



# Radioactive Materials Transported by Freight Train

Because we cannot predict transportation accidents, strict packaging requirements are used in the shipment of radioactive material to assure that even if there is an accident, radioactive material spills or releases do not occur. Extremely rigorous requirements apply for the shipment by rail or highway of radioactive material, such as high-level radioactive waste including spent nuclear fuel. Requirements include specially-designed casks to assure the integrity of the container under all circumstances including the forces that it would likely experience in a train collision and derailment. Due to the nature of transporting radioactive material, the shipment routes are chosen with careful consideration, the shipments are tracked either electronically or on paper, and the drivers are trained in both general and emergency radiation safety measures.

Radioactive materials have been shipped in the United States for more than fifty years. Each year, roughly three million packages of radioactive material are carried through the United States by trucks, trains, boats, barges and airplanes. This material is in many forms, including pharmaceuticals, industrial gauges, laboratory materials, and low-level, high-level, and transuranic radioactive wastes. While the chances of a transportation accident are small, an accident can result in expensive cleanup or unnecessary exposure to radioactive material to workers or the public.

## Who is protecting you

### The States

In the United States, each state has programs on radiation protection and on the transportation of hazardous materials within states' borders.

### U.S. Department of Transportation (DOT)

DOT oversees transportation safety and security requirements by highway, rail, air and sea. DOT's Office of Hazardous Materials Safety (OHM) issues regulations on the shipment of hazardous materials. Title 49 of the Code of Federal Regulations defines and classifies hazardous materials, outlines safety procedures for shipping, and provides strict specifications for containers and packaging of the hazardous materials.

### U.S. Nuclear Regulatory Commission (NRC)

The NRC is responsible for protecting the public from the effects of radiation from nuclear reactors, materials, and waste facilities. Regulating the safety of transported radioactive material is the joint responsibility of the NRC and the Department of Transportation (DOT). The NRC oversees the design and use of special packaging for shipping radioactive materials.

### U.S. Department of Energy (DOE)

DOE is responsible for the shipment of high-level hazardous waste, including spent nuclear fuel. This entails planning and arranging for the transportation of this material.

### U.S. Postal Service (USPS)

The USPS establishes restrictions on the shipment of hazardous mail including radioactive material for highway, rail and air.

## What can you do to protect yourself

Stringent rules apply to the transportation of radioactive materials and special packaging is required for the shipment of radioactive material. With these rules and safety measures, the risk to the public is very small.

If you do suspect radioactive material may be potentially released from a transportation accident or breached packaging, there are three basic ways to limit unnecessary exposure:

- **Time:** Limit the time spent around the radiation source.
- **Distance:** Increase distance from the radiation source.
- **Shielding:** Increase the shielding from a radiation source with protective barriers such as walls and buildings. Alpha radiation can be effectively shielded with something as thin as a piece of paper or plastic bag, while gamma radiation requires barriers as thick as lead-lined walls.

## Resources

You can explore this radiation source further through the resources at the following URL:

<http://www.epa.gov/radtown/freight-train.html#resources>

We provide these resources on-line rather than here so we can keep the links up-to-date.