Mercury Report: Toxics Release Inventory

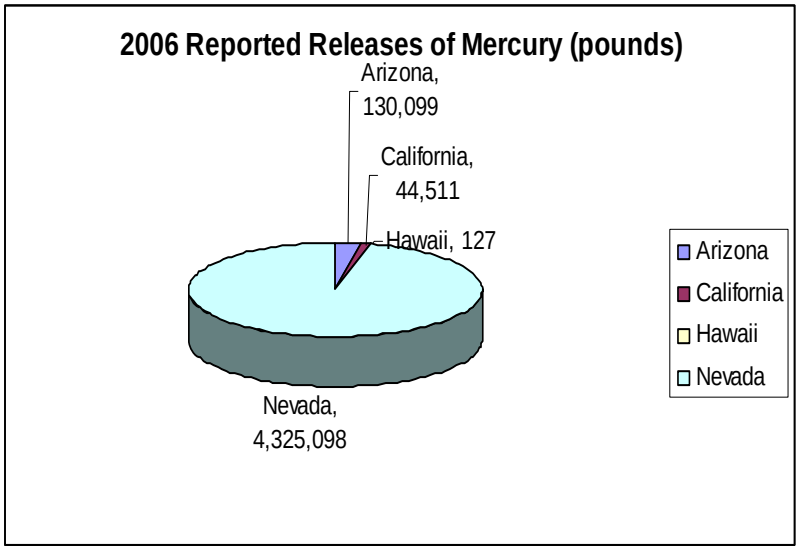
Reporting Year 2006

U.S. EPA Region 9
Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations

-- March 2008

Table 1

Industries with Largest On-site and Off-site Releases of Mercury		
	Reporting Year	
Industry	**2005**	**2006**
Gold Mining	3,547,978	4,285,653
Copper Ore and Nickel Ore Mining	1,679	126,785
Hazardous Waste Treatment and Disposal	19,032	66,997



The 2006 Data for Mercury

EPA has made public the 2006 data on toxic chemicals that were released to the air, water and land within the Pacific Southwest Region.* This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program.

In the year 2000, TRI was expanded to include additional persistent, bioaccumulative and toxic (PBT) chemicals, and to require reporting for these chemicals at lower thresholds, ranging from 0.1 grams to 100 pounds. PBT pollutants are toxic chemicals that persist in the environment and bioaccumulate in food chains, thus posing risks to human health and ecosystems.

In determining release quantities for metal compounds, facilities only consider the primary metal portion of the compound. For instance, a facility reporting for mercury compounds only reports the mercury portion of the mercury compounds released.

While mercury and mercury compounds have been on the list of reportable chemicals since 1987, for the year 2000 the reporting threshold was significantly lowered (from 25,000 pounds manufactured or processed, and 10,000 pounds otherwise used to 10 pounds manufactured, processed, or otherwise used). As a result, additional facilities are required to report releases of mercury and mercury compounds.

** No adjustments were made to account for double counting that could occur as a result of off-site transfers of some TRI facilities also being reported as on-site releases at permitted hazardous waste landfills and other TRI facilities that receive the on-site transfers.*

Releases and Risk

Release is defined as the amount of a toxic chemical released on-site (to air, water, underground injection, landfills, and other land disposal), and the amount transferred off-site for disposal.

It is important to note that release should not be directly equated with risk. To evaluate risk, release data must be combined with information about chemical toxicity, site-specific conditions, and exposure. TRI chemicals vary widely in toxicity. High volume releases may pose less environmental risk than lower volume releases of highly toxic chemicals. Increases in on-site releases at permitted hazardous waste facilities may indicate a reduction in risk. In addition, these data do not indicate whether a facility is violating environmental laws. Many of the substances reported through this program are subject to state and federal regulations designed to protect human health and the environment.

Industries

A facility is subject to TRI reporting requirements if it: has 10 or more full-time employees; is classified under a reportable North American Industry Classification System (NAICS) code; and manufactures, processes, or otherwise uses any of the listed toxic chemicals in amounts greater than the threshold quantities. For most chemicals (excluding PBTs) the thresholds are 25,000 pounds for manufacturing or processing, and 10,000 pounds for otherwise using the toxic chemical.

Manufacturing industries have been reporting their releases since 1987 and federal facilities started reporting in 1994. In 1998, seven additional industry sectors began reporting their toxic chemical releases for the first time. These sectors are metal and coal mining, electricity generation, commercial hazardous waste treatment, solvent recovery, petroleum bulk terminals, and wholesale chemical distributors.

Releases

As shown in Table 2, there was an overall 24% (871 thousand pounds) increase in on-site and off-site releases for the year 2006.

Table 2
On-Site and Off-Site Releases*

Release Media	Reporting Year		Percent Change
	2005	2006	
Air	9,879	8,496	-14%
Land	3,581,965	4,438,164	24%
Water	7	6	-13%
Undg Inj **	8	3	-63%
Off-Site	37,138	53,167	43%
Total Releases	3,628,996	4,499,835	24%

** Year to year data comparisons do not reflect changes in reporting requirements.*

The overall increase in mercury emissions is driven by increases of land releases at Newmont Twin Creeks Mine, (730,105 pounds), Phelps Dodge Miami (122,899 pounds), and Newmont Carlin North Area (71,002 pounds). The largest decrease was reported by Newmont Carlin South (82,351 pounds).

Mercury air releases decreased by 14% (1,383 pounds). Decreases at Barrick Goldstrike (1,076 lbs) and Cortez Gold Mines (690 lbs) were offset by increases at Glamis Marigold Mines (596 lbs) and Newmont Lone Tree (568 lbs).

Reported off-site releases increased 16 thousand pounds. Phelps Dodge Miami Inc. reported the highest increase in off-site releases at 39 thousand pounds. The U.S. Navy Naval Air Weapons Station China Lake decreased off-site releases by 30 thousand pounds, a 98% increase.

The 2006 TRI data show that in a state-by-state comparison Nevada, Arizona, California, and Hawaii ranked nationally 1, 3, 6, and 49 respectively for total releases of mercury. Nevada ranked number 1, reporting 4.3 million pounds of on-site and off-site releases of mercury and 84% of national releases. No mercury releases were reported in Region 9's Pacific Island Territories. Table 3 gives the total pounds of mercury reported in Region 9 by state.

Table 3
2006 Mercury Releases (in pounds) by State

State	Air	Land	Under Ground Injection	Water	Off-Site
Arizona	1,552	89,430	0	0	39,116
California	2,474	29,079	0	2	12,956
Hawaii	68	0	2	4	53
Nevada	4,402	4,319,655	0	0	1,041

2006 Data for Reporting Industry Sectors

A review of the TRI data shows that 95% of mercury releases in the Region comes from the gold mining industry. The other 5% can be attributed to a variety of other industries, including: Copper, nickel and silver mining; hazardous waste facilities; and electric power generation. A detailed summary of releases by industry sector is provided in Table 4.

Table 4
Mercury Releases (in pounds) by Industry Sector

Industry	Air	Land	Water	Off-Site
Gold Ore mining	4,264	4,281,237	0	151
Copper Ore and Nickel Ore Mining	47	87,719	0	39,019
Hazardous Waste Treatment and Disposal	4	54,543	0	12,450
Silver Ore Mining	5	12,103	0	0
Fossil Fuel Electric Power Generation	1,632	1,732	0	56
Cement Manufacturing	2,054	590	0	0
Petroleum Refineries	305	0	6	691
Federal Facilities	21	0	0	548

Gold Mining

In the Pacific Southwest Region, 17 gold mines reported 4.3 million pounds of total mercury releases, most of which were released on-site to land. Mercury may be processed as a trace constituent in metal ores or recovered as a by-product from gold ores.

Many mines extract, move, store, process, and dispose of large amounts of waste rock and ore materials which often contain low concentrations of naturally occurring metals. The vast majority of this material is placed in surface impoundments or on the land, and the metals are reported as on-site releases to land. This previously buried material is exposed to potential leaching by rain, snow, and acid mine drainage, therefore it must be carefully managed and monitored to prevent any surface water or groundwater contamination.

There are also air releases from ore processing and metal refining operations. For air releases of mercury, gold mines reported a total of 4,264 pounds.

Copper Mining

There are four copper mines in Region 9 reporting 126,785 pound of mercury releases. Those mines reported 39,019 pounds for off-site releases and 87,719 pounds of land releases.

Hazardous Waste Disposal

Land disposal of 54,543 pounds of mercury was reported as released into permitted landfills. Hazardous waste disposal facilities also reported 4 pounds of air releases.

Silver Mining

One silver mine reported 12,108 pounds of total mercury releases. This silver mine reported 12,103 pounds of these releases as land releases. Air releases were reported as 5 pounds. The facility reported no mercury releases to water or underground injection.

Electricity Generation

Only facilities that burn coal or oil to generate electricity commercially are required to report to the Toxics Release Inventory Program. Mercury compounds may be formed during the combustion process. These facilities reported 1,632 pounds of air releases and 1,732 pounds of land releases.

Cement Manufacturing

Mercury may be processed or otherwise used as a trace element in raw materials and fuels in the manufacture of hydraulic cement. These facilities reported 2, 644 pounds of releases, with 2,054 releases to the air, and 590 pounds of on-site land releases.

Petroleum Refineries

Mercury may be processed or otherwise used as trace components in crude oil. Air releases totaling 305 pounds and off-site releases of 691 pounds were reported by these facilities.

Federal Facilities

One federal facility had zero releases to land, water, and underground injection. This facility did report 21 pounds released to the air, and 548 pounds of off-site transfers of mercury.

Table 5 shows the top ten counties in Region 9 with the highest on-site releases of mercury.

Table 5
Counties Releasing Largest Quantities of On-Site Releases in 2006

County	State	Pounds Released
ELKO	NV	2,221,443
HUMBOLDT	NV	1,682,516
EUREKA	NV	191,892
LANDER	NV	148,958
GILA	AZ	84,168
NYE	NV	40,210
KINGS	CA	28,069
WHITE PINE	NV	26,626
PERSHING	NV	12,234
YAVAPAI	AZ	2,362

Table 6 shows the ten facilities in Region 9 with the highest total releases of mercury.

Table 6
Facilities Releasing Largest Quantities of Chemicals

Facility Name	City	State	Pounds Released
Barrick Goldstrike Mines Inc	Elko	NV	2,149,211
Newmont Mining Corp Twin Creeks Mine	Golconda	NV	1,500,697
Cortez Gold Mines	Crescent Valley	NV	148,949
Phelps Dodge Miami Inc	Claypool	AZ	123,066
Newmont Mining Corp Lone Tree Mine	Valmy	NV	109,631
Newmont Mining Corp - Carlin South Area	Carlin	NV	90,470
Newmont Mining Corp. - Carlin North Area	Carlin	NV	87,020
Jerritt Canyon Mine	Elko	NV	71,861
Glamis Marigold Mine	Valmy	NV	69,001

On-line Access

For national information on data releases, see:
http://www.epa.gov/tri

The TRI data is available through Envirofacts Warehouse, EPA's internet site for distributing environmental information at:
http://www.epa.gov/enviro

or the TRI Explorer tool:
http://www.epa.gov/triexplorer

For general information on the Toxics Release Inventory, including reporting requirements for businesses, go to:
http://www.epa.gov/region09/toxic/tri

For more information on the EPA's PBT Chemicals Program, go to:
http://www.epa.gov/opptintr/pbt/

Information and Assistance

Region 9 staff will answer questions and assist you in learning more about the TRI Program in Region 9.

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