Dioxin Report: 2003 Toxics Release Inventory

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

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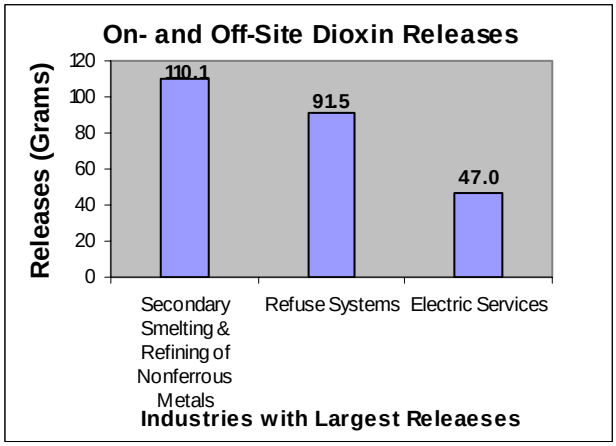

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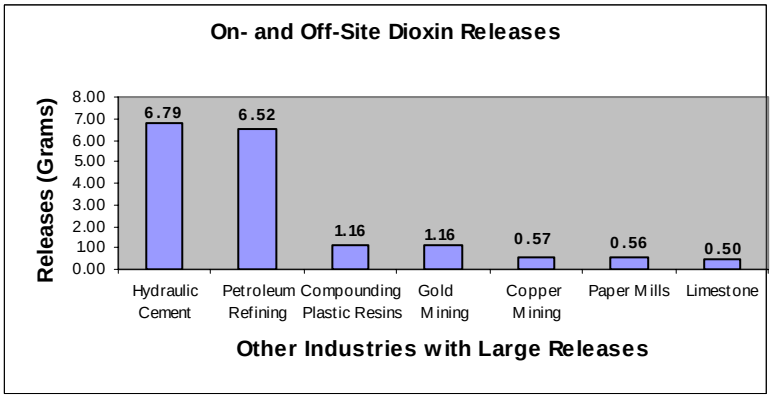

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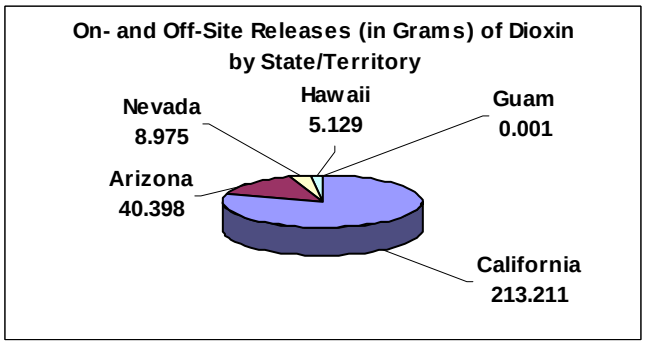

The 2003 Data for Dioxin and Dioxin-like Compounds

EPA has made public the 2003 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. One of these added PBT chemical categories is "dioxin and dioxin-like compounds".

** 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.*

Dioxin Toxics Release Inventory Fact Sheet — May 2005

Dioxin and Dioxin-like Compounds

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

In addition, the TRI 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.

Releases

As shown in Table 1, there was an overall 10.2% increase in on- and off-site releases of dioxin for the year 2003.

Table 1
On and Off-site Releases

Release Media	Reporting Year		Percent Change
	2002	2003	
Air	42.542	46.751	**10**
Land	86.536	90.928	**5**
Water	0.879	1.033	**18**
Off-Site	113.000	129.000	**14**
Total	242.957	267.712	**10**

Insamet of Arizona, located in Goodyear, Arizona, reported an increase of 24.97 grams and is primarily responsible for the overall increase.

The TRI data for 2003 shows 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 17, 33, 42 and 47, respectively for total on- and off-site releases. Louisiana ranked number 1, reporting 141,716 grams of on- and off-site releases of dioxin and dioxin-like compounds. Table 2 shows media releases by states and territory.

Table 2
Dioxin Releases (in grams)
by State or U.S. Territory

State	Air	Land	Water	Off-Site
Arizona	15.383	0.016	0.000	25.000
California	18.271	90.907	1.033	103.000
Hawaii	4.129	0.000	0.000	1.000
Nevada	8.969	0.006	0.000	0.000
Guam	0.001	0.000	0.000	0.000

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

2003 Data for Reporting Industry Sectors

The 2003 TRI data shows that among the TRI regulated industry sectors, nonferrous metal smelting, refuse systems (hazardous waste facilities) and electricity generation are the largest contributors of dioxin releases in the Region. Portland cement manufacturing and petroleum refining are the 4th and 5th largest contributors, respectively. Together, these five industry sectors account for 98% of the dioxin and dioxin-like compound releases reported in Region 9.

Table 3
Dioxin Releases (in grams) by Industry Sector

Industry	Air	Land	Water	Off Site
Secondary Smelting & Refining of Nonferrous Metals	4.149	0.000	0.000	106.000
Refuse Systems	0.600	90.906	0.000	0.000
Electric Services	26.003	0.000	0.007	21.000
Hydraulic Cement	6.790	0.000	0.000	0.000
Petroleum Refining	3.496	0.000	1.026	2.000
Compounding of Plastic Resins	1.160	0.000	0.000	0.000
Gold Mining	1.156	0.000	0.000	0.000
Copper Mining	0.572	0.000	0.000	0.000
Paper Mills	0.546	0.016	0.000	0.000
Limestone	0.498	0.000	0.000	0.000

Releases reported in total grams, not weighted for TEQ.

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, 8 secondary smelters reported 110.419 grams of dioxin releases. On-site air releases amounted to 4.149 grams and the remainder was reported to off-site disposal.

Refuse Systems

This industry includes hazardous waste treatment, disposal and material recovery facilities. Clean Harbors, located in Buttonwillow California, reported 99% of the 91.5 grams reported by 3 facilities. Air releases accounted for 0.6 grams and 90.9 grams 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 47 grams of dioxin releases, and accounted for 18% of the regional total.

Hydraulic Cement

The heating of raw materials used in the manufacture of cement may result in the formation of dioxin. In the Region, 10 hydraulic cement facilities reported 6.79 grams of dioxin and dioxin-like compounds.

Petroleum Refineries

Dioxin and dioxin-like compounds may be formed by the combustion of fossil fuels during petroleum refining process and 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, these facilities reported 6.5 grams of dioxin releases.

Table 4
Top 10 Facilities for Total On- and Off-Site Releases

Facility Name	City, State	Grams Released
Clean Harbors Buttonwillow, L.L.C.	Buttonwillow, California	90.900
TST, Inc.	Fontana, California	70.150
Insamet of Arizona	Goodyear, Arizona	25.250
Stockton Cogen Co.	Stockton, California	20.059
Light Metals, Inc.	City of Industry, California	11.126
Tucson Electric Power Co. Springerville Generating Station	Springerville, Arizona	5.780
Navajo Generating Station	Page, Arizona	3.418
Reid Gardner Generating Station	Moapa, Nevada	3.000
Chevron Products Co, Div of Chevron USA, Inc.	El Segundo, California	2.970
Mitsubishi Cement Corp.	Lucerne Valley, California	2.540

Table 5
Top Region 9 Counties for On-site Releases in 2003

County	Grams Released
Kern, California	91.409
Apache, Arizona	7.220
San Bernardino, California	6.239
Clark, Nevada	5.301
Los Angeles, California	4.417
Coconino, Arizona	3.418
Honolulu, Hawaii	3.091
Humboldt, Nevada	2.394
San Diego, California	2.320
San Luis Obispo, California	2.300

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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