



Photo courtesy of Idaho National Laboratory

Nuclear waste storage involves secure management of radioactive materials. Low-Level Waste (LLW) is stored in near-surface facilities to decay safely. High-Level Waste (HLW), like spent fuel, is cooled in pools and then stored in dry casks on-site, with long-term plans for deep geological disposal.

## Risk Management

Most nuclear waste is low-level and safely managed, while high-level waste, like spent fuel, requires secure, long-term storage due to its high radioactivity. Strict regulations ensure safety, and deep geological disposal is the preferred method for permanently isolating the most high-level waste.

Spent nuclear fuel is first stored in water-filled, reinforced concrete pools at reactor sites.



The water cools the fuel and shields radiation, while the pools' design prevents leaks and contamination.

Over the last 55 years, more than 2,500 cask shipments of spent fuel have been transported across the United States without any harm to the environment or public.

Transportation casks are designed to withstand extreme accidents, including impact, fire and water immersion.



### WASTE TYPE

Low Level Waste (LLW)



High Level Waste (HLW)



### STORAGE

LLW is stored in drums or boxes at near-surface level, or depending on radioactivity levels, in interim facilities that require shielding with concrete or steel. LLW can also be dry-stored in ventilated modules or underground caverns. LLW is typically stored on-site until it has either decayed and can be treated as ordinary trash, or until amounts are large enough for safe shipment to a disposal site.

Because of the high levels of radioactivity, high level waste and spent fuel must be handled with care. HLW requires multi-stage cooling in water pools to reduce heat/radiation, or dry storage in shielded casts with air cooling. Long term storage consists of deep geological disposal: a method of safely isolating hazardous or radioactive waste by burying it deep underground, typically at depths of 200 to 1,000 meters, within stable geological formations.

### REGULATION

Disposal facilities, equipment and transport vehicles must be licensed by the U.S. Nuclear Regulatory Commission (NRC) or Agreement States, which are states authorized by the NRC to regulate certain radioactive materials. LLW is managed through regulatory requirements, licensing and safety oversight.

- The NRC oversees licensing and safety standards for storage and disposal.
- The U.S. Department of Energy (DOE) is responsible for designing, building, operating and decommissioning permanent nuclear waste facilities, under NRC regulation.
- The U.S. Environmental Protection Agency (EPA) develops environmental standards to assess the safety of geologic repositories for nuclear waste disposal, ensuring public and environmental protection.



“We are on the precipice of the next frontier of nuclear energy here in the United States...Responsible and effective spent nuclear fuel management is a critical part of this equation. It can help foster nuclear expansion in the United States.”

*House Energy and Commerce Energy, Climate, and Grid Security Subcommittee Chair Jeff Duncan*