Radiation Terms

Acute Exposure: An exposure to radiation that occurs in a very short period of time such as seconds or minutes.

ALARA: Making every reasonable effort to maintain dose levels as far below the limit as possible.

Alpha Particle: Particle emitted by certain nuclei. Deposits energy very quickly when passing through tissue. Can be stopped by paper.

Beta Particle: Electrons ejected from the decaying nucleus of an atom. Can penetrate skin and cause extensive tissue damage and burns.

Bioassay: A measurement of radioactive materials present inside a person's body through analysis of the person's blood, urine, feces or sweat.

Californium-252: Primarily man-made but can be found in nature. Half-life of 2.64 years. Found in our cross-belt analyzer.

Cesium-137: Byproduct of nuclear fission. Used in medical devices and gauges. Half-life of 30.17 years. Found on Kiln 1 clinker cooler dump hoppers.

Chronic Exposure: Exposure to a substance over a long period of time, possibly resulting in adverse health effects.

Cobalt-60: Does not occur in nature. Primary uses are in medical and food industries. Half-life of 5.27 years. Found on Kiln 2 tower.

Cosmic Radiation: Radiation produced when heavy particles bombard the earth.

Critical Mass: The minimum amount of fissile material that can achieve a self-sustaining nuclear chain reaction.

Detector: A device that is sensitive to radiation and can produce a response signal suitable for measurement or analysis.

Dosimeter: Small portable instrument for measuring and reporting the total accumulated dose of ionizing radiation a person receives.

Fission: The splitting of a nucleus into at least two other nuclei that releases a large amount of energy.

Gamma Rays: Originate in the nucleus. Highly penetrating. Stopped by concrete or lead.

Half-Life: The time it takes any substance to decay by half of its original amount.

Hot Spot: Any place where the level of radioactive contamination is considerably greater than the area around it.

Ingestion: The act of swallowing.

Inhalation: The act of breathing.

Ion: An atom that has fewer or more electrons than it has protons, causing it to be electrically charged and therefore chemically reactive.

Lethal Dose: Exposure of about 400 rem received over a short period of time. Expected to cause death within 30 days to 50% of those exposed who do not get treatment.

Nucleus: The part of the atom that contains protons and neutrons.

Photons: A discrete "package" of energy with no mass. Travels at the speed of light. Gamma Rays and X-rays are examples.

Proton: Small atomic particle that possesses a positive electrical charge.

Radioactive Decay: The spontaneous disintegration of the nucleus of an atom due to an uneven number of protons and neutrons.

Radon: A naturally occurring radioactive gas found in soils, rocks and water. Largest source of exposure to people from naturally occurring radiation.

REM: Relates the absorbed dose in human tissue to the effective biological damage of the radiation exposure.

Risk: The probability of injury, disease or death under specific circumstances and time periods.

Shielding: The material between a radiation source and a potentially exposed person that reduces risk.

Survey Meter: A radiation detecting and measuring instrument used to take field measurements of radiation levels.

Terrestrial Radiation: Radiation emitted by naturally occurring radioactive materials like uranium, thorium and radon.

X-rays: Originate in the electronic shell. Highly penetrating. Stopped by concrete or lead.