

## **Radiological Definitions**

**Airborne Radioactive Material:** Any radioactive material dispersed in the air in the form of dust, fumes, mist, vapor or gas.

**Background Radiation:** Cosmic rays and natural radioactivity are always present in the environment. In addition, man-made sources also contribute to the background radiation level. The average New Yorker receives approximately 360 millirem per year from background radiation.

**Decontamination:** The reduction or removal of contaminating radioactive material from a structure, area, object or person.

**Dosimeter:** A personal monitoring instrument that measures the radiation dose received by an individual using the device.

**Exposure Pathways:** The ways in which the presence of radioactive materials in the environment lead to potential exposure to humans – i.e., inhalation of airborne radioactive material, ingestion of contaminated food or drink and whole body exposure to a passing plume or ground contamination.

**Exposure Rate:** Amount of exposure received per unit of time – i.e., roentgens per second or roentgens per hour. A radiation detection instrument such as a Geiger counter or an ionization chamber measures the exposure rate.

**Film Badge:** Film encased in a badge-like holder that record radiation exposure for personnel monitoring purposes. The film usually is processed monthly for calculation of the absorbed dose. Results are reported in millirems (mRem).

**Half-life:** The time required for radioactive material to lose 50% of its activity by radioactive decay.

**KI-Potassium Iodide:** A substance taken as a protective measure to reduce the uptake by the thyroid of radioiodine – i.e., potassium iodide (KI). KI is not an alternative to evacuation. It protects one organ (the thyroid) from one form of radiation (radioiodine). A 130mg tablet is the recommended dose. Children under one year of age should be given a 65mg dose, or one half of the adult tablet. KI is available from the counties emergency management offices or as an over the counter medicine at many drug stores.

**Monitoring:** Periodic or continuous measuring of radiation by means of survey instruments that can detect and measure ionizing radiation. Area monitoring measures radiation level or contamination present in a specific area, building, room, etc.

**Personal Monitoring:** Measurement of radiation levels that may have been received by an individual to the whole body or specific organs or body parts. The most common devices used for measuring exposures from external sources are film badges,

thermoluminescent dosimeters (TLDs) and pocket dosimeters. Whole body counting or bioassay measurements of breath or excretions may be taken to determine intake of radioactive materials.

**Nuclear Reactor:** A device in which a fission chain reaction can be initiated, maintained and controlled. Its essential component is a core with fissionable fuel.

**Radiation:** The emission of energy through a material medium in the form of electromagnetic waves or particles that may impart their energy to the medium through the creation of electrically charged ion pairs. X- and gamma rays and alpha and beta particles are examples of ionizing radiation.

**Radioactive Decay:** The process by which an unstable nucleus of an atom spontaneously releases energy through the emission of radiation.

**Radioactive Release:** Introduction of radioactive materials into an uncontrolled environment.

**Thyroid Exposure:** Exposure of the thyroid gland to radiation from radioactive isotopes of iodine which have been inhaled, absorbed or ingested. Accumulation of iodine is rapid in the thyroid gland.

**Thermoluminescent Dosimeter (TLD):** A dosimeter made of material that, when heated, emits light in amount proportional to the amount of radiation dose it received. Placed in a badge-type holder, it can be worn by an individual to measure possible exposure to ionizing radiation.

**Whole Body Exposure:** Exposure of a major portion of the body to an external radiation field or radioactive material distributed throughout the body. Exposure of blood forming organs, reproductive organs, head, trunk and lenses of the eyes is also considered exposure of the whole body.