Credit: The EPA
Gamma rays	High-energy, short wavelength, electromagnetic radiation emitted from the nucleus. Gamma radiation frequently accompanies alpha and beta emissions and always accompanies fission. Gamma rays are very penetrating and are best stopped or shielded by dense materials, such as lead or depleted uranium. Gamma rays are similar to x-rays. Credit: The NRC
Gray (Gy)	The SI unit of absorbed dose One gray is equal to an absorbed dose of 1 joule per kilogram (100 rad).
Half-life	The time in which one half of the atoms of a particular radioactive substance disintegrate into another nuclear form. Measured half-lives vary from millionths of a second to billions of years. Credit: The NRC
High radiation area	An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 1 mSv (0.1 rem) in 1 hour at 30 centimeters from any source of radiation or from any surface that the radiation penetrates

Individual Monitoring	Individual monitoring is the assessment of: (i) Dose equivalent (a) by the use of individual monitoring devices or (b) by the use of survey data; or (ii) Committed effective dose equivalent (a) by bioassay or (b) by determination of the time-weighted air concentrations to which an individual has been exposed, that is, Derived Air Concentration hours (DAC-hours).
Internal dose	That portion of the dose equivalent received from radioactive material taken into the body An "intake" is the amount entering the body, an "uptake" is the amount absorbed into extracellular fluid, and a "deposition" is the amount which has entered and is present in the organ of reference.
Inverse square law	A physical law describing the intensity of radiation at various distances from a point source Credit: University of Pennsylvania - School of Medicine Inverse Square Law Calculator: http://www.radprocalculator.com/InverseSquare.aspx
Ionization	The process of adding one or more electrons to, or removing one or more electrons from, atoms or molecules, thereby creating ions. High temperatures, electrical discharges, or nuclear radiations can cause ionization. Credit: The NRC
Joule	A unit of measure - One unit of work or energy A joule is defined as the amount of energy expended by a force of one newton moving an object one meter in the same direction as the force. Also see Units of Measure Credit: www.wisegeek.com
Licensee	A licensee can refer to a department, division or individual that has been licensed by the UAB Radioisotope and Radiation Safety Committee (RRSC) to possess and use the radioactive materials listed on the licensing documents issued to them.
Management	The chief executive officer or other individual having the authority to manage, direct, or administer the licensee's activities, or those persons' delegate or delegates
Member of the public	An individual in a controlled or unrestricted area - However, an individual is not a member of the public during any period in which the individual receives an occupational dose.

Misadministration	The administration of: Radioactive material or radiation from radioactive material: (a) Other than events that result from intervention by a patient or human research subject, any event which results in: 1. A dose that differs from the prescribed dose by more than 5 millisieverts (500 millirem) effective dose equivalent, 0.05 sieverts (5 rem) to an organ or tissue, or 0.05 sieverts (5 rem) shallow dose equivalent to the skin; and either (i) The total dose delivered differs from the prescribed dose by 20 percent or more; (ii) The total dosage delivered differs from the prescribed dosage by 20 percent or more or falls outside the prescribed dosage range; or (iii) The fractionated dose delivered differs from the prescribed dose, for a single fraction, by 50 percent or more. 2. A dose that exceeds 5 millisieverts (500 millirem) effective dose equivalent, 0.05 sieverts (5 rem) to an organ or tissue, or 0.05 sieverts (5 rem) shallow dose equivalent to the skin from any of the following: (i) An administration of a wrong radioactive drug; (ii) An administration of a radioactive drug containing radioactive material by the wrong route of administration; (iii) An administration of a dose or dosage to the wrong individual or human research subject; (iv) An administration of a dose or dosage delivered by the wrong mode of treatment; or (v) A leaking sealed source. 3. A dose to the skin or an organ or tissue other than the treatment site that exceeds by 0.05 sieverts (5 rem) to an organ or tissue and 50 percent of the dose expected from the administration defined in the written directive (excluding, for permanent implants, seeds that were implanted in the correct site but migrated outside the treatment site). (b) Any event resulting from intervention of a patient or human research subject which results, or is anticipated to result in, unintended permanent functional damage to an organ or a physiological system, as determined by a physician. A Therapeutic Particle Accelerator Dose: 1. Involving the wrong patient or wrong treatment site; 2. When the treatment consists of 3 or fewer fractions and the calculated total absorbed dose administered differs from the total absorbed dose prescribed by more than 10 percent of the total prescribed dose; 3. When the calculated weekly administered dose is 30 percent or more greater than the weekly prescribed dose; or 4. When the calculated total absorbed dose administered differs from the total absorbed dose prescribed by more than 20 percent of the total prescribed dose.

Monitoring	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 "Radiation monitoring" and "radiation protection monitoring" are equivalent terms.
NARM	Any naturally occurring or accelerator-produced radioactive material It does not include byproduct, source, or special nuclear material.
Negative ion	A negative ion is an atom that has gained one or more electrons. In this state, there are fewer protons with their positive electrical charge than there are electrons with their negative electrical charge. Credit: Weber State University
Negatron	An uncharged elementary particle with a mass slightly greater than that of the proton, and found in the nucleus of every atom heavier than hydrogen Credit: The Health Physics Society
Neutron	An uncharged elementary particle, with a mass slightly greater than that of the proton, found in the nucleus of every atom heavier than hydrogen. Credit: The NRC
Nonstochastic effect	A health effect, the severity of which varies with the dose and for which a threshold is believed to exist Radiation-induced cataract formation is an example of a nonstochastic effect. "Deterministic effect" is an equivalent term.
Nucleus	The small, central, positively charged region of an atom Credit: The NRC
Occupational dose	The dose received by an individual in a restricted area or in the course of employment in which the individual's assigned duties involve exposure to sources of radiation, whether in the possession of the licensee, registrant, or other person. Occupational dose does not include dose received • from background radiation, • as a patient from medical practices, • from exposure to individuals administered radioactive material and released, • from voluntary participation in medical research programs, or • as a member of the public.
Planned Special Exposure	This means an infrequent exposure to radiation, separate from and in addition to the annual occupational dose limits

Positive ion	An atom or group of atoms which by loss of one or more electrons has acquired a positive electric charge Credit: McGraw-Hill Dictionary of Scientific & Technical Terms, 6E, Copyright © 2003 by The McGraw-Hill Companies, Inc.
Proton	An elementary nuclear particle with a positive electric charge located in the nucleus of an atom. Credit: The NRC
Public dose	The dose received by a member of the public from exposure to sources of radiation either within a licensee's or registrant's controlled area or in unrestricted areas It does not include • occupational dose, • dose received form background radiation, • dose received as a patient from medical practices, • from exposure to individuals administered radioactive material and released, or • dose from voluntary participation in medical research programs.
Quality factor (Q)	The modifying factor that is used to derive dose equivalent from absorbed dose The quality factor is 20 for alpha particles, multiple-charged particles, fission fragments and heavy particles of unknown charge. The quality factor is 10 for neutrons of unknown energy and high-energy protons. The quality factor is 1 for X, gamma, or beta radiation and high-speed electrons.
Quarter	One of the four following periods of time: • January 1st-March 31st, • April 1st-June 30th, • July 1st-September 30th, and • October 1st-December 31st
Rad	One of the two units used to measure the amount of radiation absorbed by an object or person, known as the "absorbed dose," which reflects the amount of energy that radioactive sources deposit in materials through which they pass. The radiation-absorbed dose (rad) is the amount of energy (from any type of ionizing radiation) deposited in any medium (e.g., water, tissue, air). Also see Units of Measure Credit: The NRC

Radiation area	Any 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 weighting factor	The factor by which the absorbed dose (rad or gray) must be multiplied to obtain a quantity that expresses, on a common scale for all ionizing radiation, the biological damage (rem or sievert) to the exposed tissue. Credit: The Health Physics Society
Radioactive decay	The spontaneous transformation of one radioisotope into one or more different isotopes (known as "decay products" or "daughter products"), accompanied by a decrease in radioactivity (compared to the parent material) Credit: The NRC
Rem (Roentgen equivalent man)	One of the two standard units used to measure the dose equivalent (or effective dose), which combines the amount of energy (from any type of ionizing radiation that is deposited in human tissue), along with the medical effects of the given type of radiation. Also see Units of Measure Credit: The NRC
Restricted area	An area to which access is limited by the UAB licensee or registrant for the purpose of protecting individuals against undue risks from exposure to sources of radiation Restricted area does not include areas used as residential quarters, but separate rooms in a residential building may be set apart as a restricted area.
Roentgen equivalent man (Rem)	One of the two standard units used to measure the dose equivalent (or effective dose), which combines the amount of energy (from any type of ionizing radiation that is deposited in human tissue), along with the medical effects of the given type of radiation. Also see Units of Measure Credit: The NRC
Scattered radiation	Radiation that, during its passage through a substance, has been changed in direction It may also have been modified by a decrease in energy. It is one form of secondary radiation. Credit: The NRC
Shallow dose equivalent (Hs)	Shallow dose equivalent (Hs), 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 mg/cm2) averaged over an area of 1 square centimeter.

Sievert	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)
Specific activity	A measure of the amount of radioactivity per unit amount of the mixed solid radioisotopes. It is determined by dividing the activity by the mass. Credit: Martin E. Mulligan, 2003
Stable isotope	An isotope that does not undergo radioactive decay Credit: The NRC
Stochastic effect	A health effect that occurs randomly and for which the probability of the effect occurring, rather than its severity, is assumed to be a linear function of dose without threshold Hereditary effects and cancer incidence are examples of stochastic effects. "Probabilistic effect" is an equivalent term.
Survey	An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of sources of radiation. When appropriate, such evaluation includes, but is not limited to, tests, physical examinations, and measurements of levels of radiation or concentrations of radioactive materials present.
Time, distance, and shielding	The three standard principles of reducing exposure when working with or around radioactive materials: Time: Spend less time with the radioactive materials. Distance: Move farther away from the radioactive materials. Shielding: Always use the appropriate shielding. If needed, add more, but only if it is needed and of the appropriate type. (Example: Never wear a lead apron when working with beta particles - bremsstrahlung)
Total effective dose equivalent (TEDE)	The sum of the deep-dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures)
Total organ dose equivalent (TODE)	The sum of the deep dose equivalent and the committed dose equivalent to the organ receiving the highest dose

Units of measure	**Becquerel** - the SI unit of activity. One Becquerel is equal to 1 disintegration or transformation per second (dps or tps) **Curie** - One of three units used to measure the intensity of radioactivity in a sample of material. **Erg** - A unit of work or energy. A dose of one rad is equivalent to the absorption of 100 ergs (which is a small but measurable amount of energy) per gram of absorbing tissue. **Gray** - The SI unit of absorbed dose. One gray is equal to an absorbed dose of 1 joule per kilogram (100 rad). **Joule** - A unit of measure - One unit of work or energy. A joule is defined as the amount of energy expended by a force of one newton moving an object one meter in the same direction as the force. **Rad** - One of the two units used to measure the amount of radiation absorbed by an object or person, known as the "absorbed dose," which reflects the amount of energy that radioactive sources deposit in materials through which they pass. The radiation-absorbed dose (rad) is the amount of energy (from any type of ionizing radiation) deposited in any medium (e.g., water, tissue, air). **Rem** - One of the two standard units used to measure the dose equivalent (or effective dose), which combines the amount of energy (from any type of ionizing radiation that is deposited in human tissue), along with the medical effects of the given type of radiation. **Sievert** - 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). Unit converter calculator: http://www.wise-uranium.org/cunit.html
Unrestricted area	An area, access to which is neither limited nor controlled by the UAB licensee or registrant "Uncontrolled Area" is an equivalent term.
Unstable atom	A radioactive isotope Credit: The NRC
Visiting authorized user	An authorized user for medical use (appearing, by name, on a license or particle accelerator registration issued by the State of Alabama Health Department or on a permit issued by a State of Alabama Health Department specific license or particle accelerator registration of broad scope) who is not identified on the UAB license or particle accelerator registration of the UAB licensee or particle accelerator registrant being visited
Week	7 consecutive days starting on Sunday

Weighting factor	"Weighting factor" wT for an organ or tissue (T) means the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly.
	for gonads wT = 0.25;
	for breast wT = 0.15;
	for red bone marrow wT = 0.12;
	for lung wT = 0.12;
	for thyroid wT = 0.03;
	for bone surfaces wT = 0.03; and
	for remainder wT = 0.30.
	0.30 results from 0.06 for each of 5 "remainder" organs, excluding the skin and the lens of the eye, that receive the highest doses.
	For the purpose of weighting the external whole body dose, for adding it to the internal dose, a single weighting factor, wT = 1.00, is specified.

Whole body	For purposes of external exposure, • head, • trunk (including male gonads), • arms above the elbow, or • legs above the knee.
Willful Violation	Acting in a manner contrary to the written requirements of radiation safety regulations with full knowledge that such acts are in noncompliance and present a hazard to the health and welfare of the individual and others
Working level (WL)	Any combination of short-lived radon daughters in 1 liter of air that results in the ultimate emission of 1.3E+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 (WLM)	An exposure to 1 working level for 170 hours -- 2,000 working hours per year divided by 12 months per year is approximately equal to 170 hours per month
Written Directive	An order in writing for a specific patient or human research subject, dated and signed by a UAB authorized physician user prior to the administration of I-131 sodium iodide greater than 1.11 megabecquerel (30 microcuries), any therapeutic dosage of radioactive material or any therapeutic dose of radiation from radioactive material, except as specified in 6(ii) of this definition, containing the following: 4. The name of the UAB patient or human research subject; 5. For an administration of a dosage of radioactive drug containing radioactive material, the radioactive drug containing radioactive material, dosage, and route of administration; 6. For gamma stereotactic radiosurgery, the total dose, treatment site, and number of target coordinate settings per treatment for each anatomically distinct treatment site; 7. For teletherapy, the total dose, dose per fraction, number of fractions, and treatment site; 8. For high dose rate remote afterloading brachytherapy, the radionuclide, treatment site, dose per fraction, number of fractions, and total dose; or 9. For all other brachytherapy including LDR, MDR, and PDR: (i) Prior to implantation: treatment site, the radionuclide, and dose; and (ii) After implantation but prior to completion of the procedure: the radioisotope, treatment site, number of sources, and total source strength and exposure time (or, the total dose).
Year	The period of time beginning on January 1st and ending on December 31st
Z-number	The atomic number The z-number, or atomic number, is the number of positively charged protons in the nucleus of an atom. Credit: The NRC