



REVISED  
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NASA Glenn  
Plum Brook Station

# TRANSPORTING LOW-LEVEL RADIOACTIVE WASTE DURING DECOMMISSIONING

This is one in a series of fact sheets prepared by NASA Glenn Research Center to provide the public with information on decommissioning the former Reactor Facility at Plum Brook Station. This fact sheet replaces the transportation fact sheet dated September 1999 and includes more specific information about packaging and transporting solid, low-level radioactive waste (LLRW) from Plum Brook Station as a part of decommissioning the Reactor Facility.

## Background

NASA operated the Reactor Facility at Plum Brook Station for over ten years - conducting experiments on materials for use in space flight - before the facility was closed and fuel was removed in 1973. In 1998, the U.S. Nuclear Regulatory Commission (NRC) asked NASA to decommission the Reactor Facility. NASA submitted a comprehensive Decommissioning Plan to the NRC in 1999 and revisions to that plan in March 2001. NASA removed loose equipment and prepared the work area this past summer so that decommissioning can proceed quickly and efficiently once approval from the NRC is received.

## High Industry Standards

The U.S. Nuclear Regulatory Commission and the U.S. Department of Transportation (DOT) regulate the packaging and transportation of radioactive waste. Radioactive materials have been shipped in this country for more than 50 years with an excellent safety record. Disposal sites also have stringent regulations that apply to the disposal of waste.

The NRC has three disposal classifications for solid, low-level radioactive waste (LLRW) - Class A indicates extremely low levels of LLRW and Class B indicates higher levels of LLRW. Class C waste is the highest radioactive concentration allowed in a low-level waste disposal facility. The NRC's waste disposal classification is based on the type of nuclides present and their migration potential. The majority of waste from decommissioning the Reactor Facility will be Class A waste, with much smaller amounts of Class B and possibly, very small amounts of Class C waste.

## Proper Packaging

Depending on the level of radioactivity, waste materials are packaged in specific containers to meet the requirements of both transportation and disposal regulations. The type of container used for packaging is selected to ensure that the amount of radiation that comes from a container results in a dose rate that is protective of health and the environment. Often Class A waste has such low levels of radioactivity that it can be safely shipped in steel boxes or steel drums and meet the regulatory requirements. For wastes with higher levels of radioactivity, the waste is placed in metal liners to comply with disposal regulations and the liner is placed in a Type A or a Type B package to comply with transportation regulations.

Type A packages are designed to retain their contents under normal conditions of transport, such as vibration, heavy rain and pressure from stacking. Type B packages are designed to protect and retain their contents under both normal and severe accident conditions. Type B packages are certified by the NRC before use and are re-certified every 5 years.



Most of the LLRW from the Reactor Facility will be shipped in steel boxes such as B-25 boxes (approximately 4' tall x 4' wide x 3' deep).



A cask is used to package and transport Type B shipments of LLRW material.

## An Outstanding Safety Record

Each year, about 3 million shipments of radioactive materials are transported throughout the United States. According to the U.S. Department of Transportation, there has never been an injury or death related to radioactivity as a result of an LLRW transportation accident.

## Stringent Safeguards from Start to Finish

NASA will follow the numerous safety precautions outlined by federal and state regulations for packaging, handling and transporting of radioactive waste before, during and after the journey. Some of the procedures are described below.

**Documentation** - LLRW generators must prepare manifests that accompany and trace each shipment from generator to disposal. Manifests describe the type of waste, volume, level of radioactivity, other waste characteristics, and its ultimate destination.

**Labeling** - Labels are placed on opposite sides of a package to identify the contents and level of radioactivity. Placards are signs that are placed on the outside of vehicles transporting radioactive waste. Labels and placards are used for quick identification of materials so that emergency response personnel will take appropriate precautions in the unlikely event of an accident.



**Monitoring** - NASA will be monitoring air, water and sediment throughout decommissioning. LLRW shipments are also monitored as follows: when a truck arrives, the vehicle will be surveyed by health physics personnel to ensure it is clean. Before a truck leaves the site the loaded vehicle will be surveyed again.

## Shipping and Disposal

The total amount of LLRW generated during decommissioning the Reactor Facility will be relatively small. On average, decommissioning will result in one to two truckloads of waste per week. NASA will notify local authorities in advance of a planned shipment and coordinate with them to try and minimize any impact to local traffic. NASA is aware of the ongoing highway project to widen Route 250 and will monitor that progress to determine which gate to use for trucks exiting Plum Brook Station. Currently the plans are as follows:

Trucks will travel on Plum Brook Station property to minimize traffic through residential areas. The truck will exit the Plum Brook Station gate to Route 250 and will follow DOT approved roadways. The shipment will be sent to one of several waste reprocessing facilities (such as Alaron in Pennsylvania) for volume reduction or it will be sent for permanent disposal to Envirocare in Clive, Utah, or Barnwell, South Carolina.

## Emergency Response

The stringent safeguards used in handling and transporting radioactive waste have provided protection against exposures to the public and the environment even when accidents have occurred. In the unlikely event of an accident during transporting solid LLRW, NASA has a comprehensive Safety Plan in place and trained emergency response personnel at Plum Brook Station. NASA is coordinating with the Erie County Local Emergency Planning Commission (LEPC) and is partnering with local emergency rescue, police, fire departments and hospitals to ensure appropriate handling of any emergency situation.

## Committed to Safety and Communication

We've been neighbors to the people of Erie County for 45 years. Our goal has always been and will continue to be the health and safety of our neighbors, workers and the environment. We will continue to share information about decommissioning by working with our Community Workgroup, distributing fact sheets, hosting Community Information Sessions and Open Houses, and through our toll-free Decommissioning Information line and our Website.

**WE RECOGNIZE THE IMPORTANCE OF KEEPING AN OPEN DIALOGUE WITH THE COMMUNITY.**

## FOR MORE INFORMATION on Decommissioning the Reactor Facility at Plum Brook Station

Contact Sally Harrington at 216-433-2037 or **email** [s.harrington@grc.nasa.gov](mailto:s.harrington@grc.nasa.gov). or visit us at our **Website** at [www.grc.nasa.gov/www/pbrf](http://www.grc.nasa.gov/www/pbrf) or call our toll-free number at **1-800-260-3838** for regularly updated progress reports.



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21000 Brookpark Road

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