



Radiation Protection

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Radiation Glossary U-Z

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U

Uncertainty (uncertainty analysis)

During risk assessments, the need to make assumptions or best judgments in the absence of precise scientific data creates uncertainties. Uncertainties attempt to define the usefulness of the conclusion in making a decision. These uncertainties are sometimes expressed qualitatively and sometimes quantitatively. For example, a risk may be determined to be 8 in 100,000, plus or minus 1; meaning that it is between 7 and 9 in 100,000.

Unstable Nucleus

an atom is unstable (radioactive) if the forces among the particles that make up the nucleus are unbalanced, that is to say, if the nucleus has an excess of internal energy. See also stable nucleus.

Why Are Some Atoms
Radioactive?
This page explains
radioactive atoms.

Uranium

a naturally occurring radioactive element whose principal isotopes are Uranium-238 and Uranium-235. Natural uranium is a hard silvery-white shiny metallic ore that contains a minute amount of Uranium-234.

Uranium
This fact sheet describes the basic properties and uses,

Reference Information

People and Discoveries
Commonly Encountered
Radionuclides

Americium-241
Cesium-137
Cobalt-60
Iodine-129 & -131
Plutonium
Radium
Radon
Strontium-90
Technetium-99
Tritium
Thorium
Uranium

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and the hazards associated with this radionuclide. It also discusses radiation protection related to it.

Uranium Mill Tailings

naturally radioactive residue from the processing of uranium ore. Although the milling process recovers about 95 percent of the uranium, the residues, or tailings, contain several naturally-occurring radioactive elements, including uranium, thorium, radium, polonium, and radon.

NESHAPs:

Subpart T: Disposal of Uranium Mill Tailings Piles

This page explains Disposal of Uranium Mill Tailings.

Subpart W: Operating Uranium Mill Tailings Piles

This page explains Operating Uranium Mill Tailings Piles.

V

Vadose Zone

the unsaturated, moisture-bearing layer of soil between groundwater and the surface

Vitrification

the process of converting materials into a glass-like substance, typically through a thermal process. Radionuclides and other inorganics are chemically bonded in the glass matrix. Consequently vitrified materials generally perform very well in leach tests. EPA has specified, under the land disposal restrictions, vitrification as the treatment technology for high-level waste (55 FR 22627, June 1, 1990).

W

Whole Body Exposure

An exposure of the body to radiation, in which the entire body, rather than an isolated part, is irradiated.

XYZ

X-rays

high-energy electromagnetic radiation emitted by atoms when electrons fall from a higher energy shell to a lower energy shell. These rays have high energy and a short wave length. X-rays are very similar to gamma rays.

Gamma Rays

A description of the properties, uses and health effects of gamma and x-rays.

Yellowcake

a mixture of uranium oxides that can vary in proportion and in color from yellow to orange to dark green (blackish) depending on the temperature at which the material was dried (level of hydration and impurities). Higher drying temperatures produce a darker, less soluble material. Yellowcake is commonly referred to as U₃O₈. This fine powder is packaged in drums and sent to a conversion plant that produces uranium hexafluoride (UF₆) as the next step in the manufacture of nuclear fuel. (Ref. Nuclear Regulatory Commission)

Yield

<http://www.epa.gov/rpdweb00/glossary/termuvwxyz.html#u>

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used to describe the power of an nuclear explosion; the amount of TNT required to create an equivalent explosion

Yucca Mountain, Nevada

The site of the U.S. Department of Energy's proposed repository for spent nuclear fuel and high-level radioactive waste. EPA established the public health and environmental radiation protection standards for the facility.

Zirconium

metallic element used in coating nuclear fuel rods and in corrosion-resistant alloys. Deposits of zirconium (in the form of zircon or zirconium) frequently include natural radioactive materials.

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