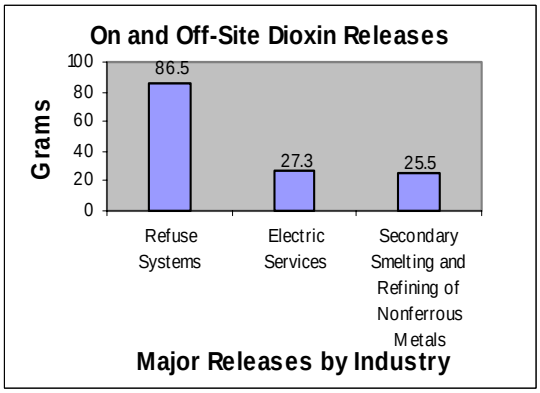
Dioxin Report: 2002 Toxics Release Inventory

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

A)



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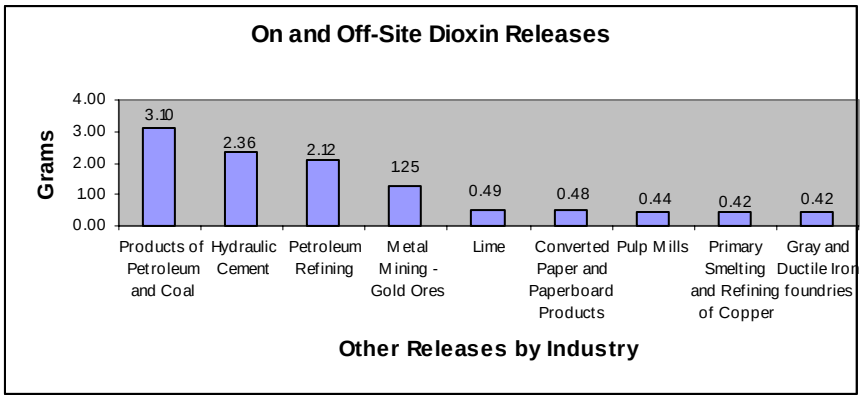

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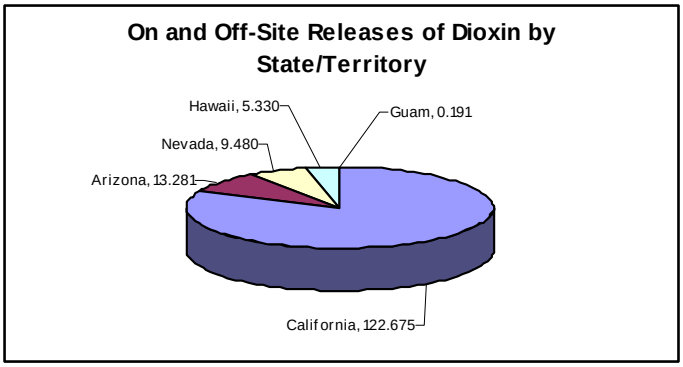

Note: On and off-site releases is defined as the amount of toxic chemical releases on-site (to air, water, underground injection, landfills and other land disposal), and the amount transferred off-site for disposal. Charts A and B show dioxin releases (in grams) for the top industries. Chart C gives state/territory totals for on and off-site dioxin releases (in grams).

The 2002 Public Data Release

The U.S. Environmental Protection Agency has just made public its data on toxic chemicals that were released* to the air, water and land within the Pacific Southwest Region (Region 9) during the year 2002. This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program.

In the year 2000, the TRI was expanded to include additional persistent, bioaccumulative and toxic (PBT) chemicals, and required reporting for these chemicals at lower thresholds. PBT pollutants are toxic chemicals that persist in the environment and bioaccumulate in food chains, thus posing risks to human health and ecosystems. One of these added PBT chemical categories is 'dioxin and dioxin-like compounds'.

Dioxin and Dioxin-like Compounds

The term 'dioxin and dioxin-like compounds' refers loosely to a group of several hundred

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

compounds that share similar chemical structure and biological characteristics. Under the TRI program this phrase refers to a list of 17 specific compounds that have similar properties and health effects. Only information for these compounds is collected.

Data Characteristics

The total mass of the 17 compounds that make up the category is reported in grams. Facilities were given the option of reporting data on the percentage distribution of the 17 compounds, or congeners, that make up their releases. Some facilities reported the percentage distribution.

Toxicity and TEQ

Each dioxin and dioxin-like compound has a different toxicity, and toxicity can differ by a factor of 10,000. Scientists use a shorthand method of assessing the toxicity of different mixtures by comparing them to the most toxic compound, a method called "Toxicity Equivalence," or TEQ. While some dioxin inventories collect data in TEQs, the TRI data is in grams of total dioxin and dioxin-like compounds.

Sources Covered by this Report

Only certain types of facilities are required to report chemical releases to the TRI program. As such, the TRI data on releases of dioxin and dioxin-like compounds are limited to releases from TRI-covered industry sectors. Reporting industries include: manufacturing, metal and coal mining, electricity generation (coal and oil fired only), commercial hazardous waste treatment, solvent recovery, petroleum bulk terminals, and wholesale chemical distributors. The reporting threshold for dioxin is 0.1 grams manufactured, processed, or otherwise used.

A Note on 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. In the case of dioxin and dioxin-like compounds, EPA estimates that the majority of human exposure to dioxin and dioxin-like compounds is through diet, with over 95% of exposure attributable to dietary intake of animal fats.

The TRI data does 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.

Releases

As shown in the table below, there was an overall 7% decrease in on- and off-site releases of dioxin for the year 2002.

On and Off-Site Releases

Release Media	Reporting Year		Change (grams)
	2001	2002	
Air	55.252	42.542	-12.710
Land	2.110	86.536	+ 84.426
Water	0.850	0.879	+ 0.029
Off-Site	104.000	21.000	- 83.000
Net Change			- 11.255
Percent Change			- 7%

Clean Harbors Buttonwillow, located in Buttonwillow California, is responsible for 96% of the reported increases. TST, Inc., located in Fontana California, is responsible for 86% of the reported decreases.

The TRI data for 2002 suggest that releases of dioxin and dioxin-like compounds from TRI-regulated industries are lower for Region 9 states than for most states in the U.S. In a state-by-state comparison California, Arizona, Nevada and Hawaii ranked 22, 38, 41 and 46, respectively for total on- and off-site releases. Texas ranked number 1, reporting 323,192 grams of on and off-site releases of dioxin.

Dioxin Releases (in grams) by State or U.S. Territory

State	Air	Land	Water	Off-Site
Arizona	13.265	0.016	0	0
California	14.277	86.520	0.879	21.000
Hawaii	5.330	0	0	0
Nevada	9.480	0	0	0
Guam	0.191	0	0	0

Releases in grams, not weighted by Toxicity Equivalence (TEQ)

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Reporting Industry Sectors – the 2002 Data

The 2002 TRI data suggest that among the TRI-regulated industry sectors, refuse systems (hazardous waste facilities), electricity generation and nonferrous metal smelting are the largest contributors of dioxin releases in the Region. Petroleum and coal products, portland cement manufacturing, and petroleum refining are the 4th, 5th, and, 6th largest contributors, respectively. Together, these six industry sectors account for 97% of the dioxin and dioxin-like compound releases reported in Region 9.

Dioxin Releases (in grams) by Industry Sector

Industry	Air	Land	Water	Off-Site
Refuse systems	0.029	86.520	0	0
Electric Services	27.255	0	0.010	0
Secondary Smelting and Refining of Nonferrous Metals	4.516	0	0	21.000
Products of Petroleum and coal	3.100	0	0	0
Hydraulic Cement	2.365	0	0	0
Petroleum Refining	1.251	0	0.869	0
Metal Mining – Gold Ores	1.253	0	0	0
Lime	0.491	0	0	0
Converted Paper and Paperboard Products	0.467	0.016	0	0
Pulp Mills	0.440	0	0	0

Releases reported in total grams, not weighted for TEQ.

Refuse Systems

This industry includes hazardous waste treatment, disposal and material recovery facilities. A single refuse system in California reported the total dioxin releases for that category. These releases were disposed in a permitted hazardous waste landfill.

Electric Services

In this industry, dioxins and dioxin-like compounds can be formed as unwanted by-products during the combustion process. Only facilities that combust coal or oil to generate electricity for distribution in commerce are required to report to the Toxics Release Inventory. In the Pacific Southwest Region, twenty-one electric generating facilities reported 27.265 grams of dioxin releases, and accounted for 18% of the regional total.

Secondary Smelting and Refining of Nonferrous Metal

In the metals industry, dioxin and dioxin-like compounds may be generated as an unwanted by-product during the high temperature secondary smelting process. Another potential dioxin source is on-site fossil fuel combustion. In the Region, eight secondary smelters reported 25.516 grams of dioxin releases. On-site air releases amounted to 4.516 grams and the remainder was reported to off-site disposal.

Products of Petroleum and Petroleum Refineries

Dioxin and dioxin-like compounds may be formed in petroleum refining from the combustion of fossil fuels and during certain catalyst regeneration processes. Refineries that utilize continuous catalyst regeneration are more likely to exceed the reporting threshold for dioxin and dioxin-like compounds than facilities using semi-continuous catalyst regeneration processes. In Region 9, five facilities in the petroleum refining and related industries reported 5.22 grams of dioxin releases.

Hydraulic Cement and Lime Industries

The heating of raw materials used in the manufacture of cement may result in the formation of dioxin. In the Region, seven hydraulic cement facilities and three lime facilities reported 2.856 grams of dioxin and dioxin-like compounds.

Top 10 Facilities for Total On and Off-Site Releases

Facility Name	City, State	Grams Released
Clean Harbors Buttonwillow, L.L.C.	Buttonwillow, California	86.549
Light Metals, Inc.	City of Industry, California	20.160
Tucson Electric Power Springerville Generating Station	Springerville, Arizona	5.090
Navajo Generating Station	Page, Arizona	3.818
Reis Gardner Station	Moapa, Nevada	3.000
North Valmy Station	Valmy, Nevada	2.810
Hawaiian Electric Inds. Kahe Generating Station	Kapolei, Hawaii	2.600
ConocoPhillips Santa Maria Facility Carbon Plant	Arroyo Grande, California	2.600
Cabrillo Power I L.L.C. Encina Power Plant	Carlsbad, California	2.290
Edison Mohave Generating Station	Laughlin, Nevada	2.100

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Top Region 9 Counties for On-site Releases in 2002

County	On-Site Release (grams)
Kern, California	87.114
Apache, Arizona	6.385
Clark, Nevada	5.290
Honolulu, Hawaii	4.071
San Bernardino, California	3.980
Coconino, Arizona	3.818
Humboldt, Nevada	2.810
San Luis Obispo, California	2.600
San Diego, California	2.290
Los Angeles, California	1.946

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 additional information on dioxin, go to:
http://www.epa.gov/ncea/dioxin.htm

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
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