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DOE

## **DOE RECLAIMS FINAL LEASED CESIUM CAPSULES**

Since 1988, the U.S. Department of Energy (DOE) has been carrying out a recall of more than more than 700 cesium capsules which were manufactured at Hanford and leased to four commercial businesses. All but 25 capsules have been safely returned to Hanford. The remaining cesium capsules are currently located at the Applied Radiant Energy Corporation (ARECO) facility in Lynchburg, Virginia. These capsules will be returned to Hanford in two shipments, one of 16 capsules and a final shipment of 9 capsules. The first shipment will depart the ARECO facility on August 22, 1996 and the final shipment is planned for September 17, 1996.

The department has coordinated transportation and communications planning for the shipments with all states through which the shipments will pass. Coordination with the states has been managed through working relationships established by DOE with the Southern States Energy Board, Midwest Council of State Governments, and the Western Governors' Association.

The states along the shipping corridor and DOE will continually monitor and evaluate the shipping campaign and safety procedures to ensure that both shipments are conducted safely and uneventfully.

The shipments will be inspected by state inspectors periodically along the route. In addition, the truck carrying the cask will be monitored by a satellite tracking system which can determine the truck's location as it moves along the route. The tracking system also provides communications between the drivers and dispatch center. No shipments will be made during inclement weather, and both shipments will be escorted by health and safety personnel.

The capsules will move by commercial truck over Interstate 81, Interstate 64, Interstate 65, Interstate 74, Interstate 80, Interstate 84, and Interstate 82 through twelve states, with each shipment expected to take approximately 65 hours. Prior to dispatch from ARECO each shipment will be inspected in accordance with strict Department of Transportation safety requirements.

The 15-ton stainless steel shipping cask is designed to withstand accident or emergency conditions, including severe impacts, immersion, and fire. When fully loaded, the hourly radiation exposure at the cask surface will be 15 to 20 millirem, which is less than a typical chest x-ray. As the distance from the cask increases, the radiation level decreases. Therefore, no special protection is required for the truck drivers or others in the vicinity of the shipping cask.

The Waste Encapsulation and Storage Facility at Hanford, where the capsules were fabricated, will store the capsules until a final disposition plan is developed. The stainless steel capsules are about 21 inches long and 2-1/2 inches in diameter and contain radioactive cesium-137, as a cesium chloride compound.

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BACKGROUND

## CESIUM CAPSULE RECOVERY PROGRAM

### ABOUT CESIUM-137

Cesium-137 is a radioactive isotope, which at Hanford is a byproduct of nuclear fuel processed to produce plutonium. Cesium has a half-life of about 30 years. A half-life is the time it takes a radioactive particle to lose half its radioactivity. The cesium capsules at Hanford were manufactured in the Waste Encapsulation and Storage Facility and leased to commercial irradiation businesses in the United States. NOTE: Unlike cesium in its pure form, the material in the capsules is cesium chloride, a stable substance similar to rock salt.

### ABOUT THE CAPSULES

The cesium capsules were manufactured during the late 1970s and early 1980s at Hanford's Waste Encapsulation and Storage Facility. The capsules are 21 inches long, 2.6 inches in diameter and contain an inner capsule which, in turn, contains about 8.1 pounds of cesium chloride.

The cesium capsules were used primarily to sterilize medical supplies and other commercial purposes. DOE leased the capsules to commercial irradiators in Ohio, Georgia, Colorado, and Virginia in 1985-86. In all, more than 700 capsules were leased to the four commercial operators.

DOE recalled all of the capsules after a single capsule at the Georgia facility leaked a very small amount of radioactivity in 1988.

### ABOUT THE WASTE ENCAPSULATION AND STORAGE FACILITY (WESF)

Located in the 200 East Area, near the center of the Hanford Site, the WESF facility was constructed in 1974. Its purpose was to convert cesium and strontium solutions taken from waste storage tanks to more stable solids in doubly encapsulated containers. The cesium and strontium were removed from several of Hanford's waste tanks to reduce the heat levels in the tanks and then encapsulated during 1974-1984.

Cesium and strontium capsules have been safely stored at WESF for nearly twenty years without leaking.

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