

# GLOSSARY OF RADIATION TERMS

**Alpha Particle** – Two neutrons and two protons typically arising from the decay of heavy metals such as uranium, plutonium and radium. The large mass and two positive charges result in large direct ionization potential but little ability to penetrate. Alpha particles cannot penetrate through a piece of paper or skin.

**Beta Particle** – Negatively or positively charged particle emitted from the nucleus as an unstable atom. They can penetrate the skin.

**Biological Half-life** – The times it takes for the body to reduce the amount by one-half its original amount through elimination.

**Electromagnetic Wave** – Energy resulting from changing electric and magnetic fields. Long wave lengths are x and gamma rays where the shorter wave lengths are ultraviolet and visible lights and the shortest wave lengths are radar, radio and television.

**Fallout** – The descent of airborne particulate matter. Although this could refer to soot, dust, etc., it is now generally used in reference to radioactive materials incorporated in particulate matter such as dust and sand as the result of a nuclear detonation or release of radioactive materials from a nuclear power plant.

**Gamma rays** – A nuclear electromagnetic ray with no mass or charge. Gamma rays can penetrate many centimeters into the tissue.

**Ionizing Radiation** – Radiation as a result of radioactivity.

**Irradiation** – The submission of an object to radiation whether it is solar, radioactive or heat.

**Neutrons** – A man-made nuclear source of nuclear radiation resulting from a fission process. There is no electrical charge and neutrons can travel considerable distance in the air and penetrate the body tissues.

**Radioactive Decay (half-life)** – The amount of time it takes for an element to reach half of its initial value. The decay rate is the rate of disintegration of a radioactive material.

**Radioactivity** – The spontaneous disintegration of atoms from an unstable form to a more stable form; the transformation rate of an atom resulting in the emission of radiation in the form of alpha, beta or gamma rays.

**Radiation** – Kinetic energy being emitted in rays such as heat, light, sound and radioactivity.

**Radionuclide** – Any radioactive material. Radioisotope should be used in referring to a specific element.

**Radiotoxicity** – The relative hazards of the various radionuclides and electromagnetic rays and their effect within the body.

**X-rays** – An artificial source of ionizing radiation. It has the same physical properties of gamma rays but this form of radiation is used in diagnostic and therapeutic applications.