

BACKGROUND

TRANSPORTATION OF USED NUCLEAR FUEL IS SAFE AND RELIABLE

Used fuel transport in perspective

- Of almost 400 million packages of hazardous material shipped each year in the United States, radioactive materials account for less than 1 percent. Fewer than 100 container shipments of used nuclear fuel occur annually.
- The U.S. nuclear energy industry has completed more than 3,000 shipments of used nuclear fuel over the past 40 years with no injuries, fatalities or environmental damage as a result of the radioactive nature of the cargo, according to the Nuclear Regulatory Commission. Internationally, more than 21,000 used fuel containers have been transported over the past 40 years.
- Used nuclear fuel shipments emit low levels of radiation through the fuel storage container walls. Researchers use route and population information to estimate the number of people who could be exposed and the total radiation dose that they might receive. If the container is moving past a person—perhaps someone standing along the highway or railroad track—the exposure is brief and well below federal regulatory limits. Exposure will vary depending upon the speed of the train or tractor-trailer rig and the distance the person is standing from the highway or track. As a basis for comparison for this low radiation dose possible from the transportation of used nuclear fuel, a passenger traveling round-trip by air from New York to Los Angeles receives a background radiation dose that is 25 times greater than the dose to persons closest to a typical used nuclear fuel shipment.

The methods used to ensure safe transportation recognize that accidents can happen.

- Shippers transport used nuclear fuel as a solid, ceramic material that is unable to leak or explode. There is no liquid that can drain out of the shipping container. Used nuclear fuel cannot explode.
- The containers that transport the used nuclear fuel are extremely robust. These are massive, vault-like containers that use multiple layers of steel, lead and other materials to confine radiation from the used fuel. These specially designed containers weigh between 25 and 40 tons for truck transport, and between 75 and 125 tons for rail shipments, including the weight of the used fuel. Typically, for every ton of used fuel, there is about 4 tons of protective shielding.
- The NRC must approve containers that transport used nuclear fuel. Before the agency certifies container designs, they must meet rigorous engineering and safety criteria. In addition, the container designs must be able to pass a sequence of hypothetical accident tests involving forces greater than they would experience in actual accidents.
- Advance notice of shipments is provided to governors seven days prior to shipment through a state. Interstate highway systems are preferred routes for highway shipments, although states may propose alternative routes provided they meet federal safety standards.

Even when accidents happen, public safety is protected.

- Since 1964, the U.S. nuclear energy industry has safely transported more than 10,000 used nuclear fuel assemblies more than 1.7 million miles. During this period, nine accidents involving used nuclear fuel containers have occurred—four on highways and five during rail transport. Five of these accidents involved empty containers, and none of these accidents resulted in a breach of the container or any release of its radioactive cargo.

Contact: Nuclear Energy Institute, Washington, DC 202/739-8000