DOE Oak Ridge Environmental Management Program

Transuranic Waste Processing


Transuranic Waste Processing Center

Transuranic radioactive waste, or TRU, is one of several types of waste handled by the U.S. Department of Energy (DOE) Oak Ridge Office (ORO). Transuranic waste contains man-made elements heavier than uranium, such as plutonium, hence the name "trans" or "beyond" uranium. Transuranic waste material is generally associated with the human manipulation of fissionable material dating back to the Manhattan Project through today, and primarily consists of clothing, tools, rags, residues, soil, and debris.

TRU Waste Types

The handling of TRU waste is determined by its composition. Waste that is considered Contact-Handled means that it can be safely handled without remote equipment, although workers never actually touch the waste without protective barriers provided by special clothing or equipment. Higher energy radioactive TRU is called Remote-Handled because it must be processed by remote control equipment in special rooms called "hot cells". Workers who process Remote-Handled waste are protected by barriers such as thick concrete walls and leaded glass viewing windows.


Contact-Handled Waste is processed in an airlock room

Waste Processing Center

Through years of defense-related research conducted primarily at the Oak Ridge National Laboratory, TRU material was generated and stored. Due to its unique characteristics, handing of TRU materials, including waste, is performed utilizing special equipment and techniques. To address the stockpile of waste, DOE designed and completed construction of the TRU Waste Processing Center in 2003, a special facility equipped to handle a number of different types and classifications of waste, including liquid and solid waste streams, or waste forms.

The TRU Waste Processing Center's function is to characterize and package TRU waste for transporation and disposition at DOE's Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, which provides permanent isolation and disposal in underground salt caverns. Any Mixed Low-Level Waste or Low-Level waste processed from the TRU waste inventory is prepared for compliant disposal at the Nevada Test Site.


Operators handle Remote-Handled Waste with robotic arms

Hot cells contain Remote-Handled Waste behind concrete walls and leaded glass

U.S. DEPARTMENT OF ENERGY

Transuranic Waste Processing (continued)

Current Operations

Waste Inventory

The Oak Ridge Environmental Management Program has approximately 1500 m^3 (cubic meters) of Contact-Handled debris and 600 m^3 of Remote-Handled debris. On an annual basis, approximately 35 shipments of contact-handled waste will be made through 2013 in specially-designed shipping casks. Additionally, the Oak Ridge Office is awaiting regulatory approval to ship remote handled Transuranic Waste. DOE will meet a cleanup milestone with the State of Tennessee with the removal of all Transuranic Debris Waste by 2013. Starting in Fiscal Year 2013, approximately 2000 m^3 of sludge waste will be processed for treatment. This waste is anticipated to be disposed as low-level waste at the Nevada Test Site.

Waste Awaiting Processing

Applying foaming agents to Mixed Low-Level Waste drums in macroencapsulation boxes for safe transport to the Nevada Test Site for disposal

TRUPACT II Shipping Casks for transport of Contact-Handled TRU Waste

Waste boxes are inspected before transport to the Nevada Test Site

Safety

The TRU Waste Processing Center has a proven track record of demonstrating safety in all operations. This includes earning five consecutive National Safety Council Perfect Safety Record awards along with not having a lost-work time accident in over five years. DOE awarded Voluntary Protection Program Merit Level recognition to the Center's operating contractor in September 2008.

DOE coordinates closely with the Tennessee Emergency Management Agency and the Tennessee Highway Patrol to ensure safe shipment of this waste on Tennessee highways, in addition to working with other states along shipping routes. Prior to any transport, rigorous inspections are conducted to ensure the waste is safely packaged in the shipping casks and the trucks are road-ready.

RH-72B Shipping Cask used in transporting Remote-Handled TRU Waste to WIPP.

Operating Contractor

EnergX, LLC, operates the TRU Waste Processing Center under a cost-reimbursable/fixed fee prime contract to the DOE Oak Ridge Environmental Management Program. The workforce currently totals approximately 175, with EnergX, CCP, and other subcontractors.
Website: ***http://www.truproject.com***