

# DISPOSAL

## PERMANENT GEOLOGIC DISPOSAL

Permanent geologic disposal is an essential element of a sustainable, integrated waste management system. Geologic disposal involves placing carefully prepared and packaged radioactive waste in excavated tunnels in formations such as:

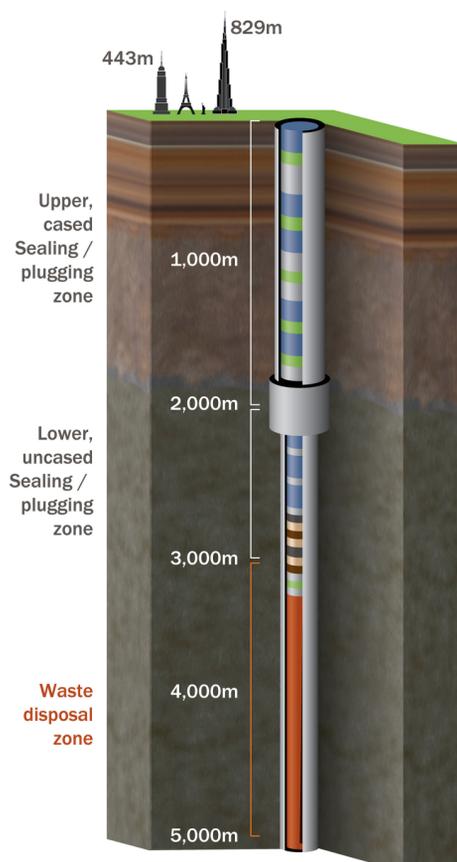
- salt
- hard rock
- clay/shale

A series of barriers, natural and engineered, would be designed to safely contain the waste for thousands of years.

Geologic disposal is the best known method for permanently disposing of spent nuclear fuel and high-level radioactive waste without placing a burden of continued care on future generations. Therefore, the Department is currently performing research and development to study the long-term performance of disposal systems in various rock types, as well as evaluating the deep borehole disposal.

## BOREHOLE DISPOSAL

Boreholes offer a potential alternative to mined geologic repositories, particularly for smaller waste forms. Boreholes would be drilled to a depth of approximately three miles, with at least two miles of depth penetrating hard rock. Waste packages would be emplaced in the bottom mile or so of a borehole, and the hole would then be filled and sealed. The Department is currently conducting field tests to evaluate the technical feasibility of the borehole method.



A key advantage of a geologic repository is that it will not require perpetual human care and will not rely on the stability of societies or civilizations for thousands of years into the future. It will rely instead on geologic formations that have remained relatively stable for millions of years and on long-lived, engineered barriers.

## A SEPARATE DEFENSE REPOSITORY

On March 24, 2015, President Obama authorized the Department to develop a separate repository for high-level radioactive waste resulting from atomic energy defense activities. Establishing a separate repository for defense high-level radioactive waste would:

- represent significant progress toward addressing the Federal government's Cold War legacy
- make progress toward meeting the government's obligation to manage the nation's radioactive waste
- facilitate parallel efforts to permanently dispose of commercial spent nuclear fuel

Successful development of a repository for defense waste, following a consent-based approach, will provide important experience in the design, siting, licensing, and development of a facility that could be applied to a future repository for commercial spent nuclear fuel.



U.S. DEPARTMENT OF  
**ENERGY**

[energy.gov/consentbasedsiting](http://energy.gov/consentbasedsiting)