

What are Low-Level Radioactive Wastes?

Low-level Radioactive Wastes comprise a broad category of solids, liquids and gases that can contain several different types of radionuclides. These radionuclides can be derived from diverse sources. They are called “low-level” because—in the wide spectrum of radioactive wastes—low-level wastes contain the smallest concentrations of radionuclides, and many of the radionuclides have relatively short-half-lives.

What are some examples of Low-Level Radioactive Wastes?

Low-level Radioactive Waste is generated by both commercial operations such as nuclear power plants, hospitals, research institutions, by U.S. Department of Energy DOE, and from decommissioning nuclear facilities. It includes radioactive sources that were used in various applications. Low-Level Radioactive Wastes can include shoe covers, gloves, lab coats, cleaning cloths, paper towels, containers, contaminated hand tools, piping, spent filters, spent resins, contaminated demolition debris, and contaminated soil and groundwater.

How are Low-Level Radioactive Wastes disposed?

The chemical composition of solid low-level waste is used to classify the material into groups or classes. This classification system is used to decide the safest method of disposal. The current Low-Level Radioactive Waste classification system used by the NRC is available at the Code of Federal Regulations 10 CFR 61, Subpart D ([§ 61.55 Waste classification. | Nuclear Regulatory Commission](#)). The waste classification system is based on: the concentrations of 12 specific radionuclides that have half-lives ranging from days to years and two large groups of radionuclides. These large groups are 1. transuranic radionuclides that have a half-life longer than 5 years, and are sources of alpha radiation, and 2. the summation of all radionuclides with a half-life shorter than 5 years. The concentrations of these radionuclides are used to rank or classify the wastes into one of four classes in an order of increasing concentrations of the radionuclides: A, B, C, and Greater-Than-Class C. The safest method for disposal is then based on waste classification:

Class	Radionuclide content	Disposal scenario
A	Smallest concentrations of the four waste classes.	Near-surface land disposal with waste-container restrictions.
“Very Low-Level Waste” Informal subset of Class A	Less than Class A	Options for solid-waste landfills and hazardous-waste landfills.
B	Larger concentrations than Class A	Near-surface land disposal with requirements for waste-container stability.

C	Larger concentrations than Class B	Deep-land burial with requirements for waste-container stability or with intruder barriers.
Greater-Than-Class C (GTCC)	Largest concentrations for low-level waste classification.	Currently stored in above-ground dry-storage casks. The NRC has proposed site-specific land-disposal options.