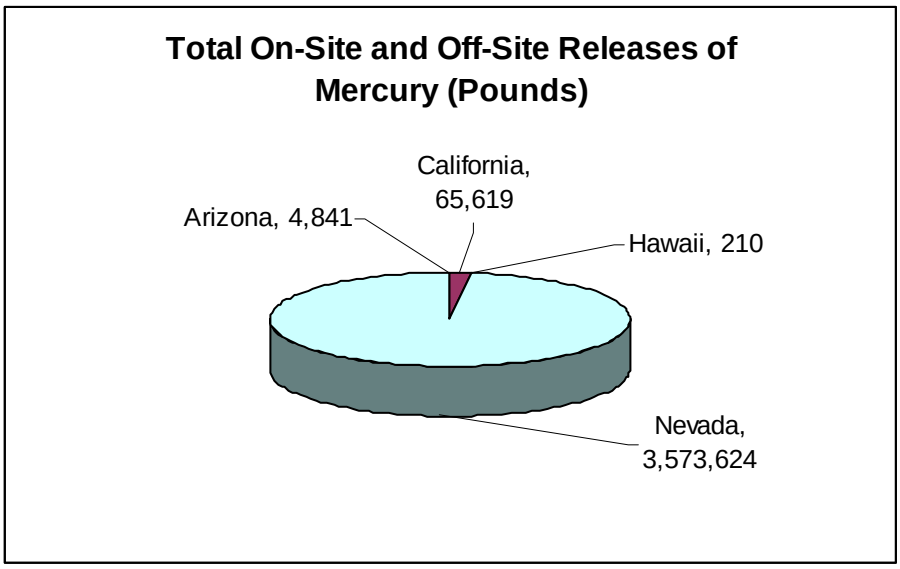
Mercury Report: 2005 Toxics Release Inventory

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

March 2007

Table 1

Industries with Largest On-site and Off-site Releases	
Industry	**Mercury (Pounds)**
Gold Mining	3,547,790
Refuse Systems (RCRA Subtitle C land fills)	34,559
Federal Facilities	31,053



The 2005 Data for Mercury

EPA has made public the 2005 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 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 9% (367 thousand pounds) decrease in on-site and off-site releases for the year 2005.

Table 2
On-Site and Off-Site Releases*

Release Media	Reporting Year		Percent Change
	2004	2005	
Air	11,564	9,818	-15%
Land	3,977,372	3,581,838	-10%
Water	6.4	6.6	+3%
Undg Inj **	2.9	7.7	+166%
Off-Site	22,440	52,624	+135%
Total	4,011,385	3,644,295	-9%

* **Underground Injection

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

The decrease in total releases is mostly attributable to land releases at three Nevada gold mines. Total releases at Barrick Goldstrike Mines Inc. decreased more than 280 thousand pounds, Newmont Mining Corp Carlin South Area decreased its releases by nearly 126 thousand pounds, and Newmont Mining Corp Lone Tree Mine had decrease of 94 thousand pounds. A large decrease in air releases came from the Lehigh Southwest Cement Co. facility in Tehachapi, California. Air releases from this facility decreased by approximately 72%, more than 1,800 pounds.

Two California facilities were largely responsible for the overall increase in off-site releases. The U.S. Navy Naval Air Weapons Station China Lake increased off-site releases by nearly 19 thousand pounds, a 150% increase. Clean Harbors San Jose LLC had a 400% increase in off-site releases, nearly 16 thousand pounds.

The 2005 TRI data show that in a state-by-state comparison Nevada, California, Arizona and Hawaii ranked nationally 1, 4, 27, and 48 respectively for total releases of mercury. Nevada ranked number 1, reporting 3,573,624 pounds of on-site and off-site releases of mercury. 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
Mercury Releases (in pounds) by State

State	Air	Land	Under Ground Injection	Water	Off-Site
Arizona	1,874	2,665	0	0	302
California	2,961	10,571	0.1	2.5	52,084
Hawaii	132	0	7.1	4.0	67
Nevada	4,850	3,568,602	0.5	0.1	171

2005 Data for Reporting Industry Sectors

A review of the TRI data shows that nearly 97% of mercury releases in the Region comes from the gold mining industry. The other 3% can be attributed to a variety of other industries, including: hazardous waste facilities and federal facilities. 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 Mining	4,702	3,542,956	0.39	131
Refuse Systems (RCRA Subtitle C)	2	14,403	0	20,154
Federal Facilities	21	0	0	31,032
Silver Mining	8	20,163	0	0
Hydraulic Cement	2,381	872	0	0
Electric Services	1,973	1,110	0.08	38
Copper Mining	79	1,596	0.00	2
Petroleum Refining	499	1	6.12	863

Gold Mining

In the Pacific Southwest Region, 16 gold mines reported over 3.5 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 4,702 pounds.

Hazardous Waste Disposal

Land disposal of 14,403 pounds of mercury were reported to be released into permitted landfills. Hazardous waste disposal facilities also reported 2 pounds of air releases.

Federal Facilities

One federal facility had zero releases to land, water, and underground injection. This facility did report 21 pounds release to the air, and 31,032 pounds of off-site transfers of mercury.

Silver Mining

In Region 9, one silver mine reported 20,171 pounds of total mercury releases. These silver mines reported 20,163 pounds of these releases as land releases. Air releases from these facilities were reported as 8 pounds. These facilities had no mercury releases to water or underground injection.

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 2,381 pounds of releases to the air, and 872 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 1,973 pounds of air releases and 1,110 pounds of land releases.

Copper Mining

There are four copper mines in Region 9 reporting releases of mercury. Those four mines reported 79 pounds for air releases and 1,596 pounds of land releases.

Petroleum Refineries

Mercury may be processed or otherwise used as trace components in crude oil. Air releases totaling 499 pounds were reporting by these facilities.

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 2005

County	Pounds Released
Elko, NV	2,189,480
Humboldt, NV	977,251
Eureka,NV	188,709
Lander, NV	140,841
White Pine, NV	49,670
Pershing, NV	20,177
Kings, CA	9,394
Nye, NV	6,935
San Bernardino, CA	1,476
Apache, AZ	1,458

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	2,117,745
Newmont Mining Corp Twin Creeks Mine	Golconda, NV	770,592
Newmont Mining Corp Carlin South Area	Carlin, NV	172,821
Cortez Gold Mines	Crescent Valley, NV	140,841
Newmont Mining Corp Lone Tree Mine	Valmy, NV	115,002
Glamis Marigold Mining Co.	Valmy, NV	88,616
Jerrit Canyon Mine	Elko, NV	71,209
Bald Mountain Mine	Elko, NV	49,670
U.S. Navy Naval Air Weapons Station China Lake	China Lake, CA	31,053
Coeur Rochester Inc	Lovelock, NV	20,171

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.

U.S. EPA Region 9, TRI Program
Nancy Sockabasin, (415) 972-3772
Mariela Lopez, (415) 972-3771