Radioactive Material Transport in Oregon 2009

Report to State and Local Government

OREGON DEPARTMENT OF ENERGY

February 2010

Executive Summary

This 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 calendar year 2009. 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 2009, 421 shipments of radioactive materials entered or traveled in Oregon under authority of the state's radioactive material transport permit program. This number of shipments is typical for recent years. These shipments represented a wide range of materials and hazards.

There were no transport accidents in Oregon in 2009 that resulted in spillage or injury from radioactive material. However, there was a minor traffic accident involving a radioactive material shipment. That is explained in more detail on page six.

Oregon Law Regulating Radioactive Material Transport

The 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 and $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 Public Health (Oregon Health), to ensure adequate training and emergency planning is conducted along the transport routes, and requires Oregon Health to maintain a radiation emergency response team.

The Oregon Energy Facility Siting Council (EFSC) develops rules to implement the statutes, which provide the following rulemaking authority:

> **Set requirements for notification, record keeping, reporting, packaging and emergency response.** The rules require notification for inspection of certain radioactive material shipments. The rules also require notification to the state of any vehicle accidents, loss of any radioactive material, or tampering or obstruction of any shipments.
>
> **Specify conditions of transport for certain classes of radioactive materials.** Rules require motor vehicles to avoid movement during a road condition advisory unless vehicles have traction tires or devices. The Director of the Oregon Department of Energy may halt the transport of radioactive material if he or she believes there is a clear and immediate danger to public health or safety. The Oregon Department of Energy may impose civil penalties for violation of rules.
>
> **Establish requirements for insurance, bonding or other indemnification.** The rules require carriers to maintain a certain amount of insurance and pay for costs associated with response to an accident and indemnifies the State from claims arising from the release of radioactive material during transportation.

Shipment Activity

Radioactive 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 nuclear site and nearby facilities 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.

Attachments 1 and 2 show the number of placarded radioactive material shipments through Oregon from 1982 through 2009, and a listing by route of shipments during 2009.

Low-level waste

Low-level waste shipments traditionally make up a large majority of the placarded radioactive material shipments that travel through Oregon. Both government and commercially-generated waste is buried on the Hanford Site. Low-level waste generated at federal Department of Energy (DOE) nuclear weapon production and research sites throughout the country had been shipped to government burial trenches at Hanford for decades, but such shipments were mostly suspended during the past decade because of litigation and an agreement by DOE to suspend most shipments until related environmental studies were completed.

Low-level waste from hospitals, nuclear power plants and universities in 11 Western and Rocky Mountain states – including Oregon – is buried in a commercial disposal site at Hanford operated by a company called US Ecology. An increasing amount of low-level waste is also treated at Perma-Fix Northwest, a commercial facility near Hanford. In addition, fuel for nuclear reactors is fabricated at the Areva facility in Richland, Washington and trucks related to this facility travel through Oregon.

Perma-Fix Northwest

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 had become a significant percentage of the radioactive material shipments that traverse the state until these shipments were halted from Hanford in September 2008. WIPP shipments through Oregon are restricted to Interstates 82 and 84 in Northeast Oregon. Shipments are expected to resume in 2010.

Number of WIPP shipments from Hanford:

2000	5	2005	100
2001	5	2006	79
2002	3	2007	75
2003	48	2008	51
2004	66	2009	0

Through January 25, 2010, the WIPP site has accepted 8,160 shipments from ten DOE sites – 432 of those shipments from Hanford.

Oregon worked with other Western states and DOE to develop and implement 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. DOE has also agreed to these above-regulatory protocols for certain other shipments.

Other Shipments

In June 2009, the reactor core from the research reactor at Oregon State University was transported by truck from Corvallis to the Idaho National Laboratory. The cover of this report includes a photo of that shipment.

Naval nuclear reactor compartment shipments

Since 1986 the U.S. Navy has disposed of 120 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. The average number of shipments now is between zero and two per year. Two compartments were shipped in 2009.

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's Radiation Protection Services periodically inspect these shipments prior to their departure to ensure they meet state and federal transport regulations. Oregon inspected one of the 2009 shipments.

Summary of Transport Accidents & Incidents

There were no transport accidents in Oregon in 2009 that resulted in spillage or injury from radioactive material.

In March, a flat-bed truck hauling low-level radioactive waste was rear-ended by a car while traveling south on Interstate 82 near Hermiston, not far from where Interstate 82 intersects with Interstate 84. There were no injuries. The driver of the car was cited for careless driving after he fell asleep and rear-ended the trailer. The Oregon State Police trooper that responded noted only minor damage to the trailer which did not cause any alarm for damage or discharge of the cargo. The truck continued on its trip. The truck was a flat bed truck hauling six metal boxes and one wooden box. It was low-level waste (metal piping and other waste), coming from Puget Sound Naval Shipyard and going to a waste treatment facility in Tennessee.

Oregon Health's Radiation Protection Services (RPS) received and responded to a total of 64 incident reports during 2009. These reports ranged from informational notifications to requests for a physical response by the department's emergency response team. Of the total incident reports, 25 were classified as transportation incidents. A breakdown of the major categories is given below:

- Six incidents of radiation alarms at Cascade Steel Rolling Mills for gondolas (open top type of rolling rail stock) carrying scrap metal received from in-state and out-of-state locations. Three of these alarms were determined to be false, two contained pipes with radium scale buildup, and one contained a World War I compass with radium paint. For the confirmed radioactive material incidents, the material was removed and placed into storage at the steel mill for disposal by an authorized radioactive materials waste broker.

- Five incidents of radiation alarms at the Covanta waste-to-energy incinerator for waste trucks entering the Brooks facility. All of these incidents involved medical waste. The radioactive materials were removed by RPS personnel and placed into the department's storage facility for decay and disposal into the normal municipal solid waste stream.

- Five incidents of radiation alarms at the Stericycle facility in Morton, Washington for radioactive biohazard medical waste received from

Oregon hospitals. Notifications were received from the Washington Department of Health and the waste shipped back to the shipper for characterization and decay of materials. RPS issued violations to the hospitals involved and followed up to ensure the hospitals initiated corrective actions to prevent future occurrences.

- Three incidents were requests for radioactive material retrieval by RPS personnel from the Portland Metro waste transfer stations (Central and South). Articles retrieved included a World War II aircraft panel with radium paint on the indicator dials, bottles of thorium nitrate and eighteen tritium exit signs. RPS personnel retrieve and place the items into the department's radioactive material waste container for storage and future disposal by an authorized waste broker. All items collected in 2009 are in storage at this time.

- Other transportation incidents include medical waste triggering an alarm at the Marion-Keizer waste transfer station; the discovery of an aircraft toggle switch containing radium at a scrap metal dealership in Roseburg; and the discovery of radioactive medical waste (marked medical trash bag) by a Portland waste hauler in a customer's waste bin.

Compliance and the Effectiveness of Enforcement Activities

Since 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.

Future Shipments

Low-level waste

Low-level waste shipments will continue through Oregon to Hanford and to-and-from Richland-area facilities. Shipment numbers are difficult to predict.

Oregon is unlikely to see major new shipping campaigns associated with Hanford during the next decade. 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. The settlement of separate litigation extends this moratorium on most waste shipments to Hanford through 2022.

Shipments destined for the US Ecology disposal site and to and from the Perma-Fix and Areva facilities are expected to continue.

Transuranic waste

A projected five-year halt to WIPP shipments from Hanford is scheduled to end after a year and a half without shipments. Shipments of transuranic waste are expected to resume in 2010. The last WIPP shipment from Hanford occurred in September 2008.

Naval nuclear reactor compartment shipments

Shipments of submarine and cruiser reactor compartments on the Columbia River are expected to continue in 2009 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's decision to reconsider plans to build and operate a geologic repository in Nevada for the nation's spent nuclear fuel and high-level nuclear waste potentially leaves highly radioactive waste "stranded" in both Oregon and Washington for years to come. Irradiated nuclear fuel is stored at the shut-down Trojan nuclear plant northwest of Portland and at the Columbia Generating Station nuclear plant near Richland, Washington. In addition, highly radioactive waste at Hanford is also eventually destined to go to a geologic repository. Once such a facility is sited and built, these materials are then expected to be

transported through Oregon for disposal. Extensive planning and training will occur before these materials are transported through Oregon – regardless of the destination.

Emergency Preparedness and Response Activities

The Oregon Department of Energy contracts with Oregon Health's RPS to provide radiological training to first responders and hospital emergency room personnel. During 2009, about 400 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 participate in this training. About 28 people received this advanced training in 2009.

Public Information/Regional Planning

The 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 2009, 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
- State and Tribal Government Working Group

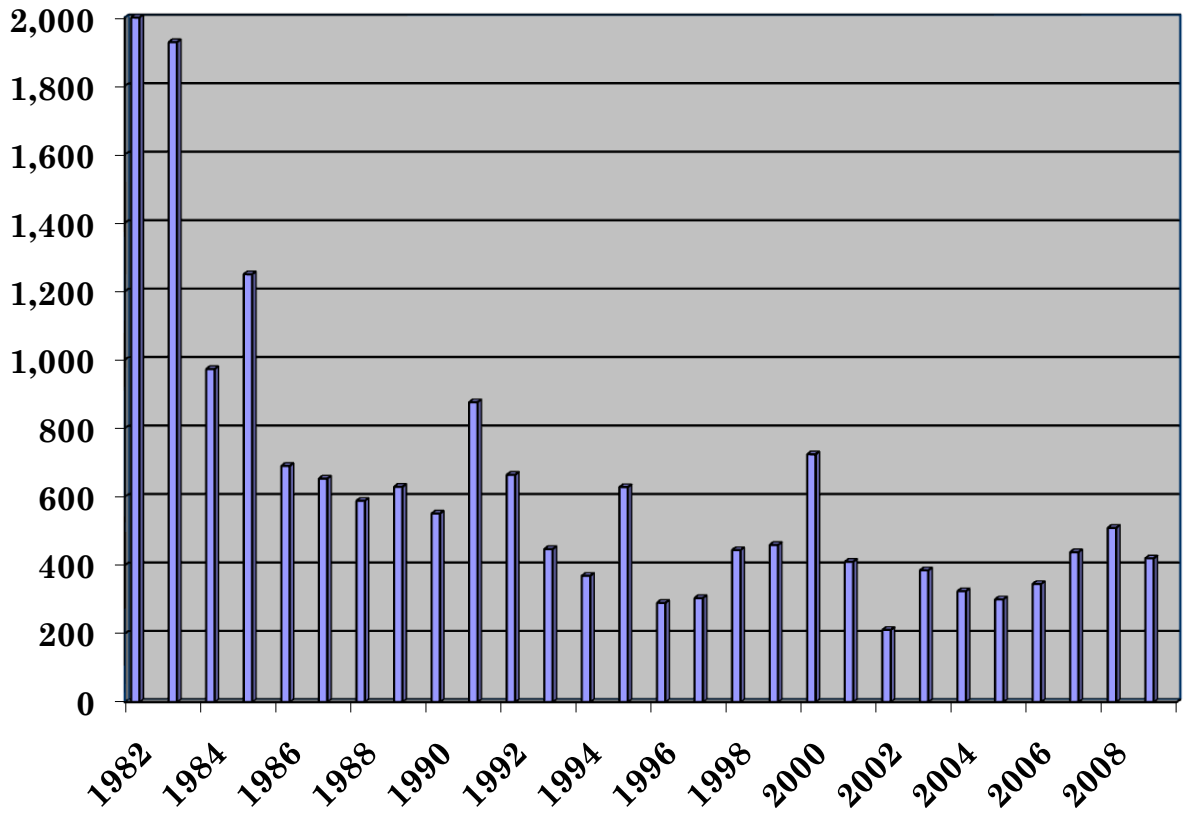
In addition, the Oregon Hanford Cleanup Board, a policy advisory group on Hanford issues to the Governor, Legislature and the Oregon Department of Energy, maintains involvement with radioactive material transport issues.

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+	1996	290
1983	1,928	1997	304
1984	973	1998	444
1985	1,250	1999	459
1986	690	2000	724
1987	653	2001	410
1988	588	2002	211
1989	629	2003	385
1990	551	2004	324
1991	876	2005	300
1992	664	2006	345
1993	447	2007	438
1994	369	2008	509
1995	628	2009	420



Attachment 2

Placarded Radioactive Shipments by Route
2009

	Interstate 5 thru state	Interstate 5 Portland to Eugene	Interstate 84 Columbia Gorge	US Highway 97	Interstate 84 Eastern Oregon	Total
January	3	6	2	0	15	22
February	0	6	0	0	15	21
March	5	0	7	4	42	42
April	0	5	1	1	27	33
May	1	0	1	1	43	45
June	6	5	5	4	37	43
July	0	2	1	1	41	43
August	2	1	3	2	48	49
September	1	0	0	0	28	29
October	1	1	1	1	37	40
November	0	0	1	0	34	34
December	1	1	1	1	18	20
Total	10	27	23	15	383	421*
Percent	2%	6%	5%	3%	91%	

**** There were 421 total shipments. By-route and by-month totals are larger, as some shipments show up on more than one route.***