



# **Radioactive Material Transport in Oregon 2007**

*Report to State & Local Government*



OREGON  
DEPARTMENT OF  
ENERGY

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## **Executive Summary**

**T**his report is submitted to interested state and local government agencies, as required by Oregon Revised Statute 469.617. It reports on the transport of radioactive material in and through Oregon during 2007. It also summarizes Oregon's radioactive material transport safety program.

The program's mission is to help prevent accidents involving the transport of radioactive material and to prepare for and handle mishaps if they occur. The Oregon Department of Energy is the lead state agency for this program. The Department of Energy works with other state and local agencies to carry out this mission.

During 2007, 438 shipments of radioactive materials entered or traveled in Oregon under authority of the state's radioactive material permit program. These shipments represented a wide range of materials and hazards, from barely contaminated soil to long-lived transuranic waste and irradiated nuclear fuel.

There were no transport accidents in Oregon in 2007 that resulted in spillage or injury from radioactive material.

## **Oregon Law Regulating Radioactive Material Transport**

**T**he 1981 Legislature passed ORS 469.603 through 469.621 to regulate the transport of radioactive material. The law also mandates effective emergency response to transport mishaps. Oregon's rules are consistent with federal safety standards.

Certain shipments of radioactive materials – depending on radiation levels and whether the vehicle is used to haul other materials – require warning signs called “placards.” Oregon statutes require carriers of all radioactive placarded shipments to obtain a state permit prior to transport through Oregon. This permitting authority is assigned to the Department of Energy, which is authorized to delegate the authority to the Oregon Department of Transportation (ODOT). Since ODOT operates the state's ports-of-entry, they are best able to track compliance with the permitting regulation. Permit holders are charged a fee for each placarded shipment that travels through the state. The fees support part of the state's transport

emergency preparedness program. The fee is \$70 for most shipments; \$500 per year for some medical and industrial shipments.

The statutes further require the Oregon Department of Energy to ensure the best and safest routes are used, directs the Department to work with Oregon Health Services to ensure adequate training and emergency planning is conducted along the transport routes, and requires Health Services to maintain a radiation emergency response team.

The Oregon Energy Facility Siting Council develops rules to implement the statutes.

## **Shipment Activity**

**R**adioactive materials travel in Oregon on a daily basis. Small amounts of radioactive materials are hauled on Oregon highways for industry and medicine. Industrial gauges with radioactive sources are also routinely transported to work sites throughout the state. Many of these shipments do not require placards.

Shipments which do require placards and therefore a permit include the truckloads of radioactive waste which are shipped to and from the Hanford Site in Washington state. Nuclear waste cleanup and other activities at Hanford and throughout the country often result in the shipment of radioactive materials through Oregon. While most of these materials pose a low risk, some of the wastes present unique hazards.

Overall, the number of placarded radioactive material shipments through Oregon during the past year increased and was at the highest level since 2000.

Attachments 1 and 2 show the number of placarded radioactive material shipments through Oregon from 1982 through 2007, and a listing by route of shipments during 2007. Attachment 3 shows how different routes have been used over the years.

### **Low-level waste**

Low-level waste shipments traditionally made up a large majority of the placarded radioactive material shipments that travel through Oregon. Both government and commercially-generated waste is buried at Hanford. Low-level waste generated at federal Department of Energy (DOE) nuclear

weapon production and research sites throughout the country has been shipped to government burial trenches at Hanford for decades. Low-level waste from hospitals, nuclear power plants and universities in 11 Western and Rocky Mountain states is buried in a commercial disposal site at Hanford operated by US Ecology. An increasing amount of low-level waste is also treated at a commercial facility near Hanford.

**Transuranic waste**

DOE is disposing of transuranic waste by burial at the Waste Isolation Pilot Plant (WIPP) in southeast New Mexico. Transuranic waste includes lab equipment, tools, rubble and sludges tainted with small amounts of plutonium and other radioactive materials.

Limited shipments from Hanford began in July 2000 but have since become a significant percentage of the radioactive material shipments that traverse the state. WIPP shipments through Oregon are restricted to Interstates 82 and 84 in Northeast Oregon.

***Number of WIPP shipments from Hanford:***

2000	5
2001	5
2002	3
2003	48
2004	66
2005	100
2006	79
2007	75

Through January 7, 2008, the WIPP site has accepted 6,347 shipments from eight DOE sites – 381 from Hanford.

Oregon worked with other Western states and DOE to develop a comprehensive transport safety program for these shipments. This program includes: higher standards for the drivers and trucking companies; a “defect-free” standard for inspections; procedures to keep the trucks off the road when weather conditions are especially hazardous; training of first responders and hospital emergency room personnel along the shipping routes; advance notice of shipments provided to the states; and near-real time tracking of the shipments through the use of satellite tracking systems.

### **Other Hanford Shipments**

Beginning in October, DOE began the shipment of nuclear fuel from the Fast Flux Test Facility at Hanford to the Idaho National Laboratory. Those shipments are made by truck.

Also in the fall, DOE received approval to begin the shipment of surplus plutonium at Hanford to DOE's Savannah River Site in South Carolina. These shipments are considered "national security" shipments. Shipment schedules and other information related to them is classified.

### **Naval nuclear reactor compartment shipments**

Since 1986 the U.S. Navy has disposed of 117 reactor compartments from deactivated nuclear submarines and cruisers at Hanford. The Navy removes the spent nuclear fuel from the reactors, cuts out a section of the submarine or cruiser containing the reactor compartment, and welds steel plates over any openings to seal the compartments. The compartments are then shipped by barge up the Columbia River to Hanford for disposal. These shipments are low-level waste.

Through most of the 1990s and into the early part of this decade, the Navy made between seven and 10 shipments on average each year. Only two compartments were shipped during each of 2003 and 2004. No shipments were made during 2005. One compartment was shipped in 2006 and two in 2007.

Notification to local and state emergency response agencies along the Columbia River is provided prior to each shipment.

The Washington Department of Health and Oregon Health Services periodically inspect these shipments prior to their departure to ensure they meet state and federal transport regulations.

### **Rail shipments**

Spent nuclear fuel from Navy ships is periodically sent by rail from Puget Sound Naval Shipyard in Bremerton, Washington, to the Idaho National Laboratory. These shipments travel through about 200 miles of northeast Oregon. The Oregon Department of Energy works with the Navy to provide information on these shipments to state and local emergency responders.

Other radioactive materials are also occasionally shipped by rail through the state.

## Summary of Transport Accidents & Incidents

**T**here were no transport accidents in Oregon in 2007 that resulted in spillage or injury from radioactive material.

The Oregon Health Services' Radiation Protection Services responded to a variety of transportation-related incidents in Oregon in 2007 involving radiological material. Among the incidents were:

- A vehicle carrying a portable gauge device was involved in a minor traffic accident. No spillage or leakage of the source was reported.
- Steel mills reported 11 instances of low-level radioactive contamination in loads of steel or scrap steel. The mills have radiation detectors that examine each load upon arrival. The loads were returned to the places of origin. There is no hazard to the workers or to the public during transportation.
- Waste transfer stations and commercial garbage incinerators discovered small amounts of radioactive materials mixed in with garbage on five occasions. The waste was segregated until the radioactive materials decayed away. One incident involved a breached safe found at a landfill with "Radioactive Materials" labels. Radiation Protection Services staff responded and discovered a small amount of exempt radiological sources. The origin of the container is unknown.
- There were two incidents involving contaminated waste. One incident involved a state of Washington bio-hazard receiving facility that detected radiological material received from an Oregon medical facility. The materials were transported back to the sender for isolation and appropriate disposal/decay of materials. Another incident involved a small radiation source discovered at a garbage incinerator facility. The source was picked-up by Radiation Protection Services staff.

## **Compliance and the Effectiveness of Enforcement Activities**

**S**ince the establishment of its program, Oregon has experienced few compliance problems regarding the state's regulation of radioactive material transport. The carriers have generally met our standards, have applied for and carried our permits, and have paid their fees.

Inspections both within the state and nationally have shown that trucks carrying radioactive materials are, on average, better maintained than trucks carrying other hazardous materials. We believe this difference is the result of the special attention paid to radioactive material shipments. ODOT personnel randomly stopped and inspected on average, one WIPP shipment per month as it entered Oregon at Umatilla. A sampling of other radioactive material shipments was also inspected.

## **Future Shipments**

### **Low-level waste**

Low-level waste shipments will continue through Oregon to Hanford. Shipment numbers are difficult to predict.

Oregon could see major new shipping campaigns associated with Hanford during the next several years. Hanford was selected in 1999 as a primary disposal site for significant amounts of the nation's low-level and mixed low-level waste, which could result in many thousands of shipments over the next several decades. Litigation has so far prevented DOE from following through with these plans but the scheduled completion of an Environmental Impact Statement in 2008 could result in shipments beginning later this year.

An initiative passed by Washington voters in November 2004 would prevent those shipments from occurring. However, in June 2006, a federal judge ruled that the initiative was unconstitutional in its entirety. That ruling was appealed to the 9th U.S. Circuit Court of Appeals. While the case winds through the appeal process, the initiative cannot be enforced.

### **Transuranic waste**

DOE will continue to ship transuranic waste from Hanford for the next 15-20 years. Shipment numbers are anticipated to remain in the 70-100 range during each of the next several years.

### **Other Hanford Shipments**

DOE is expected to complete the shipment of nuclear fuel from the Fast Flux Test Facility at Hanford to the Idaho National Laboratory in early-to-mid 2008.

DOE is expected to continue shipment of surplus plutonium from Hanford to the Savannah River Site into 2009.

### **Naval nuclear reactor compartment shipments**

Shipments of submarine and cruiser reactor compartments on the Columbia River are expected to continue in 2008 and beyond. The number of shipments – like in recent years – will be only a few per year.

### **Spent nuclear fuel and high-level waste**

The federal government continues to move forward with plans to build and operate a geologic repository for the nation's spent nuclear fuel and high-level nuclear waste. When open, spent nuclear fuel from the shut-down Trojan nuclear power plant and the Columbia Generating Station nuclear plant near Richland, Washington would be shipped through Oregon to the repository. Vitrified high-level waste and spent nuclear fuel from Hanford would also be transported to such a facility. At the earliest, the facility – proposed for Yucca Mountain, Nevada – will not be open prior to 2019, and likely not for several years beyond that.

Congress continues to periodically examine interim solutions for spent nuclear fuel storage prior to the opening of Yucca Mountain. Extensive planning and training will occur before these shipments occur in Oregon.

## **Emergency Preparedness and Response Activities**

**T**he Oregon Department of Energy contracts with Oregon Health Services to provide radiological training to first responders and hospital emergency room personnel. During 2007, about 305 persons received this training throughout the State of Oregon.



In addition, the Oregon Department of Energy contracts with Oregon State University's Radiation Center to annually provide advanced training in radiological response to members of Oregon's regional Hazardous Material Response Teams. State Police officers and emergency responders from other state, federal and local agencies also occasionally participate in this training.

## **Public Information/Regional Planning**

**T**he Oregon Department of Energy participated in a number of regional and national forums to help develop transportation policies that are consistent with Oregon policy. During 2007 Oregon Department of Energy staff participated in the following transportation groups:

- The Western Governors' Association Technical Advisory Group for WIPP Transport
- The Western Interstate Energy Board's High-level Radioactive Waste Committee
- DOE's Transportation External Coordination/Working Group
- State and Tribal Government Working Group

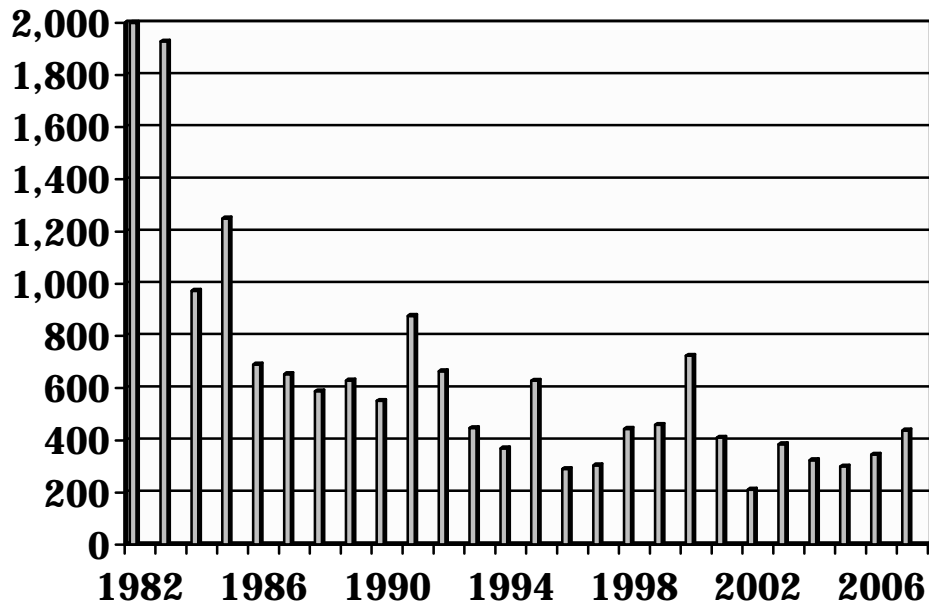
In addition, the Oregon Hanford Cleanup Board, a policy advisory group on Hanford issues to the Governor, Legislature and the Oregon Department of Energy, maintains involvement with radioactive material transport issues.

Information materials about this program were updated on the Oregon Department of Energy web site:  
(<http://oregon.gov/ENERGY/NUCSAF/nucsafe.shtml>)

**Attachment 1**

**Placarded Radioactive  
Material Shipments  
Through Oregon**

1982	2,000+	1995	628
1983	1,928	1996	290
1984	973	1997	304
1985	1,250	1998	444
1986	690	1999	459
1987	653	2000	724
1988	588	2001	410
1989	629	2002	211
1990	551	2003	385
1991	876	2004	324
1992	664	2005	300
1993	447	2006	345
1994	369	2007	438



## Attachment 2

### Placarded Radioactive Shipments by Route 2007

	I-5 Ashland	I-84 Cascade	I-84 Farewell	US-97 Klamath	US-730 Umatilla	I-5 Woodburn	Total
January	0	0	21	0	17	5	43
February	2	0	7	0	14	4	27
March	3	0	5	0	35	6	49
April	0	0	9	0	11	6	26
May	0	0	8	0	14	3	25
June	0	0	20	0	29	4	53
July	1	0	16	0	15	2	34
August	1	0	15	0	18	8	42
September	0	0	10	0	17	7	34
October	1	0	18	0	25	6	50
November	0	0	11	0	13	5	29
December	0	0	10	0	14	2	26
<b>Total</b>	<b>8</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>222</b>	<b>58</b>	<b>438</b>
<b>Percent</b>	<b>2</b>	<b>0</b>	<b>34</b>	<b>0</b>	<b>51</b>	<b>13</b>	

**Attachment 3**

**Placarded Radioactive Shipments  
% by Route**

	I-5 Ashland	I-84 Cascade	I-84 Farewell	US-97 Klamath	US-730 Umatilla	I-5 Woodburn	Misc Shipments
2007	2	0	34	0	51	8	- --
2006	<1	<1	29	0	49	19	- --
2005	1	<1	21	3	49	25	--
2004	2	7	18	2	32	38	--
2003	1	6	20	4	37	32	--
2002	2	10	38	2	27	19	--
2001	3	16	51	4	15	11	--
2000	2	30	43	3	15	7	--
1999	2	25	54	2	9	2	5
1998	5	38	33	8	7	5	4
1997	1	30	35	5	20	0	8
1996	3	25	39	7	24	0	1
1995	2	12	52	2	19	4	1
1994	3	12	57	7	11	8	1
1993	4	26	46	5	5	1	14
1992	3	18	67	11	1	--	--
1991	2	16	76	6	--	--	--
1990	3	13	72	12	--	--	--
1989	9	5	70	16	--	--	--
1988	7	--	72	21	--	--	--
1987	2	--	95	4	--	--	--
1986	3	--	86	11	--	--	--
1985	3	--	79	18	--	--	--