



Radiation Protection

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Radiation Glossary S-T

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S

Safe Secure Trailer

a specially designed trailer for transporting nuclear materials. As its name implies, it is built for security and to withstand severe impacts.

Sensitivity Analysis

an important part of mathematical modeling, sensitivity is a measure of the change in the final result compared to the change in an input parameter. If a small input change generates a large output change, the parameter is sensitive (or the model is sensitive to that parameter). A sensitivity analysis helps the modeler to bound the model results and identify which uncertainties are most important.

Sewage

solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. It includes, but is not limited to: domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and material derived from sewage sludge. It does not include ash generated during the incineration of sewage sludge or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

Joint NRC/EPA Sewage Sludge Radiological Survey:
Survey Design and Test Site Results (PDF)
(17pp, 170K)

Shelter in Place

selecting a small, interior room, with no or few windows, and taking refuge there. It does not require sealing off the entire home or office building.

T

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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Sievert (Sv)

a unit used to derive a quantity called equivalent dose. This relates the absorbed dose in human tissue to the effective biological damage of the radiation. Not all radiation has the same biological effect, even for the same amount of absorbed dose. Equivalent dose is often expressed in terms of millionths of a Sievert, or micro-Sievert. One Sievert is equivalent to 100 rem.

Site

any installation, facility, or discrete, physically separate parcel of land, or any building or structure or portion thereof, that is being considered for survey and investigation.

Slope Factors

risk coefficients for radionuclides, risk per unit dose.

Heast Table 4: Radionuclide Slope Factors
This page provides the latest information and guidance on using radionuclide slope factors from the Health Effects Assessment Summary Tables (HEAST) - Radionuclides Table (formerly Table 4).

Solid Waste

RCRA defines solid waste as any solid, semi-solid, liquid, or contained gaseous materials discarded from industrial, commercial, mining, or agricultural operations, and from community activities.

Solid waste includes the following:

- garbage
- construction debris
- commercial refuse
- sludge from water supply or waste treatment plants
- air pollution control facilities
- other discarded materials

Solid waste does not include:

- solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act
- source, special nuclear, or byproduct material as defined by the AEA.

Solid Waste Landfill

See municipal waste landfill.

Somatic Effects of Radiation

effects of radiation that are limited to the exposed individual, as distinguished from genetic effects, which may also affect subsequent generations.

Health Effects
This page describes the effects of both long-term and acute exposure to radiation.

Source or Sealed Source

small, sealed metal cases containing radioactive materials used as references in research and industrial processes. They are often part of specialized industrial devices that measure quantities as

the moisture content of soil or the density or thickness of materials. The sources are usually enclosed in a housing that prevents the escape of the radiation. Often referred to as "radioactive sources" or "sealed sources."

Radiation Source Management
This site describes EPA's activities to reduce the use of radioactive sources in industry, track existing sources and recover orphan sources.

Source Material

uranium or thorium ores mined from the Earth. Source material is defined in 10 CFR 20.1003 as

1. Uranium, or thorium or any combination of uranium and thorium in any physical or chemical form
2. Ores that contain, by weight, one-twentieth of 1 percent (0.05 percent), or more, of uranium, thorium, or any combination of uranium and thorium. Source material does not include special nuclear material.

Special Nuclear Material

SNM is defined in 10 CFR 20.1003 as

1. plutonium, uranium-233, uranium enriched in the isotope 233 or in isotope 235, and any other material that the NRC, pursuant to the provisions of section 51 of the Atomic Energy Act, determines to be special nuclear material (does not include source material)
2. any material artificially enriched by any of the foregoing (does not include source material).

Spent Nuclear Fuel

nuclear reactor fuel that has been used to the extent to that it can no longer effectively sustain a chain reaction

Spontaneous Fission

fission that occurs without any outside cause.

Stable Nucleus

a nucleus in which the forces among its particles are balanced. See unstable nucleus as well.

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

Standards

See radiation protection standards.

Statutory Authority

responsibility and authority assigned by law to a state; a federal agency, department, bureau, etc.; or other governmental organization

Stochastic Effects

effect that occur on a random basis with its effect being independent of the size of dose. The effect typically has no threshold and is based on probabilities, with the chances of seeing the effect increasing with dose. Cancer is a stochastic effect. (See also non-stochastic effects)

Health Effects

This page describes the effects of both long-term and acute exposure to radiation.

Strontium

a silvery, soft metal, that rapidly turns yellow in air; one of the radioactive fission materials created within a nuclear reactor during its operation. Its most common radioisotope is strontium-90, which emits beta particles during radioactive decay.

Strontium

This fact sheet describes the basic properties and uses, and the hazards associated with this radionuclide. It also discusses radiation protection related to it.

Surface Disposal

placement of sewage sludge or other waste materials on an area of land for final disposal. It includes monofills, surface impoundments, lagoons, waste piles, and dedicated disposal sites. It does not include treatment and storage of sewage sludge, although placement on land for longer than 2 years is considered surface disposal unless the site owner/operator retains written records demonstrating that the operation constitutes a treatment or temporary storage site.

Tabletop Exercise (TTX)

an informal gathering of government officials and emergency response personnel to discuss an emergency response operation based upon an emergency plan and its standard operating procedures. The purpose of the TTX is to have participants practice problem solving and resolve questions of coordination and assignment of responsibilities in a non-threatening format, under minimum stress. TTXs can be use in preparation for a field exercise.

Exercises

This page provides information on exercises that range from informal "walk throughs" to highly complex, realistic simulations of actual emergencies. It also provides examples of the exercises in which EPA's Radiological Emergency Response Team has participated.

tailings

overburden and other waste rock from mining operations that contain concentrations of mineral ore that are too low to make typical extraction methods economical.

Teratogenic Effects

non-hereditary effects from some agent that are seen in the offspring of the individual who was exposed to the agent. The agent must be encountered during the gestation period.

Health Effects

This page describes the effects of both long-term and acute exposure to radiation.

Terrestrial Radiation

<http://www.epa.gov/rpdweb00/glossary/termst.html#s>

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radiation that is emitted by naturally occurring radioactive materials, such as uranium, thorium, and radon in the earth. (see also naturally occurring radioactive materials)

Thorium

a naturally occurring radioactive metal found at very low levels in soil, rocks, water, plants and animals. The most common naturally occurring forms of thorium are thorium-232, thorium-230 or thorium-228.

Thorium

This fact sheet describes the basic properties and uses, and the hazards associated with this radionuclide. It also discusses radiation protection related to it.

Transuranic

elements with atomic numbers higher than uranium (92). For example, plutonium and americium are transuranics.

Waste Isolation Pilot Plant

This web site provides information on WIPP's oversight, history of EPA's involvement in the WIPP program, Inspections, Dockets, Certification and Recertification Decisions, and Publications.

Tritium

Tritium (chemical symbol H-3) is a radioactive isotope of the element hydrogen (chemical symbol H)

Tritium

This fact sheet describes the basic properties and uses, and the hazards associated with this radionuclide. It also discusses radiation protection related to it.

Type I Decision Error

a decision error that occurs when the null hypothesis is rejected when it is true. The probability of making a Type I decision error is called alpha (α).

Type II Decision Error

a decision error that occurs when the null hypothesis is accepted when it is false. The probability of making a Type II decision error is called beta (β).

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