

Nuclear Weapons Production Waste

The creation of nuclear weapons produced a large amount of waste, which is still being managed today.

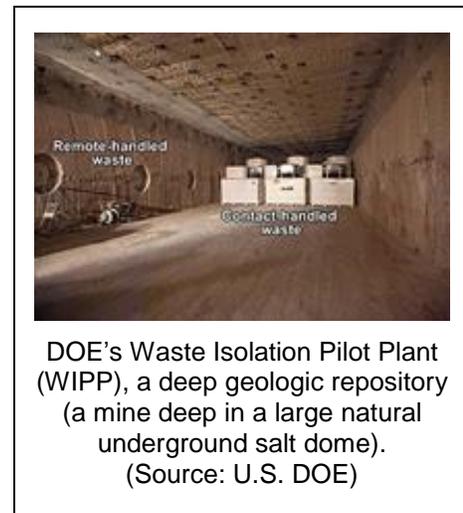
About Nuclear Weapons Production Waste

When the Cold War ended in the late 1980s, the United States, and much of the rest of the world, stopped making and testing new nuclear weapons. Since then, the U.S. has focused on maintaining existing warheads and is in the process of disposing of the radioactive waste left behind.

Plutonium and uranium were used to create fuel for nuclear weapons. When nuclear bombs detonate, atoms split and release enormous amounts of energy through a nuclear reaction. Between 1944 and 1988, the United States built special reactors to make about 100 metric tons of plutonium for nuclear weapons. The reactors created the highly radioactive plutonium by bombarding uranium fuel rods with neutrons. Each time a uranium atom changed to a plutonium atom, more neutrons were released, causing a chain reaction. The process continued until the majority of the uranium atoms were converted to plutonium, thus ending the chain reaction. At this point, the fuel rods are said to be spent (used up) and they were removed from the reactor.

Workers used strong acids to dissolve the plutonium from the fuel rods. This process left behind more than 100 million gallons of hazardous liquid waste. It is called mixed waste because it contains both hazardous chemicals and radioactive materials. The Department of Energy is working to safely cleanup and dispose of these nuclear weapons production wastes.

Workers at nuclear weapons production facilities wore protective clothing and worked with a variety of equipment. Clothing, glassware, tools, equipment, soils and sludges became contaminated with radioactive materials. These are called transuranic wastes and are permanently disposed of at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico.



DOE's Waste Isolation Pilot Plant (WIPP), a deep geologic repository (a mine deep in a large natural underground salt dome).
(Source: U.S. DOE)

Rules and Guidance

U.S. DEPARTMENT OF ENERGY (DOE)

DOE's Stockpile Stewardship Program assesses the safety, security and reliability of existing nuclear warheads without the use of nuclear explosions.

DOE is also in charge of cleaning up and disposing of nuclear weapons production wastes. DOE's Waste Isolation Pilot Plant facility in Carlsbad, New Mexico is the nation's first geological repository for permanent disposal of transuranic wastes and transuranic mixed wastes (those also containing hazardous chemicals). The facility is a mine deep underground in salt formations. It was built specifically to store U.S. weapons production wastes in a way that protects people and the outside environment.

DOE's Environment, Safety and Health office protects its radiation workers and the communities surrounding its facilities.

U.S. DEPARTMENT OF DEFENSE (DOD)

The military must use DoD and EPA regulations to prevent releases of radioactive materials from DoD facilities.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Federal agencies are responsible for radioactive waste at their facilities. EPA regulates releases of radioactive material that travel beyond the federal facility boundaries. Section 112 of the Agency's National Emission Standards for Hazardous Air Pollutantsⁱ (NESHAPs) helps federal facilities manage airborne releases of radiation.

The EPA oversees the DOE's Waste Isolation Pilot Plant in Carlsbad, New Mexico. The Agency sets limits on how much radiation is allowed to leave the WIPP site. DOE must recertify its compliance with EPA's standards every five years.

What you can do

Plutonium levels in the environment are very low. They pose little risk to most people. However, people who live near old weapons production or testing sites may have a higher risk of exposure. You can contact your local facility or visit their website to learn more. You can also contact your state radiation office to get more information about monitoring and safety rules.

Where to learn more

You can learn more about nuclear weapons production waste by visiting the resources available on the following webpage: <http://www3.epa.gov/radtown/weapons-production-waste.html#learn-more>.

ⁱ <http://www.epa.gov/radiation/neshaps/>