

# Facts



## ● SRS Transuranic Waste Program

Past and present operations at the Savannah River Site (SRS) produce a variety of waste streams, including transuranic (TRU) waste. The term transuranic means those elements with an atomic number greater than that of uranium (92). TRU waste is defined as waste contaminated with alpha-emitting TRU radioisotopes that have a half-life greater than 20 years and a concentration level above 100 nanocuries per gram. At SRS, TRU waste is solid waste, consisting of clothing, tools, rags, residues, debris and other items contaminated with trace amounts of plutonium.

In 1999, the U.S. Department of Energy (DOE) opened the Waste Isolation Pilot Plant (WIPP), a geologic repository near Carlsbad, New Mexico, specifically constructed for the permanent disposal of TRU waste from DOE sites across the nation.

When the SRS TRU Ship-to-WIPP program began, over 30,000 containers of TRU waste were in storage at SRS. SRS made its first shipment in May 2001 and made over 1,100 shipments through 2010. By optimizing existing SRS facilities and implementing more efficient operations, SRS has been able to accelerate shipments. At the end of 2011, over 29,500 55-gallon drums, or about 6,000 cubic meters, of the original TRU waste inventory had been shipped. SRS's current projections have the Site scheduled to ship all of the SRS TRU waste to WIPP by 2013, 22 years ahead of the original baseline.

Non-drummed TRU waste accounted for approximately 3,600 cubic meters. This waste was stored in large steel boxes, concrete culverts and other miscellaneous containers. With funding provided by the American Recovery and Reinvestment Act, SRS is currently repacking and remediating this non-drummed waste and shipping it to WIPP for disposal.

**Preparing TRU Waste for Shipment** Preparations for the initial shipments to WIPP included the safe retrieval of almost 9,000 buried drums. These drums were stored in the late 1970s and early 1980s on concrete pads and covered with soil for protection from the environment. SRS began retrieval in 1997 and completed it in 1999, two years ahead of schedule.

A crucial step in preparing the waste for shipment was the venting of hydrogen and other gases that may have accumulated during storage of the drums. A venting system provided a spark-free puncture of the drum lid and the installation of a filter vent in the drum lid to prevent the future buildup of gases.

Since the majority of SRS waste containers were filled prior to the issuance of WIPP Waste Acceptance Criteria (WAC), nearly 30 percent of the drums and all of the miscellaneous waste containers require repackaging and the removal of prohibited items.

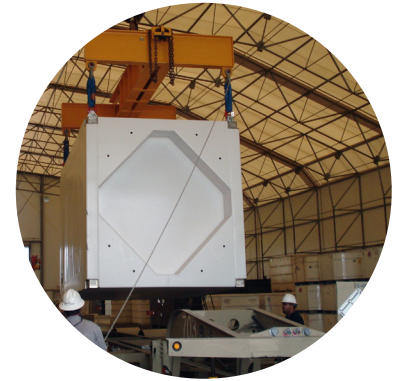


*Preparing a shipment of TRU waste in TRUPACT IIs for shipment to WIPP.*

In order to ship the TRU waste to WIPP, SRS must meet stringent WIPP WAC and Resource Conservation and Recovery Act permit requirements as issued by the state of New Mexico. TRU is characterized by:

- Assay of all TRU containers to determine the amount of radioactivity
- X-ray of all containers to verify that the physical contents meet WIPP WAC
- Sampling of all containers to detect hydrogen, methane and other volatile organic compounds

In order to meet an ambitious shipping schedule, SRS teamed with the National TRU Waste Program to host the first large scale deployment of a mobile characterization program. Three mobile characterization instruments were transferred to SRS, making it possible to perform the characterization requirements to meet the accelerated schedule.



*Employees maneuver a TRUPACT III shipping container onto a truck trailer.*

**Packaging the TRU Waste for Shipment** After completing the characterization and certification requirements, one of three Nuclear Regulatory Commission (NRC) licensed Type-B casks is utilized to transport the TRU waste to the WIPP facility. These casks have undergone extensive testing to demonstrate the ability to provide safe containment of the TRU wastes. The Transuranic Package Transporter Model 2 (TRUPACT II) are designed to transport up to 14 55-gallon drums, two Standard Waste Boxes (SWB) or one Ten Drum Overpack (TDOP). The shipping trailers normally carry three TRUPACT IIs at one time.

When waste is too large to fit into the TRUPACT II and size reduction is not reasonable due to levels of contamination, personnel exposure or waste makeup, a Standard Large Box may be utilized. A SLB can hold approximately 7 cubic meters of waste. SLBs are then transported in a Transuranic Package Transporter Model 3 (TRUPACT III). In August 2011, SRS made its first shipment using the TRUPACT III which was also a first for the DOE complex.

The third Type-B cask used to transport TRU wastes is known as the 72-B. This dumbbell shaped container holds up to three 55-gallon drums of TRU waste and offers more protection from higher radiation levels emanating from waste for workers than the other casks. The TRUPACT III and 72-B are large, each occupying an entire trailer for shipment.

**Ensuring Safe Shipments** Specifically designed transport trucks carrying Type-B containers travel along approved routes to WIPP. The routes are designated by the U.S. Department of Transportation (DOT) and the impacted states, and are in compliance with DOT and NRC requirements. Drivers must pass strict traffic safety and emergency exams, maintain excellent driving records and renew their certifications annually.

As part of the preparation for these shipments, the WIPP States and Tribal Education Program (STEP) initiated training for more than 17,000 emergency response professionals in 18 states along the approved transportation routes. This DOE training began in 1988 and focused on the response to potential incidents involving waste shipments. Classes addressed the caring for incident victims, guarding the public welfare, protecting the environment and ensuring the safety of responders.

Each year, a shipment schedule is provided to the affected states. South Carolina state transportation agents perform extensive vehicle and container inspections before each shipment leaves SRS. Other states along the routes perform similar inspections at their respective borders. Each truck is tracked by emergency response and law enforcement officials along the route via the satellite Transportation Tracking and Communications System. The system makes the appropriate notifications to officials prior to crossing a state's border.

For more information on WIPP contact the WIPP Information Center, 4021 National Parks Highway, Carlsbad, NM 88220; phone 1-800-336-WIPP (9477); email: [Infocntr@wipp.ws](mailto:Infocntr@wipp.ws); web <http://www.wipp.energy.gov/>.