

Glossary of Common Terms

Waste Incidental to Reprocessing Activities

Common Term	Definition
Diffusion	Movement of contaminants from an area of higher concentration to an area of lower concentration.
Diffusion Coefficient	In combination with the concentration difference, the diffusion coefficient predicts the rate of diffusion of particles from an area of higher concentration to lower concentration. It depends on the particle size, fluid viscosity, and temperature.
High Level Waste (HLW)	As defined by the Nuclear Waste Policy Act of 1982, <i>“...the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that the NRC, consistent with existing law, determines by rule requires permanent isolation.”</i>
Hybrid Approach	The combination of a deterministic and probabilistic model in the performance assessment process (e.g., the coupling of the deterministic PORFLOW code with the probabilistic GoldSim model).
Hydraulic Conductivity	A property of soil or rock that describes how easily water moves through pore spaces or fractures. It depends on the permeability of the material and the degree of water saturation.
Inadvertent Intruder	A hypothetical member of the general public who is assumed to intrude unknowingly into the low-level waste disposal facility. The dose from intrusion to such hypothetical individuals may not exceed 500 millirem (TEDE) per year. .
K _d (Distribution Coefficient)	A measure of the partitioning of a substance between water and a solid (e.g., cement or sediment). It describes the ability of a porous material to retain chemical constituents.
Low-Level Waste (LLW)	Includes items contaminated with radioactive material or made radioactive through exposure to neutron radiation. This waste typically consists of contaminated protective shoe covers and clothing, wiping rags, mops, filters, reactor water treatment residues, equipments and tools, luminous dials, medical tubes, swabs, injection needles, syringes, and laboratory animal carcasses and tissues. The radioactivity can range from just above background levels found in nature to very highly radioactive in certain cases such as parts from inside the reactor vessel in a nuclear power plant.
Model Support	Activities that provide confidence in the results of a model. Multiple lines of evidence are important for barriers (natural or engineered) that provide a high degree of risk reduction. Model support activities may include laboratory and field studies, monitoring data, analog studies, engineering calculations, and expert elicitation..
Moisture Characteristic Curve	In combination with permeability, moisture characteristic curves describe the ability of a medium (e.g., soil or cementitious materials) to convey water under unsaturated conditions.
Performance Assessment (PA)	An important tool used by both DOE and the NRC to identify which facility attributes are important to meeting the 10 CFR Part 61, Subpart C, performance objectives. DOE typically uses a PA to demonstrate compliance with the requirements in 10 CFR 61.41, 10 CFR 61.42, and 10 CFR 61.44, in recognition that long-term modeling predictions are needed to demonstrate compliance with performance objectives. A PA is a type of systematic (risk) analysis that addresses (1) what can happen, (2) how likely it is to happen, (3) what the resulting impacts are, and (4) how these impacts compare to specifically defined standards. The NRC staff believes that sufficient PA model support, coupled with observation of disposal actions carried out in conformance with detailed closure plans, is necessary for the staff to assess whether these performance objectives can be met in the future.



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Permeability	A measure of the ability of a material (e.g., soil, rock) to transmit fluids.
Pore Space	The space within a rock body that is unoccupied by solid material. Pore space includes spaces between grains, cracks, and voids.
Pore Volume (Porosity)	A measure of the void spaces in a material. Measurement is a fraction of the volume of voids over the total volume, between 0–1, or as a percentage between 0–100%
Reasonable Assurance	The standard specified in the general requirement of 10 CFR Part 61, Subpart C (§61.40). In the context of waste disposal activities, NRC staff develops reasonable assurance by (1) evaluating the technical bases for the predicted performance of a disposal facility and resulting potential doses to hypothetical receptors, (2) evaluating sources of uncertainty and conservatism in supporting analyses, and (3) determining whether, given the uncertainties, the conclusions of the analysis are sound. In the review, the staff often performs independent analyses to identify important assumptions in DOE's analysis so that it can assess the degree to which the staff agrees with DOE's assumptions. The term is not meant to imply a requirement that extreme values be used in analyses or that compliance be based on extreme values of predicted dose distributions and is not meant to indicate a significantly different standard than would be indicated by the term "reasonable expectation". Regardless of the terminology applied, the review's objective is to develop confidence that public health and safety will be protected.
Reducing Capacity	Ability of a substance (e.g., grout) to maintain a chemically reducing environment that may immobilize certain radionuclides (e.g, technetium),
Saltstone	A blend of slag, fly ash, and cement mixed with salt solution derived from waste storage tanks in F- and H-Tank Farms, that is designed to immobilize radioactive waste in the form of a solid material.
Sorption	The action of absorption or adsorption : Absorption – A process in which atoms, molecules, or ions are taken up by the volume of a material. Adsorption – A process in which atoms, molecules, or ions are taken up by the surface of a material.
Synergistic Case	An analysis designed to evaluate the effects from the simultaneous occurrence of multiple degradation mechanisms.
Waste Incidental to Reprocessing (WIR)	Waste generated during reprocessing of spent nuclear fuel is typically designated as HLW, to be disposed of in a deep geologic repository. However, some of this material does not require permanent isolation in a geologic repository, because the residual radioactive contamination after decommissioning (removal of most of the waste) is low enough that hazards to public health and safety are reduced. This material is called "incidental waste" or WIR and is considered to be suitable for near-surface disposal.

