



U.S. Department of Energy
Portsmouth/Paducah Project Office
Lexington, Kentucky

Transporting DOE Uranium Oxide from Portsmouth, Ohio, and Paducah, Kentucky

Over the next 25 years, the U.S. Department of Energy will convert its large inventory of depleted uranium hexafluoride, DUF_6 , —about 700,000 metric tons—to a more stable form (uranium oxide) for reuse and/or disposal. Currently, DUF_6 conversion facilities are under construction at the Portsmouth, Ohio and Paducah, Kentucky Gaseous Diffusion Plants. DOE expects conversion operations to begin by June 2008.

The DUF_6 conversion facility project is the culmination of a long history of DUF_6 management activities and events. DUF_6 , a co-product of the uranium enrichment process, was placed in large steel cylinders and stored in outdoor yards at the Portsmouth and Paducah sites. About 58,000 cylinders have accumulated—38,000 at Paducah, and 20,000 at Portsmouth. The total includes about 5,000 cylinders transferred from the East Tennessee Technology Park in Oak Ridge, Tennessee to Portsmouth.

In 2002, DOE awarded a contract to Uranium Disposition Services, LLC (UDS) to design, construct, and operate the two DUF_6 conversion facilities. In 2004, a Final Environmental Impact Statement (EIS) and Record of Decision (ROD) was issued for each of the DUF_6 conversion facilities. The EISs and RODs addressed the potential environmental impacts from the construction, operation, maintenance, and decontamination and decommissioning (D&D) of the proposed conversion facilities. The EISs also generally considered the environmental impacts of transporting the depleted uranium conversion product, uranium oxide, to disposal facilities.

What will be transported for disposal?

DUF_6 will be converted to depleted uranium oxide prior to shipment.

Depleted uranium oxide produced by the conversion process is a stable compound chemically similar to uranium compounds found naturally, and is less radioactive than naturally occurring uranium.

The uranium oxide produced will be a gray solid that does not react with either water or air and is very stable. Uranium oxide is classified as low-level radioactive waste.

What type of container will be used for shipments?

Cylinders currently containing DUF_6 will be reused to transport the converted uranium oxide for disposal. The emptied cylinders must also be disposed of as waste. Utilizing emptied cylinders as packaging results in significant waste minimization and cost savings to the government. The emptied DUF_6 cylinders will be inspected and certified to meet DOE orders and Department of Transportation (DOT) requirements.

Prior to using the cylinder as packaging for the uranium oxide, the cylinder will be inspected to ensure its integrity.

What is the quantity of waste to be transported?

The DUF_6 conversion facilities will produce approximately 700,000 metric tons of uranium oxide. The Portsmouth facility will generate approximately four oxide filled cylinders per day and Paducah will generate approximately five oxide filled cylinders per day. The project will take about 18 years at Portsmouth and about 25 years at Paducah to convert the current inventory of DUF_6 cylinders at the sites.

Covered gondola railcars (used on the Fernald Closure Project) will be modified to hold six uranium oxide cylinders per railcar. It is anticipated there will be one shipment each week of 5 to 6 railcars (30 to 36 uranium oxide filled cylinders) from each site.

What are the disposal options??

There has not been a final decision on the disposal. Two disposal options are being considered; Nevada Test Site (NTS) and EnergySolutions at Clive, Utah.



How will the uranium oxide be transported?

The uranium oxide is a heavy solid, and the weight of each uranium oxide filled cylinder is expected to range from 14 to 18 tons. Due to the weight, it is not economical to ship the material the entire distance to the disposal facility(ies) by truck, therefore, shipments will primarily be by rail. Shipments to EnergySolutions in Utah will be transported directly via gondola railcars. Shipments to NTS will be sent by gondola railcars to a transload facility, where the cylinders will be placed on either flatbed or low-boy trailers for final shipment by truck to the Nevada Test Site.

How will the shipments be identified?

Consistent with other routine low level radioactive waste shipments, the uranium oxide shipments will bear placards reading "Radioactive, Class 7" as required by DOT regulations for exclusive use conveyances. In addition, all DOT required emergency response information will be contained in the shipping papers and readily available for all law enforcement and emergency response personnel. Radiological surveys and inspections will be performed prior to shipping the uranium oxide cylinders. Transport vehicles (i.e., railcars and/or trucks) and the cylinders they carry will be available to State highway and radiological health inspectors during loading and prior to leaving the sites, as well as upon arrival and during unloading at both the transload facility and the final disposal facility.

What are the shipment routes?

DOE will use standard commercial rail and truck shipment routes to transport the uranium oxide cylinders to the disposal facility (ies). From the conversion facilities to either the disposal facility or a transload facility the primary mode of transportation will be by rail. Truck shipments will be utilized from the transload facility to the NTS.

Typical rail shipment routes from Paducah, Kentucky may pass through Kentucky, Tennessee, Illinois, Missouri, Kansas, Nebraska, Colorado, Wyoming, Utah, and Nevada.

Typical rail shipment routes from Portsmouth, Ohio, the rail shipments may pass through Ohio, Indiana, Illinois,

Missouri, Kansas, Nebraska, Colorado, Wyoming, Utah, and Nevada.

A transload facility has not yet been established. Truck shipments to NTS will use preferred and alternate routes to be selected based upon the quickest transit time, lower population centers, road conditions, and traffic flow patterns. DOE expects that truck shipments will pass through the states of Nevada and Utah.

How will emergency response be implemented?

In the unlikely event of an incident involving a uranium oxide cylinder shipment, state, tribal, and local government agencies and the carrier would have the primary responsibility for response.

DOE has a radiological training program for affected state, tribal, and local emergency response units through its Transportation Emergency Preparedness Program (TEPP). TEPP program information is available at www.em.doe.gov/otem.

Carriers have established Emergency Response Plans and contingency plans for cleanup and recovery, if needed. The DUF₆ conversion project contractor, Uranium Disposition Services, is in the process of developing a Transportation Plan, and will maintain a 24-hour emergency response telephone number to provide on-scene responders with comprehensive emergency response and incident mitigation information specific to the material in the shipment.

ADDITIONAL INFORMATION

As more information becomes available for the DUF₆ conversion project transportation plan, this fact sheet will be updated and will be coordinated with the appropriate State Regional Government groups. Information on the conversion project can be found on the UDS website, www.uds-llc.com.

Requests for additional information on the uranium oxide shipments should be referred to Laura Schachter, DOE Public Affairs Officer at (859) 219-4010 (E-mail: laura.schachter@lex.doe.gov).