Mercury and Mercury Compounds Report: 2004 Toxics Release Inventory

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

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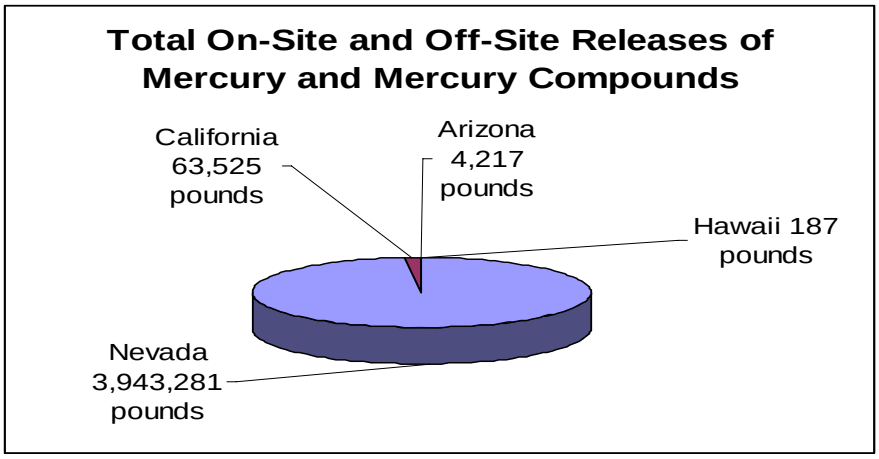
Table 1

Industries with Largest On-site and Off-site Releases	
Industry	**Pounds**
	Mercury and Mercury Compounds
Gold Mining	3,914,413
Refuse Systems (RCRA Subtitle C land fills)	52,800
Silver Mining	20,291



The 2004 Data for Mercury and Mercury Compounds

EPA has made public the 2004 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.

While mercury and mercury compounds have been on the list of reportable chemicals since 1987, for the year 2000 the reporting threshold was drastically 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.

Releases and Risk

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

**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.*

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 Standard Industrial Classification (SIC) 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 23% decrease in on-site and off-site releases of mercury and mercury compounds for the year 2004.

Table 2
On-Site and Off-Site Releases

Release Media	Reporting Year		Percent Change
	2003	2004	
Air	11,850	11,389	-4%
Land	5,146,419	3,977,372	-23%
Water	15.5	6.4	-59%
Undg Inj *	4.2	2.9	-31%
Off-Site	31,448	22,440	-29%
Total	5,189,737	4,011,211	-23%

* Underground Injection

The decrease in total releases is mostly attributable to land releases at one Nevada mine. Total releases at Newmont Mining Corp Twin Creeks Mine decreased by 59%, more than 975 thousand pounds. Large decreases in air releases came from three Nevada mines. Those mines were: Jerritt Canyon Mine with a 42% decrease, 328 pounds; Newmont Mining Corp. Carlin South Area with a 54% decrease, 303 pounds; and Newmont Mining Corp. Twin Creeks Mine with a 44% decrease, 261 pounds.

The TRI data for 2004 show in a state-by-state comparison Nevada, California, Arizona and Hawaii ranked 1, 5, 29, and 49, respectively for total on-site and off-site releases of mercury and mercury compounds. Nevada ranked number 1, reporting 3,943,281 pounds of on-site and off-site releases of mercury and mercury compounds. No mercury releases were reported in Region 9's Pacific Island Territories, and Table 3 gives the total pounds of mercury and mercury compounds reported in Region 9.

Table 3
Mercury and Mercury Compound Releases (in pounds) by State

State	Air	Land	Under Ground Injection	Water	Off-Site
Arizona	1,743	2,116	0	0	359
California	4,593	37,232	0.3	2.2	21,697
Hawaii	135	0	2.2	3.9	46
Nevada	4,918	3,938,024	0.4	0.3	338

2004 Data for Reporting Industry Sectors

A review of the TRI data shows that nearly 98% of mercury and mercury compound releases in the Region comes from the gold mining industry. The other 2% can be attributed to a variety of other industries, including: hazardous waste facilities and other mining activities. A detailed summary of releases by industry sector is provided in Table 4.

Table 4
Mercury and Mercury Compound Releases (in pounds) by Industry Sector

Industry	Air	Land	Water	Off-Site
Gold Mining	4,771	3,909,417	1	223
Refuse Systems (RCRA Subtitle C)	3	44,544	0	8,253
Silver Mining	9	20,282	0	0
Federal Facilities	0	0	0	12,425
Hydraulic Cement	4,051	463	0	0
Electric Services	1,861	934	0	75
Petroleum Refining	439	1	6	1042
Copper Mining	109	1,304	0	0

Gold Mining

In the Pacific Southwest Region, 17 gold mines reported over 3.9 million pounds of total mercury and mercury compound releases, most of which were released on-site to land. Mercury and mercury compounds 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, and 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 and mercury compounds, gold mines reported a total of 4,771 pounds.

Hazardous Waste Disposal

Land disposal of 44,544 pounds of mercury and mercury compounds were reported to be released into permitted landfills. Hazardous waste disposal facilities also reported 3 pounds of air releases.

Silver Mining

In Region 9, two silver mines reported 20,291 pounds of total mercury and mercury compound releases. These silver mines reported 20,282 pounds of these releases as land releases. Air releases from these facilities were reported to be 9 pounds. These facilities had no mercury releases to water or underground injection.

Federal Facilities

Federal Facilities had zero releases to air, land, water, and underground injection. These facilities did report 12,425 pounds of off-site transfers of mercury and mercury compounds.

Cement Manufacturing

Mercury may be processed or otherwise used as a trace element in raw materials and fuels in the manufacture of portland cement. These facilities reported 4,051 pounds of releases to the air, and 463 pounds of on-site land releases.

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 1,861 pounds of air releases and 934 pounds of land releases.

Petroleum Refineries

Mercury and mercury compounds may be processed or otherwise used as trace components in crude oil. Air releases totaling 439 pounds were reporting by these facilities.

Copper Mining

There are five copper mines in Region 9 reporting releases of mercury and mercury compounds. Those five mines reported 109 pounds for air releases and 1,304 pounds of land releases. Total reported releases of mercury and mercury compounds were 1,413 pounds. There were no releases to water or underground injection from these facilities.

Table 5 shows the top 10 counties in Region 9, with the highest on-site releases of mercury and mercury compounds

Table 5
Top Region 9 Counties for Total Releases in 2004

County	Pounds Released
Elko, NV	2,476,765
Humboldt, NV	952,406
Eureka,NV	333,507
Lander, NV	89,953
White Pine, NV	60,301
Kings, CA	36,565
Pershing, NV	20,002
Kern,CA	15,246
Nye, NV	9,784
Los Angeles, CA	4,487

Table 6 shows the 10 facilities in Region 9, with the highest total releases of mercury and mercury compounds

Table 6
Top Facilities for Total On- and Off-Site Releases

Facility Name	City, State	Pounds Released
Barrick Goldstrike Mines, Inc.	Elko, NV	2,398,971
Newmont Mining Corp. Twin Creeks Mine	Golconda, NV	685,327
Newmont Mining Corp. Carlin South Area	Carlin, NV	298,484
Newmont Mining Corp. Lone Tree Mine	Valmy, NV	209,004
Cortez Gold Mines	Crescent Valley, NV	89,406
Jerrit Canyon Mine	Elko, NV	77,270
Bald Mountain Mine	Elko, NV	60,301
Glamis Marigold Mining Co.	Valmy, NV	49,019
Chemical Waste Management, Inc.	Kettleman City, CA	36,565
Newmont Mining Corp. Carlin North Area	Carlin, NV	35,023

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 premier 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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