Term
Acute Exposure Definition: Exposure to radiation over a short period of time.
Acute Radiation Syndrome Definition: The effects on a whole organism from large doses of ionizing radiation over a short amount of time. Human level data on ARS stems from experiences in radiation therapy; studies of the Japanese survivors of the atomic bombs dropped on Hiroshima and Nagasaki; and the victims of the limited number of accidents at nuclear installations, including Chernobyl.
Agreement State Definition: A state that has signed an agreement with the Nuclear Regulatory Commission (NRC) allowing them to regulate the use of some radioactive material within the state.
Alpha Particle Definition: A positively charged particle made up of two neutrons and two protons emitted by certain radioactive nuclei. Alpha particles typically pose no direct or external radiation threat; however, they can damage cells in the body if emitted from ingested or inhaled radionuclides. Acronym: α
Ambient Air Definition: The air that surrounds us.
Atom

Term
Definition: Extremely small particles that make up our bodies and everything around us. Atoms consist of a nucleus which contains protons and neutrons and is surrounded by electrons.
Background Radiation Definition: Natural radiation that originates from outer space (cosmic rays) and the decay of radioactive elements found in the earth's crust. This natural radiation is always around us.
Beta Particle Definition: An electron or positron emitted by the nucleus of a radioactive atom. Beta particles can be stopped by a layer or two of clothing or by a few millimeters of a substance such as aluminum. They can go through the skin and cause radiation damage, such as skin burns. As with alpha particles, beta particles are most hazardous when they are emitted inside the body by inhaled or ingested radionuclides. Acronym: β
Chronic Exposure Definition: Continuous or intermittent exposure to low levels of radiation over a long period of time. With chronic exposure, there is often a delay between the start of the exposure and any potential health effects.
Computed Tomography Definition: A noninvasive medical examination or procedure that uses specialized x-rays equipment to produce cross-sectional images of the body.

Term
Contamination Definition: When radioactive material is deposited on or in an object or person. A contaminated person has radioactive materials on or inside their body.
Daughter Products Definition: Radioactive atoms decay in an attempt to become more stable. The element that remains after the radioactive decay is called the daughter product or decay product.
Decay Definition: The process in which an unstable (radioactive) nucleus emits radiation and changes to a more stable isotope or element. A few different particles can be emitted by decay. The most typical are alpha or beta particles, often accompanied by gamma radiation.
Decay Chain Definition: The series of decays or transformations that radionuclides go through before reaching a stable form. For example, the decay chain that begins with uranium-238 culminates in lead-206, after forming intermediates such as uranium-234, thorium-230, radium-226, and radon-222. Also called the "decay series."
Decay Products Definition: A nuclide (isotope) formed as a result of radioactive decay of a parent radionuclide. Also known as daughter product.
Dirty Bomb

Term
Definition: An explosive device that uses conventional material (e.g., dynamite) and radioactive material. It is designed to spread radioactive material when it is detonated. See Radiological Dispersal Device (RDD).
DNA (deoxyribonucleic acid) Definition: The "blueprints" that carry our genetic information. DNA ensures that a perfect copy of the original cell is created when our body repairs or replaces cells.
Dose Definition: The amount of energy absorbed by a body or material due to radiation exposure.
Dosimeter Definition: A personal radiation monitoring device that measures an individual’s accumulated radiation exposure. Active dosimeters feature a digital display and provide real-time dose readings and alarm when safe thresholds are exceeded. Passive dosimeters accumulate exposure data over time and do not provide instant readouts; instead, they are sent to a dosimetry laboratory for processing.
Dosimetry Definition: The measurement or calculation of the amount of radiation energy absorbed by materials, organisms, or living tissue.
Drilling Mud Definition: When tapping natural resources, soil and bits of rock mix with water used to lubricate drills to form drilling mud. When rocks contain radioactive minerals such as radium, the mud is radioactive.

Term
Electromagnetic Spectrum Definition: Particles that orbit the nucleus as a cloud. They are negatively charged and balance the positive electrical charge of the protons in the nucleus. Interactions with electrons in the outer orbits affect an atom’s chemical properties.
Electron Definition: Particles that orbit the nucleus as a cloud. They are negatively charged and balance the positive electrical charge of the protons in the nucleus. Interactions with electrons in the outer orbits affect an atom’s chemical properties.
Evaporating Ponds or Pits Definition: Drilling and waste materials produced when tapping natural resources are stored in evaporating ponds or pits. These ponds allow the water to evaporate to reduce the volume. The water may be reused in the drilling process.
Exposure Definition: The amount of radiation that reaches a person or object. Exposure occurs when a person is near a radiation source. Receiving an x-ray is an example of exposure. Though the radiation penetrates the body, it does not remain on the skin or in the body.
Exposure Pathways Definition: A route by which organisms are exposed to radiation or radionuclides[DB18.1]. The three basic radiation exposure pathways are inhalation (breathing), ingestion (eating or drinking), and external exposure (irradiation from an external source).
Fallout

Term
Definition: Radioactive particles that fall to the ground after a nuclear explosion.
Fission Definition: The splitting of an atomic nucleus into at least two other smaller nuclei with the release of a relatively large amount of energy.
Fluoroscopy Definition: A medical technique used by doctors to visualize, in real-time, the internal anatomy of the human body by placing a patient between an imaging receptor and an x-ray tube.
Fusion Definition: The union of two or more atomic nuclei to form heavier nuclei resulting in the release of energy. The energy released by the sun is from nuclear fusion.
Gamma Rays Definition: High-energy electromagnetic radiation, or photon quanta, emitted by certain radioactive elements, either naturally occurring or man-made. Gamma rays are very penetrating and can easily pass through the human body. Several feet of concrete or a few inches of lead may be required to protect from gamma rays.
Geiger Counter

Term
Definition: A widely used portable radiation detection and measuring instrument. It consists of a gas-filled tube containing electrodes, between which there is an electrical voltage, but no current flowing. When ionizing radiation passes through the tube, a short, intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of the radiation field.
Half-Life Definition: The time required for half of the quantity of a radioactive isotope to decay. Half-lives are different for each radionuclide and range from fractions of a second to billions of years.
Hazardous Waste Definition: Waste products that can pose a substantial or potential hazard to human health or the environment when improperly managed. Hazardous waste is regulated at the federal level under the Resource Conservation and Recovery Act (RCRA). A waste may be hazardous if it has at least one of four characteristics: ignitable, corrosive, reactive, or toxicity.
Health Physics Definition: A scientific field that focuses on the radiation protection of humans and the environment. A health physicist uses physics, biology, chemistry, statistics and electronic instrumentation to help protect individuals and the environment from any damaging effects of radiation.
Heap Leaching Definition: The process of sprinkling chemicals on above ground piles of crushed uranium ore-bearing rock in a lined pit and collecting uranium through underground drains. Either acid or alkaline solutions may be used to remove uranium from the host ore

Term
rock.
High-Level Radioactive Waste Definition: Radioactive material resulting from spent nuclear fuel reprocessing. Radioactive materials can be designated as high-level waste if they require permanent isolation. This determination is made by the U.S. Nuclear Regulatory Commission (NRC) based criteria established in U.S. law.
In-Situ Leaching Definition: The process (presently the most common method used in the U.S.) involves drilling wells deep underground and using chemicals (typically are alkaline and include sodium bicarbonate and oxygen mixed with water) to dissolve the uranium before it is pumped to the surface as a liquid through wells.
Ingestion Definition: Eating or drinking radioactive material.
Inhalation Definition: Breathing in radioactive material.
Interventional Fluoroscopy Definition: A technique using x-rays to guide small instruments such as catheters through blood vessels or other pathways in the body. See fluoroscopy.

Term
Ion Definition: An atom with a net electrical charge. An ion that has too many electrons is negatively charged (anion), and an ion with too few electrons is positively charged (cation).
Ionizing Radiation Definition: Particles or rays (photon quanta) with enough energy to remove an orbital electron from an atom, creating an electrically charged particle called an ion. Ionizing radiation can damage living tissues and DNA. Alpha particles, beta particles, gamma rays, and x-rays are all forms of ionizing radiation.
Irradiation Definition: The process of exposing an object to radiation. This usually occurs with postal mail screening or food irradiation (for sterilization or food preservation).
Isotope Definition: A form of an element that has the same atomic number (same number of protons), but a different atomic mass due to a different number of neutrons.
Low-level Radioactive Waste Definition: Radioactively contaminated industrial or research waste that is not spent nuclear fuel, high-level radioactive waste, transuranic radioactive waste or uranium mill tailings. Low-level radioactive waste could include items such as paper, rags, plastic bags, or water-treatment residues.

Term
Man-made Radiation Definition: Radiation that is produced to generate electricity and for medical, manufacturing and consumer purposes.
Meson Definition: A subatomic particle that provides the attractive nuclear force that holds nucleons (protons and neutrons) together in the atomic nucleus.
Millirem Definition: Rem (historically standing for “roentgen equivalent man”) is the special name for the unit of dose equivalent (or effective dose). One millirem is one thousandth of a rem or 0.001 rem. The special name for the SI unit of effective dose is the Sievert; 1 mrem = 0.01 mSv. Acronym: mrem
Monitoring Definition: The use of sampling and detection equipment to determine the levels of radiation or other toxic materials in land, air or water.
Naturally Occurring Radioactive Materials Definition: Radioactive materials that are found in nature. Acronym: NORM
Neutron

Term
Definition: A subatomic particle with no electrical charge, found within every atom's nucleus except hydrogen, with some exceptions. A neutron has about the same mass as a proton.
Non-Ionizing Radiation Definition: Radiation that has enough energy to move atoms or cause them to vibrate, but not enough to remove electrons. Examples of this kind of radiation are radio waves, visible light, and microwaves.
Nuclear Energy Definition: The heat energy produced by the process of nuclear reaction (fission or fusion) within a nuclear reactor or by radioactive decay.
Nuclear Fuel Cycle Definition: The series of steps involved in supplying fuel for nuclear power reactors. It can include mining, milling, use in reactors, chemical reprocessing, re-enrichment of the fuel material or waste disposal.
Nuclear Medicine Definition: A specialized area of medicine that uses radioactive elements, or tracers, that are given intravenously or orally. A nuclear camera (or “gamma camera”) detects gamma rays emitted by the tracer. These data are fed into a computer where they are used to produce images and other information about the body’s organ system.
Nuclear Power Plant

Term
Definition: An electrical generating facility using a nuclear reactor as its power source.
Nucleus Definition: The center of an atom, which contains protons and neutrons. The nucleus is the heaviest part of the atom.
Open-pit Uranium Mining Definition: The mining process that involves stripping away or excavating the topsoil and rock that lie above the uranium ore.
Orphan Radioactive Source Definition: Found or abandoned radioactive sources are described as "orphan" when their identifying marks have been removed or damaged.
Overburden Definition: Soil and rocks that have been moved out of the way to get to the ore are called "overburden." In areas where there are high concentrations of radionuclides in the rock, overburden may contain relatively high levels of radioactivity.
Photon Definition: A discrete “packet” of electromagnetic energy, that has no mass and exhibits properties of both particles and waves. These photon quanta travel at the speed of light. Gamma rays and x-rays are photons.
Pipe Scale

Term
Definition: Minerals that build up inside pipes used to pump water in and out of the well and in storage tanks is called "pipe scale." The formation of pipe scale concentrates the minerals, including the radionuclides. The level of radioactivity depends on the radionuclide content of the soil and rock in the area.
Produced Water Definition: The water brought to the surface during oil and gas drilling is called "produced water." It often contains dissolved radioactive minerals such as radium from the surrounding rocks.
Protective Action Guide Definition: A protective action guide suggests precautions that state and local authorities may take to protect people from receiving an amount of radiation which might be dangerous to their health. Acronym: PAG
Proton Definition: A small particle typically found within an atom's nucleus that possesses a positive electrical charge. The number of protons is unique for each chemical element.
Radiation Definition: Energy given off as either particles or rays (photon quanta).
Radiation Protection Definition: Basic radiation protection concepts can be applied separately or in combination to help limit people's exposure to

Term
increased radiation levels, including time: limiting time near the radiation source, distance: increasing the distance from a radiation source, and shielding: placing material or a barrier between a person and a radiation source.
Radioactive Atom Definition: An atom with an unstable nucleus that emits ionizing radiation (alpha particles, beta particles or gamma rays) as it decays and attempts to become stable.
Radioactive Materials Definition: Materials that emit ionizing radiation (alpha particles, beta particles and gamma rays).
Radioactivity Definition: The property of some atoms that causes them to spontaneously give off energy as particles or photon quanta. Radioactive atoms emit ionizing radiation when they decay and transform into a new element. The units used to measure radioactivity are becquerel (Bq) and curie (Ci).
Radiological Dispersion Device Definition: Any device that causes the purposeful dissemination of radioactive material through explosive methods or other dispersal methods. A radiological dispersal device is not a nuclear weapon. Acronym: RDD
Radiology Definition: A specialized field of medicine that makes use of ionizing radiation to generate images that visualize the internal anatomy

Term
of the human body.
Radioluminescence Definition: The emission of light from objects containing radioactive material, such as radium.
Radionuclide Definition: Radioactive forms of elements. Radium-226, cesium-137, and strontium-90 are examples of radionuclides. They are unstable and decay to reach a more stable configuration.
Radium Definition: A naturally occurring radioactive (unstable) element that forms when uranium or thorium decay. Elevated levels of radium can contaminate water supplies. Radium also poses a risk when it decays to form radon, a radioactive gas.
Radon Definition: A naturally occurring (colorless and odorless) radioactive gas found in soils, rock and water throughout the United States. Radon causes lung cancer and is a threat to health because it tends to collect in homes, sometimes in very high concentrations. As a result, radon is the largest source of exposure to naturally occurring radiation.
Risk Definition: The probability of injury, disease, or death under specific circumstances.
Roentgen Equivalent Man

Term
Definition: A U.S. unit of dose that accounts for the biological effectiveness of the type and sometimes energy of the radiation involved. The international unit is the sievert; 100 rem = 1 sievert. Acronym: rem
Sealed Source Definition: Radioactive material that is either permanently sealed in a capsule or closely bonded and in a solid form. The capsule or material of a sealed source is strong enough to maintain leak tightness under the conditions of use for which the source was designed and under foreseeable mishaps.
Shelter-in-place Definition: One of many possible protective actions members of the public may receive from state, federal or local authorities in the case of an emergency. Members of the public receiving this instruction should get inside a building and select a small, interior room, with no or few windows and continue to take refuge until further instruction is provided by the authorities.
Spent Nuclear Fuel Definition: Nuclear reactor fuel that has been exhausted and can no longer effectively sustain a chain reaction.
Strong Nuclear Force Definition: A powerful force between nucleons; proton-to-proton, neutron-to-neutron, and proton-neutron. It acts over a very short distance, about the diameter of a proton or neutron.
Tailings

Term
Definition: Tailings are waste from processing ore to extract a desired mineral. The waste may contain radioactive elements that release high levels of radiation into the environment.
Technologically Enhanced Naturally Occurring Radioactive Material Definition: Radionuclides that have been concentrated or enhanced as the result of human activity. Acronym: TENORM
Terrestrial Radiation Definition: Radiation that is emitted by naturally occurring radioactive materials in the earth.
Transuranic Waste Definition: Waste materials containing elements with atomic numbers higher than uranium (92).
Trefoil Definition: The official radiation warming symbol; a magenta or black trefoil on a yellow background. It must be displayed where certain quantities of radioactive materials are present or where certain doses of radiation could be received.
Tritium Definition: A radioactive isotope of the element hydrogen (chemical symbol H).
Underground Uranium Mining

Term
Definition: The mining process that involves extracting rock through a tunnel or opening in the side of a hill or mountain, or digging a shaft from the surface into the underlying ore zone.
Uranium Definition: A radioactive (unstable) element generally found in the environment. As uranium decays, it releases radiation and forms other elements (like radium and radon) until it becomes a stable element.
Uranium milling Definition: The process that removes uranium from the ore. The ore is crushed and ground up, treated with chemical solutions to dissolve the uranium, and separated from the solution. The final product is commonly called, "yellowcake."
X-rays Definition: A form of ionizing radiation made up of high-energy, electromagnetic radiation, or photon quanta. X-rays can pass completely through the human body without interacting, or, in some instances, they can either be absorbed or scattered when interacting with the human body. Medical x-rays are the single largest source of man-made radiation exposure.