

Transportation Safety

Q: What types of packages will be used to ship spent nuclear fuel and high-level radioactive waste to a repository?

DOE will use robust transportation packages called casks. Casks are typically made of stainless steel and metal shielding more than six inches thick to protect the contents and confine radiation in both routine transport operations and under severe accident conditions. All shipments to Yucca Mountain must be transported in casks certified by NRC. The NRC certification process requires that each transportation cask design must be analyzed or tested to meet the conditions of all of the following tests, in the given sequence:

- A drop from 30 feet onto a hard, unyielding surface that is equivalent to a high-speed crash into a bridge abutment
- A drop from 40 inches onto a shaft six inches in diameter
- A fully engulfing fire at 1,475 degrees Fahrenheit for 30 minutes
- Immersion under three feet of water

An undamaged version of the cask must also be able to survive immersion in the equivalent of 50 feet of water. Furthermore, casks designed for shipping spent nuclear fuel must be able to survive water pressure greater than 600 feet for 1 hour without collapse, buckling, or leaking.

The NRC utilizes state of the art computerized models, as well as scale-model and full-scale model tests, to determine whether cask designs meet NRC requirements for certification.

