3.3 Waste Management and Chemical Inventories

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Waste Management

Waste produced at the Hanford Site is classified as either radioactive, nonradioactive, or mixed waste. Radioactive waste is categorized as transuranic, high-level, and low-level. Mixed waste has both radioactive and hazardous nonradioactive substances. Hazardous waste contains dangerous wastes or extremely hazardous wastes or both, as defined in Ecology's Dangerous Waste Regulations.

Radioactive and mixed waste are currently handled in several ways. High-level waste is stored in single- and double-shell tanks. Low-level waste is stored in double-shell tanks, on storage pads, or is buried. The method used to manage low-level waste is dependent on the source, composition, and concentration of the waste. Transuranic waste is stored in vaults or on underground storage pads from which it can be retrieved.

Approximately 200 Hanford Site facilities have the capacity to generate dangerous waste. An annual report lists the dangerous wastes and extremely hazardous wastes generated, treated, stored, and disposed of onsite and offsite (DOE 1995b). Dangerous wastes are treated, stored, and prepared for disposal at several Hanford Site facilities or are shipped offsite for disposal, destruction, or recycling.

Nondangerous wastes generated at the Hanford Site are buried in the Solid Waste Landfill, located in the 200 Areas. These wastes originate at a number of areas across the Site. Examples of these wastes are construction debris, office trash, cafeteria waste, and packaging materials. Other materials and items classified as waste include solidified filter backwash and sludge from the treatment of river water, failed and broken equipment and tools, air filters, uncontaminated used gloves and other clothing, and certain chemical precipitates such as oxalates. Nonradioactive friable asbestos is buried in designated areas at the Solid Waste Landfill. Ash generated at powerhouses in the 200-East and 200-West Areas is buried in designated sites near those powerhouses. Demolition waste from 100 Areas decommissioning projects is buried in situ or in designated sites in the 100 Areas.

Annual reports document the quantities and types of solid waste generated onsite, received, shipped offsite, and disposed of at the Hanford Site (WHC 1995b). Solid waste program activities are regulated by the RCRA and TSCA, discussed in Section 2.0, "Environmental Compliance Summary." Solid waste quantities generated onsite, received from offsite sources, shipped offsite, and disposed of at the Hanford Site annually from 1989 through 1994 are shown in Tables 3.3.1 through 3.3.4.

The quantities of liquid wastes generated in 1994 and stored in underground storage tanks are included in the annual dangerous waste report (DOE 1995b). Table 3.3.5 is a summary of the liquid waste generated from 1989 through 1994, which are stored in underground storage tanks.

Chemical Inventories

Emergency Planning and Community Right-To-Know Act

Title III of the Superfund Amendments and Reauthorization Act is a free-standing law, called the Emergency Planning and Community Right-To-Know Act. This Act requires that the public be given information about hazardous chemicals in their communities. It also established emergency planning and notification procedures to protect the public in the event of a hazardous chemical release.

Subtitle B of the Act contains requirements for reporting information to local communities on hazardous materials existing in or released from a facility near those communities. The Hanford Site was in compliance with the reporting and notification requirements of the Act in 1994. The *1994 Hanford Tier-Two Emergency and Hazardous Chemical Inventory* (DOE 1995a) report will be issued in 1995 to the State Emergency Response Commission, local county emergency management committees, and the local fire departments. This report contains information on hazardous materials stored across the Hanford Site. Table 3.3.6 summarizes the information reported, listing the 10 chemicals stored in greatest quantity on the Hanford Site.

Table 3.3.1 Quantities of Solid Waste[a] Generated on the Hanford Site, kg

Waste Category	1989	1990	1991	1992	1993	1994
Mixed	670,457	1,025,084	475,370	48,641	150,012	567,670
Radioactive	7,798,182	1,325,045	1,069,703	682,684	1,116,616	1,390,647

(a) Solid waste includes containerized liquid waste.

Table 3.3.2 Quantities of Solid Waste[a] Received from Offsite, kg

Waste Category	1989	1990	1991	1992	1993	1994
Mixed	815,655	0	23,605	40,897	207,905	96,409
Radioactive	585,064	239,669	629,686	1,010,439	1,587,884	1,355,653

(a) Solid waste includes containerized liquid waste. Solid waste quantities do not include naval reactor submarine compartments.

Table 3.3.3 Quantities of Hazardous Waste[a] Shipped Offsite, kg

Waste Category	1990	1991	1992	1993	1994
Containerized	92,811	89,354	181,305	123,754	428,219
Bulk Solids		0	433,330	250,235	2,872,661
Bulk Liquids		331,905	11,089	94,065	87,056
Totals	92,811	421,259	625,724[b]	468,054[c]	3,387,936[d]

(a) Does not include Toxic Substances Control Act wastes.
(b) Includes 418,676 kg from demolition of 2727-S Building.
(c) Includes 250,235 kg from demolition of 190-B Building.
(d) Includes 2,658,788 kg from North Slope cleanup and 160,883 kg from carbon tetrachloride soil extraction.

Table 3.3.4 Radioactive Solid Waste Disposed of in 1994[a]

Constituent	Units	Low-Level	Low-Level Mixed	Low-Level Plus[b]	Low-Level Mixed Plus[c]	Transuranic	Transuranic Mixed
Americium	g	3.1×10^{-1}	0.0	0.0	1.5×10^{-4}	0.0	0.0
Cesium	Ci	0.0	0.0	0.0	0.0	0.0	0.0
Europium	Ci	6.7×10^{-1}	0.0	0.0	0.0	0.0	0.0
Plutonium	g	2.8×10^{1}	0.0	0.0	7.0×10^{-4}	0.0	0.0
Strontium	Ci	5.0×10^{3}	0.0	0.0	5.6×10^{-2}	0.0	0.0
Thorium	g	1.0×10^{5}	0.0	0.0	0.0	0.0	0.0
Uranium	g	2.3×10^{6}	0.0	0.0	0.0	0.0	0.0
Other fission and activation products	Ci	3.6×10^{-1}	0.0	0.0	0.0	0.0	0.0

(a) Values provided include only waste buried or permanently disposed of. This table does not include inventories of waste contained in temporary storage facilities. The "Mixed" category identifies wastes that are regulated under the RCRA. The "Plus" category identifies waste that are regulated under the TSCA (e.g., polychlorinated biphenyls).
(b) Low-level with polychlorinated biphenyls.
(c) Low-level mixed with polychlorinated biphenyls. All quantities in this category are from the naval reactor compartments disposed of at the Hanford Site.

Table 3.3.5 Quantities of Bulk Liquid Waste[a] Generated on the Hanford Site, kg

1989	1990	1991	1992	1993	1994
8,642,497	10,988,821	4,094,802	3,330,246	5,859,059	2,833,896

(a) Bulk liquid waste is defined as liquid waste sent to double-shell underground storage tanks. This does not include containerized waste (e.g., barreled), which are included in the solid waste category.

Table 3.3.6 Average Balance of Ten Chemicals Stored in Greatest Quantity, 1994

Hazardous Material	Average Daily Balance, kg
Coal	2.9×10^{7}
Mineral oil	2.0×10^{6}
Sodium	1.3×10^{6}
Diesel fuel	6.0×10^{5}
#6 Fuel oil	5.9×10^{5}
Nitric acid	4.8×10^{5}
Ethylene glycol	2.8×10^{5}
Argon	1.4×10^{5}
Unleaded gasoline	1.1×10^{5}
Nitrogen	9.2×10^{4}