

The safe management of hazardous materials is a vital part of our technologically advanced society. Hazards are defined in many different ways to keep those handling, transporting and using materials safe, such as compressed gases, corrosive materials, flammable liquids, and radioactive materials.

More than 2 billion tons of regulated hazardous materials, including radioactive material, are safely transported around our nation every year. Shipments range in quantity from several ounces to many thousands of gallons. Radioactive materials are transported by highway, rail, air, and water following stringent U.S. Department of Transportation (DOT) regulations designed to protect the public and environment. Careful research and conservative design processes produce robust containers and packages for the safe transport of radioactive materials.

The U.S. Department of Energy's (DOE) Hanford Site Test Bed Initiative (TBI) will treat liquid waste to significantly reduce the radiological content, then the 2,000 gallons of treated liquid will be safely transported in DOT-approved containers for final treatment and disposal in licensed waste-disposal facilities in Texas and Utah.

GENERAL TRANSPORTATION FACTS

Amount of TBI liquid shipped, as well as the radiological content in the shipment, will be extremely small in comparison to the volume and content shipped each year across the country. In 2022 (latest available data):

- Of about 365 million shipments of hazardous materials, only about 3 million (0.8%) contained radioactive materials
- About 2.2 billion tons of hazardous materials were shipped
- > Only 57 thousand tons (0.003%) contained radioactive material
- > Only 52 thousand tons (0.002%) were transported on highways
- There were about 23,400 highway incidents involving hazardous materials
- > About 63% occurred during loading and unloading, not actual transport
- > There was only one incident involving radioactive hazardous materials, which occurred during unloading

DOE OVERSIGHT

The DOE Office of Packaging and Transportation will provide oversight to ensure that safe and DOT-compliant transportation processes and procedures are followed:

- The DOE Motor Carrier Evaluation Program (MCEP) evaluates the safety and practices of commercial vendors and drivers involved in transporting hazardous materials
- More than 3,800 hazardous material shipments were transported over 7.5 million miles in fiscal year 2022, without incident
- DOE highway shipments over the past two decades include the following:
 - > 1,000 gallons from New York to Texas
 - > 4,700 gallons from Ohio to Texas
 - > 150,000 gallons from New York to Washington
 - > More than 1.5 million gallons from Colorado to Utah

TBI SPECIFICS

- At most, TBI will be two 1,000-gallon (less than 5-ton) shipments compliant with all applicable regulations for highway transport of radioactive material
- Each shipment will consist of three double-contained shipping packages called totes. Each tote is a DOT-certified and federally regulated shipping package.
- TBI totes are certified to meet stringent DOT requirements for the shipment of radioactive liquid
 - > Hanford plans to remove more than 98% of the radioactivity from the waste before shipment
 - > Radioactive inventory of one tote would be only about 10% of that allowed by the package type
- Shipment will be made in a fully enclosed trailer transported by a commercial carrier that has been approved by the DOE MCEP
- > Severe-accident scenarios find these certified totes could spill full contents 0.4% of the time
- > Probability of severe accident during transport to Utah is less than one in 1 million
- > Probability of severe accident during transport to Texas is less than three in 1 million
- In the extremely unlikely case of a severe accident, the highest potential radiation exposure for an individual would be less than that from a single abdominal x-ray