



Train

Transporting Radioactive Material

Radioactive material can be transported by truck, train, plane or ship.

- The shipment of radioactive material has been regulated since 1939.
- Shipping routes for radioactive materials are picked very carefully and shipments are tracked.
- Markings on containers and vehicles explain the contents of each package using standard terms and codes.

About Transporting Radioactive Material

Every day, radioactive material is used in medicine, power generation, research and product quality testing. In order to meet these needs, radioactive material is shipped from one location to another. Special packaging, labeling and training are necessary to keep routine radioactive material transportation safe and to reduce exposure in case of an accident.

Regulations for the transport of radioactive material were started by the Postal Service in 1939. Since then, strict packaging and shipping rules have been put in place to keep radioactive materials from spilling, even if there is a bad accident.

For added safety, shipping routes are picked very carefully and shipments are tracked. Operators transporting radioactive shipments must be trained in basic radiation science and in radiation emergency safety.

Markings and labels on packages, casks and transportation vehicles are important aspects of the transport of radioactive materials.

Safety and training practices maintain controlled handling and packaging of spent nuclear fuel so that it cannot harm workers, the public or the environment. Highly radioactive wastes and spent nuclear fuel must be shipped in specially designed barrel-like containers called casks. To ensure safety, casks undergo a series of extreme tests, such as:

- A collision with an immovable object such as being dropped 30 feet onto reinforced concrete.
- Being dropped 40 inches onto a steel spike.
- Being burned in a hot (gasoline) fire for 30 minutes.
- Submersion in water for eight hours.

You can see videos of example cask tests on the Sandia National Laboratory websiteⁱ.



Markings are designed to provide an explanation of the contents of a package by using standard terms and codes.

Rules and Guidance

THE STATES

Each state has a radiation protection program. The states also control the transportation of hazardous materials within their borders.

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

DOT oversees the safety and security of hazardous materials during shipping. It has rules for shipping by highway, rail, air and sea. DOT's Office of Hazardous Materials Safety (OHM) writes these rules. DOT works with the Nuclear Regulatory Commission to keep shipments safe.

U.S. NUCLEAR REGULATORY COMMISSION (NRC)

NRC protects the public from radiation from U.S. nuclear reactors, materials and waste facilities. NRC works with DOT to set safety rules for shipping radioactive material. NRC oversees the design and use of special packaging for shipping radioactive materials. DOT oversees safety during the actual shipping. DOT and NRC shipping rules are in Title 49 of the Code of Federal Regulations.

U.S. DEPARTMENT OF ENERGY (DOE)

DOE ships high-level hazardous waste, including spent nuclear fuel. DOE staff plans and arranges for the shipments.

U.S. POSTAL SERVICE (USPS)

USPS sets limits on mailing hazardous materials, including radioactive materials. The limits apply to highway, rail and air shipments.

U.S. FEDERAL AVIATION ASSOCIATION (FAA)

FAA enforces regulations set by DOT for radioactive materials transported by air within the United States.

U.S. COAST GUARD (USCG)

USCG is responsible for the safe transportation of radioactive materials by sea. USCG also develops and promotes regulations and standards for industry use.

What you can do

Strict rules about packaging and shipment of radioactive material keep the risk to the public very small.

If radioactive materials have been released from a transportation accident or broken packaging:

- Follow instructions from the responders on the scene of the accident.
- Stay away from the area.

Where to learn more

You can learn more about transporting radioactive material by visiting the resources available on the following webpage: <http://www3.epa.gov/radtown/transporting-material.html#learn-more>.

ⁱ http://www.sandia.gov/tp/SAFE_RAM/SEVERITY.HTM