Chemicals in Washington State Summary Report 2000

Toxic Release Inventory and Tier Two - Emergency and Hazardous Chemical Inventory

Department of Ecology
Hazardous Waste and Toxics Reduction Program
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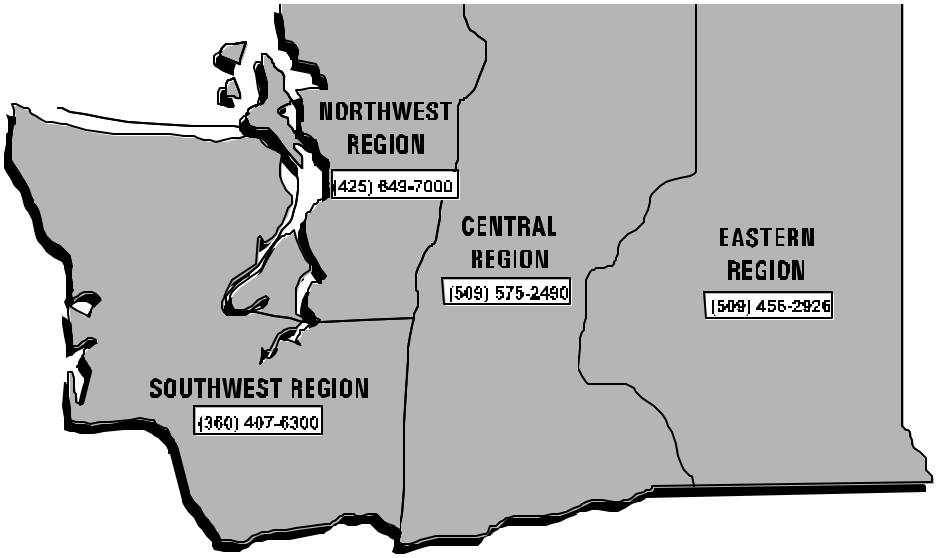

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A Special Acknowledgement to: The EPCRA Team (Idell Hansen, and Sadie Whitener); Maria Peeler (HWTR-Environmental Justice); and HWTR

Management

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.Published separately

Executive Summary

Statewide Summary of Hazardous Chemical Inventory in Washington State, 2000

More than 3,000 facilities in the state of Washington reported storage of one or more hazardous chemicals at reportable levels during 2000. Under the Emergency Planning and Community Right-to-Know Act Section 312, Tier Two reporting requirements, the reportable threshold for all hazardous substances was originally 10,000 pounds stored at any one time.

In 1998, reporting requirements for retail gas stations were changed to 75,000 gallons for gasoline and 100,000 gallons for diesel. Since then, the number of reporting facilities has dropped from nearly 4,000 sites to about 3,000 sites, which decreased the volume of diesel fuels and gasoline reported. Still, two of the three most commonly reported hazardous chemicals were diesel fuel and gasoline.

Top Three Hazardous Substances Reported in Storage		
	Chemical	Times Reported
1	Diesel Fuel #2	814
2	Sulfuric Acid	739
3	Gasoline	433

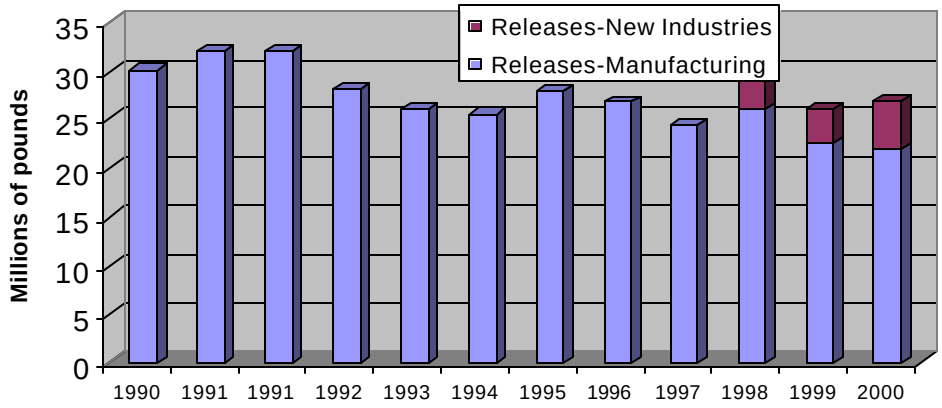
Extremely hazardous substances (EHS) have significantly lower thresholds for reporting due to their acute risk to employees, the public and the environment. The most commonly reported EHSs were sulfuric acid, ammonia, and chlorine.

Top Three Extremely Hazardous Substances Reported in Storage		
	Chemical	Times Reported
1	Sulfuric Acid	838
2	Ammonia	426
3	Chlorine	288

Statewide Summary of Toxics Release Inventory in Washington State, 2000

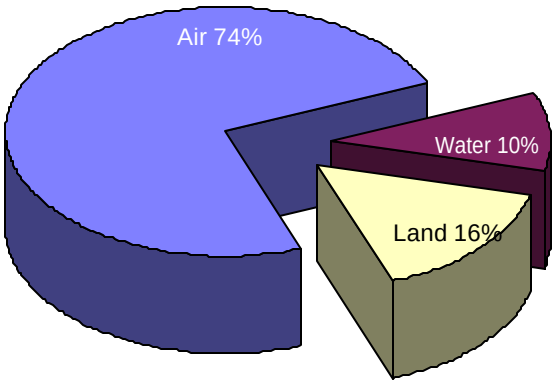
In the year 2000, 26.9 million pounds of toxic chemicals were reported released to the air, land and water in Washington State. This was an increase of 0.9 million pounds of reported releases in 1999.

Since 1991, total releases of all reported chemicals by manufacturing sectors decreased by over 32% and releases of chemicals with constant reporting requirements decreased by 33%.



Releases to Air, Water and Land

The relative percentage of releases to land increased with the 1998 addition of the mining and electric utilities industry categories. However, the greatest percentage of releases consistently continues to be to air.



Top Releases

Top Three Industries Reporting Releases

	Industry	Releases[mp]
1	Paper and Allied Products	10.1
2	Electric Services	4.6
3	Primary Metal Manufacturing	3.6

Paper & Allied Products, increased their total reported releases by about 200,000 pounds from 1999.

Top Three Facilities Reporting Releases

	Facility	Releases[mp]
1	Transalta Central Generation / Mining	4.2
2	Weyerhaeuser Co., Longview	2.7
3	Fort James Camas, LLC	1.6

Transalta Central Generation / Mining, in the electric services industry category, reported increased releases by 1.6 million pounds from 1999.

Top Three Chemical Releases

	Chemical	Releases[mp]
1	Methanol	4.3
2	Barium Compounds	2.3
3	Carbonyl Sulfide	2.2

Methanol had the highest amount of reported releases - about the same as in 1999.

Top Three Carcinogen Reporting Releases

	Carcinogen	Releases[mp]
1	Styrene	1.80
2	Acetaldehyde	0.71
3	Chloroform	0.28

Releases of carcinogens (known or suspected cancer-causing chemicals as defined by OSHA) decreased about 200,000 pounds from 1999.

Top Three Counties Reporting Releases

	Counties	Releases[mp]
1	Lewis	4.2
2	Cowlitz	4.1
3	Snohomish	2.0

mp = millions of pounds

Facilities located in Lewis County and Cowlitz County reported releases of more than 4 million pounds.

TRI PBT Reporting

Reporting year 2000 was the first year that certain persistent, bioaccumulative, toxic (PBT) chemicals had lower thresholds for reporting under TRI. These use thresholds were 10 pounds (chemicals like mercury) or 100 pounds (polycyclic aromatic compounds) or 0.1 grams (dioxin and dioxin-like compounds category). The greatest percentage of PBT chemicals reported was in the polycyclic aromatic compounds. One hundred six grams of the dioxin and dioxin-like compounds were reported released.

Top Three PBT Chemicals

Chemical	Releases[p]
1 Polycyclic aromatic compounds	88,000
2 Benzo(g,h,i)perylene	4,659
3 Mercury and Mercury Compounds	2,256

p = pounds

Uses of Hazardous Chemical Inventory (Tier Two) and Toxics Release Inventory (TRI) Data

The Hazardous Chemical Inventory (Tier Two) data is used for emergency planning activities. Local emergency planning committees (LEPCs) use the information for emergency preparedness, disaster planning, and counter-terrorism planning. Local fire departments use the information for incident responses at or near reporting facilities.

The Department of Ecology (Ecology) uses TRI data as one of several environmental indicators for the state. The data also serve as a valuable tool for monitoring the progress of pollution-prevention efforts and for measuring the effectiveness of pollution-prevention programs underway in Washington State.

For More Information

Additional information on TRI and Tier Two is available on the Community Right-to-Know website at *http://www.ecy.wa.gov/programs/hwtr/epcra.* This includes the Toxics Release Inventory Display System (TRIDS), a graphic model for viewing TRI data. Ecology developed TRIDS under a grant from EPA. It is available for downloading (copying) from the Community Right-to-Know

website.

Introduction

Congress enacted the Emergency Planning and Community Right-to-Know Act (EPCRA) into federal law on October 17, 1986. EPCRA helps communities deal safely and effectively with hazardous chemicals. The law includes a number of requirements for businesses and government. It is intended to improve emergency planning for hazardous chemicals at the local level. EPCRA has a number of provisions, but its primary objectives are to:

- Enhance emergency response capabilities for chemical incidents;
- Expand emergency planning for hazardous chemical incidents;
- Identify storage, use and release of hazardous chemicals in communities; and
- Promote communication between facilities that handle hazardous chemicals, the community and local planners.

EPCRA contains five sections that deal with the various reporting requirements of businesses. A facility may be subject to one or all of the sections depending on the type of chemicals it uses and the quantities stored or released. This summary focuses on two of the EPCRA reporting requirements: Tier Two - Emergency & Hazardous Chemical Inventory Reporting (Section 312) and Toxic Chemical Release Reporting (Section 313).

Tier Two – Hazardous Chemical Inventory Reporting

Any facility in Washington State that stores a certain amount of a hazardous chemical must report this once a year. Under Section 312, the facility must file a Tier Two Emergency and Hazardous Chemical Inventory report by March 1st, for any hazardous chemicals present in amounts at or above the threshold level at any time during the previous calendar year. The Tier Two reports are filed with Ecology, representing the State Emergency Response Commission (SERC). The reports are also filed with the Local Emergency Planning Committee (LEPC) and local fire department. The information required on the Tier Two reports include facility identification, chemical name, health hazards, codes representing maximum and average amounts on-site, and storage and location descriptions. Ecology enters this information into a database for sharing with the public, LEPCs and other interested parties.

In addition to tracking the hazardous chemicals, Tier Two data includes the number of facilities storing extremely hazardous substances (EHS). Approximately 350 chemical compounds classified as EHS chemicals are listed by the Environmental Protection Agency (EPA).

Tier Two tells us what chemicals are stored in our communities. LEPCs and local fire departments use the information for emergency preparedness and response to incidents at or near reporting facilities.

Toxics Chemical Release Reporting

Toxic Chemical Release Reporting is tracked through an annual summary called the Toxics Release Inventory (TRI). The TRI tracks the amount of toxic chemicals released into the air, land and water by certain facilities. Over 600 chemical compounds and / or chemical categories listed under Section 313 of EPCRA are reported under the TRI.

TRI reports are filed every year with EPA and the Department of Ecology. Forms submitted by facilities are due on July 1st, for the preceding calendar year's releases. For 2000 reporting, the due date for filing was July 1, 2001. After completing data entry and data quality checks, EPA and Ecology compile a TRI database. Each agency publishes an annual summary report. EPA reports from a national perspective, while Ecology focuses on Washington State.

Ecology uses TRI data as one of several environmental indicators for the state. The data also serve as a valuable tool for monitoring the progress of pollution-prevention efforts and for measuring the effectiveness of pollution-prevention programs underway in Washington. Under a grant from EPA, Ecology developed the Toxics Release Inventory Display System (TRIDS), a graphic model for viewing TRI data. This display program is available for downloading (copying) on Ecology's website at *http://www.ecy.wa.gov*.

Tier Two – Emergency & Hazardous Chemical Inventory Reporting

Tier Two reporting is this country's response to toxic chemical releases in Bhopal, India and Institute, Virginia in the mid-eighties. Thousands of people were killed in Bhopal because of an industrial accident that sent a deadly cloud of toxic gas over the city. In 1986, in order to help facilities and communities in the United States prevent such a catastrophe from happening, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA is also known as Title III of the Superfund Amendments and Reauthorization Act (SARA Title III).

Washington Administrative Code Chapter 118-40 was established in 1987. This regulation established Washington's State Emergency Response Commission (SERC), the 47 Local Emergency Planning Committees (LEPCs), and adopted the federal Community Right-to-Know reporting thresholds and requirements. Ecology is a member of SERC and has additional responsibilities under this regulation. Ecology's Community Right-to-Know Unit, on behalf of SERC, tracks facilities' compliance history as well as manages the chemical data submitted by businesses in accordance with this regulation. One of SERC's primary goals is to assemble and disseminate information that will help the citizens, government, and industry better prepare for emergency response. Facilities that are required to report their stored chemicals send copies of their chemical inventories to SERC, their local fire department, and their LEPC. LEPCs use the information to prepare for possible incidents at or near each reporting facility. Ecology is designated by WAC Chapter 118-40 to receive EPCRA reports for SERC.

Facilities covered under the federal Community Right-to-Know laws are required by Section 312 of EPCRA to submit a Tier Two report each March 1st. This report is an inventory of the hazardous substances or chemicals stored on-site during the previous year. Businesses are required to report their inventories if quantities of hazardous substances exceed the federal reporting thresholds. Reporting thresholds are 10,000 pounds of a hazardous substance at any one time, and 500 pounds or less of an EHS depending on the chemical. The report lists maximum quantities, average quantities, number of days on-site, storage methods and storage locations for hazardous chemicals and extremely hazardous substances.

Tier Two Reporting Facilities

The data summarized in this report was received in 2001 and represents chemicals on-site during the calendar year 2000. Figure 1 below, shows that 3,013 facilities stored hazardous chemicals during 2000. These facilities reported 15,040 chemicals in more than 25,000 storage locations at their business sites. The number of facilities reporting has shown annual increases through the 1998-reporting year. This trend was due to outreach efforts and increased awareness of reporting requirements. Beginning with the 1998 reporting year, most retail gas stations were no longer required to report due to changes in reporting requirements for gasoline and diesel. While many gas stations reported anyway for 1998 and 1999, there has been a significant decrease from this sector in the 2000 reports. Some facilities become inactive when they reduce their inventories of chemicals below reporting thresholds and several new businesses join the reporting community each year.

Figure 1: **Number of Tier Two Reporting Facilities**

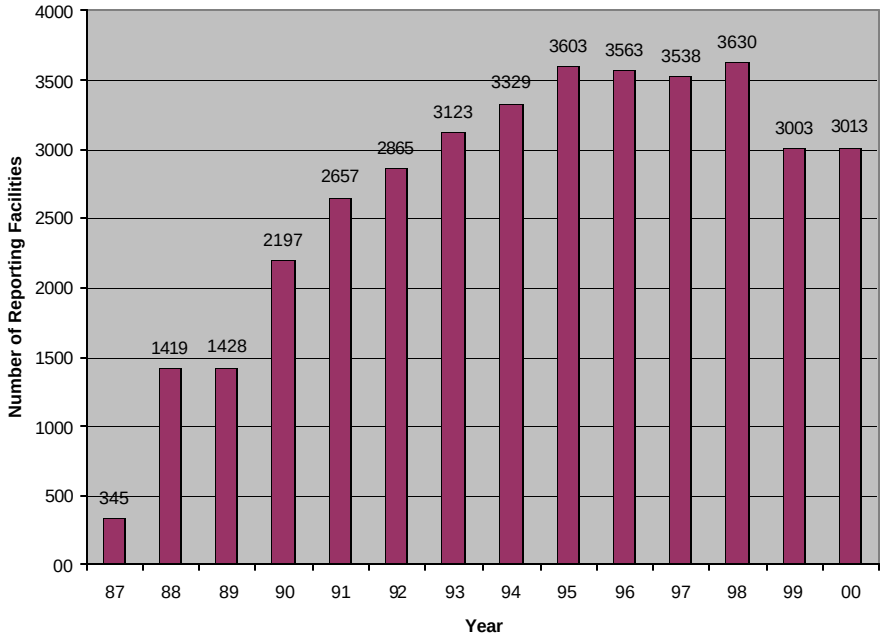


Figure 2: **Total Facilities and Chemicals by County**

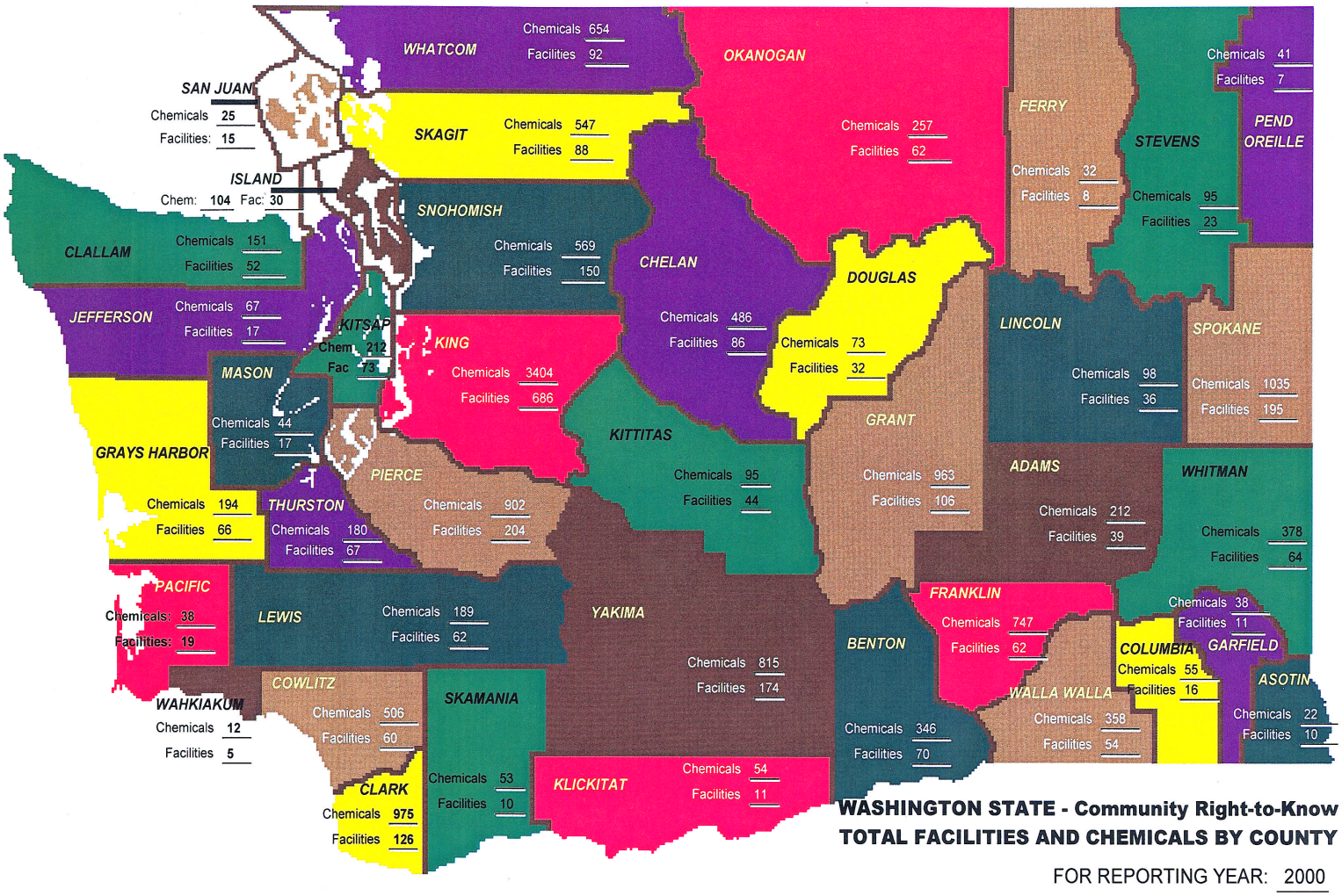
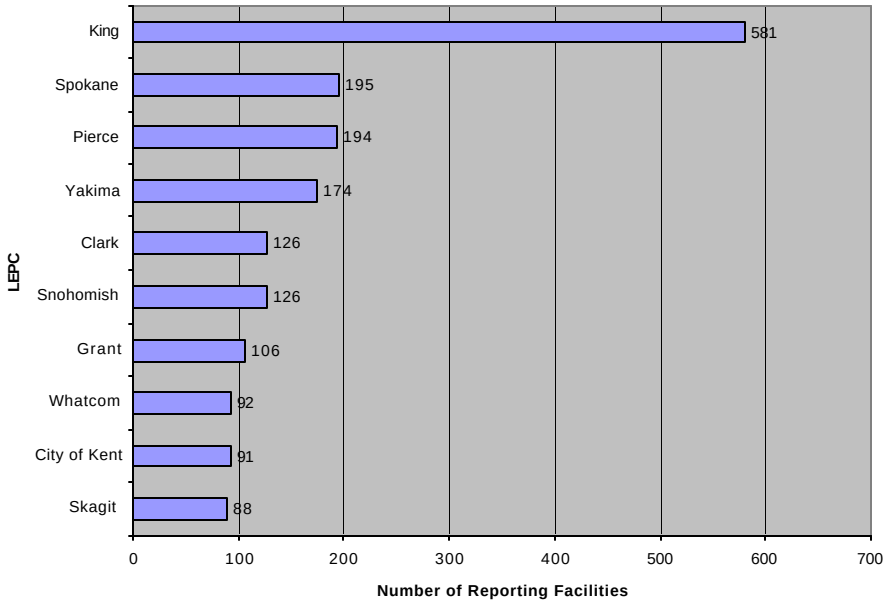


Figure 3: **Top Ten LEPCs with Most Reporting Facilities**



Reports by LEPC

There are 47 LEPCs in Washington State. Most of these share the same jurisdictional area as counties, but a few cities serve as their own LEPC. Figure 2 displays the total facilities and chemicals by county. Figure 3 above, displays the 10 LEPCs which have the most facilities within their jurisdiction that filed reports for reporting year 2000. Figure 4 below, is similar, but shows the top ten LEPCs in terms of the numbers of total chemicals reported as being stored on-site.

Figure 4: **Top Ten LEPCs with Most Chemicals Reported**

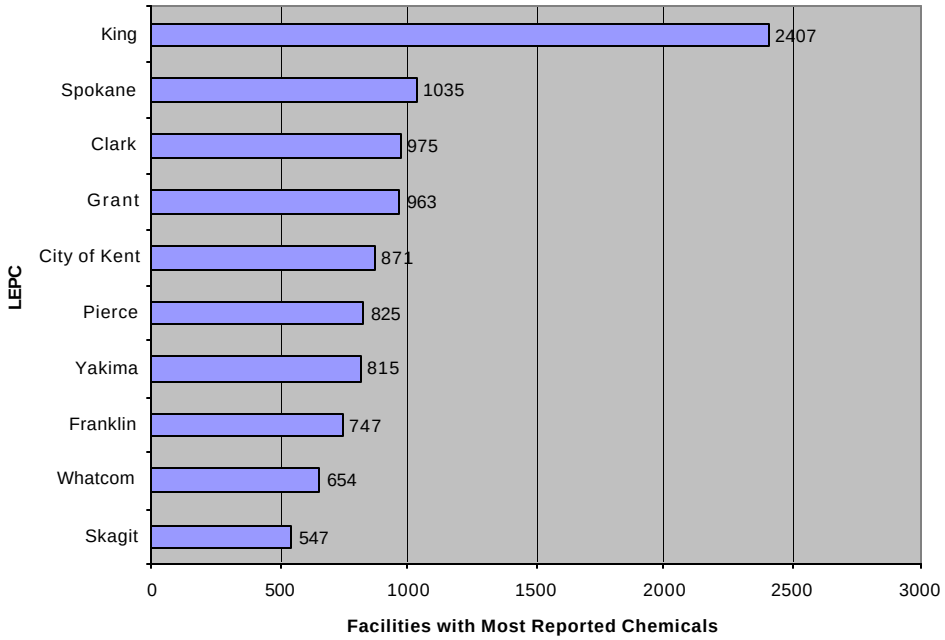
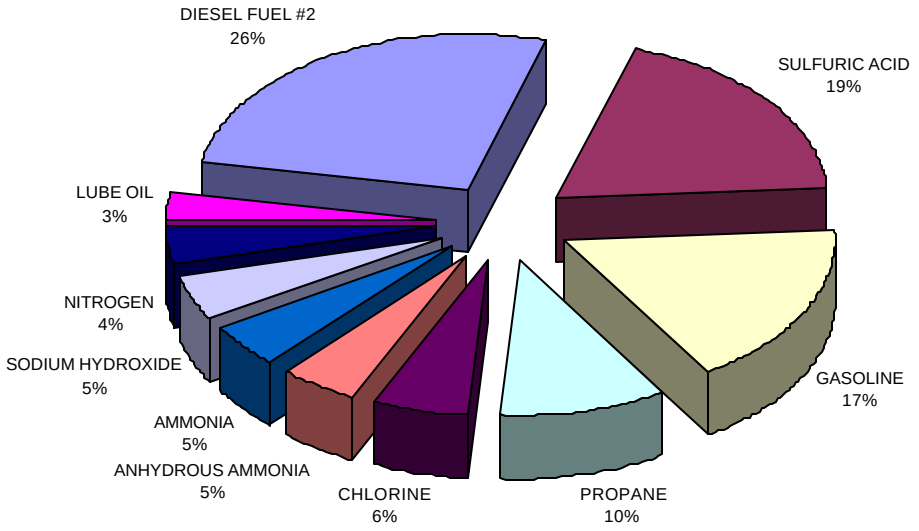


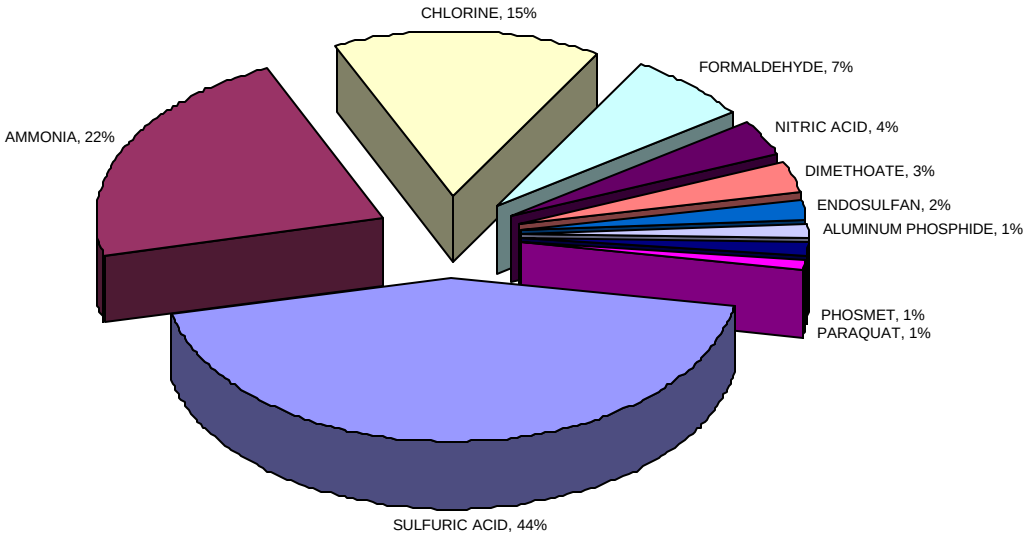
Figure 5: **Top Ten Most Frequently Reported Chemicals**



Most Frequently Reported Chemicals

The 10 most frequently reported chemicals are displayed in Figure 5 above. As a sub-set of these hazardous chemicals, Figure 6 below, displays the 10 most frequently reported extremely hazardous substances (EHS). EHSs present a higher risk to the public and the environment, and therefore have much lower reporting thresholds. The value of making information on these chemicals available becomes apparent when one thinks of the risks faced by employees and emergency responders.

Figure 6: **Top Ten Most Frequently Reported EHS Chemicals**



Appendix 2 on page 45, contains a complete listing of the number of reporting facilities and the number of chemicals reported by LEPC. More information on Tier Two reporting requirements can be found at *www.ecy.wa.gov/programs/hwtr/epcra*.

The Toxics Release Inventory

The Toxics Release Inventory (TRI) is an annual summary that tracks the amount of toxic chemicals released or transferred by certain types of facilities. Facilities in specific industry categories (Appendix 1, page 41) that meet reporting thresholds for numbers of employees and chemical use must comply with TRI reporting requirements. A separate form is required for each chemical which meets reporting thresholds. A facility may file one form or many forms depending on its chemical use. The five-page Form R chemical report is required for most reports. Facilities that produce less than 500 pounds of "total waste" (see Appendix 1) are permitted to use the abbreviated Certification Form A. Appendix 5 on page 55, lists Form A reporters in Washington State for 2000.

TRI Data Limitations

It is important to remember that a release of a TRI toxic chemical does not indicate a violation of federal, state or local environmental laws. These facilities operate under environmental regulatory permits. TRI information includes data on permitted releases and transfers of certain chemicals. It does not indicate the rate or concentration of chemicals released, nor can it demonstrate the geographic boundaries of the chemical release. Therefore, exposures or risks to the public cannot be determined by using TRI data alone.

Another limitation under the TRI regulations is that facilities may report data based upon estimates and calculations rather than actual, measured pounds of toxic chemicals. The information collected may reflect only general trends. Facilities may submit voluntary revisions of the report forms for any prior year. Sometimes the standards and methods for estimating releases change. Thus, the TRI data is somewhat variable and can change after this report is published. However, the revisions and changes will result in a more accurate database over time.

Additionally, reporting errors can limit the usefulness of the TRI data. Facilities must file their TRI Reports with both EPA and their respective state. In some cases, one agency but not the other may receive reports. Facilities that report under the TRI may file revised Form Rs if they discover or decide that a previously submitted form needs correction. This may occur multiple times for a facility's forms for one chemical. These revisions also may change state release values for a previous year. For example, if a revision for 1997 increased one facility's releases by 500,000 pounds, the state total would also increase by 500,000 pounds.

Finally, changes in TRI reporting requirements also modify our ability to make year to year comparisons. Because reporting requirements were relatively constant for years 1995 through 1997, it was possible to make direct comparisons over those years without "normalizing" or adjusting the data for changes. For the 1998 and 1999 reporting years, the new industry reports must be removed to make direct comparisons to 1995 through 1997 data. To make direct comparisons to years prior to 1995, it is necessary to adjust for other changes in reporting requirements. The normalization of data may include removing all chemicals added over the reporting years, all chemicals deleted from the list of chemicals and chemicals like ammonia, hydrochloric acid and sulfuric acid that have had significant changes in the way they are reported. For overall trend analysis in this report, we have not normalized the data in order to capture changes that were implemented under TRI. The most reliable trend analysis may be for a single chemical at a particular facility.

In spite of these limitations, the TRI data continues to be useful for addressing potential risks to a community when evaluated together with other information. The TRI information is collected and analyzed according to political boundaries such as states and counties. Of course, natural earth processes cross over such artificial boundaries. Surface water movement and weather patterns affect the impact chemical releases have on the soil, water and air. The way the winds blow and waters flow will influence the impact of chemicals on the environment independent of political boundaries.

Still, looking at releases by area and population helps to establish points of reference and gives a starting point to better characterize the impact of these releases. The points of reference cannot, however, be used to directly assess exposure and environmental risk. The question of determining the risk associated with a chemical release is a complex process that falls beyond the scope of this report. Some relative risk-based rankings of TRI chemicals have been developed and are available. However, to determine the risk of a particular chemical in a specific situation requires a process called risk assessment. EPA has tools to help communities deal with local environmental problems including chemical risk assessments. These tools are available by contacting EPA.

TRI Releases by Environmental Media

As of March 2002, 310 facilities in Washington State reported under TRI reporting requirements for 2000 (Form R, Form A or both). This is an increase of 13 facilities from 1999. Of these, 269 facilities filed one or more five-page Toxic Release Inventory Report Form Rs (see Appendix 6, published separately). Sixty-nine filed one or more two-page TRI Certification Form As (see Appendix 4, page 51, facilities may file both form R's and Form As). Forty-one of these 310 reporting facilities had not reported for the previous calendar year. Figure 7 on page 15 shows the location of reporting facilities throughout Washington State.

Figure 7: **Washington State TRI Reporters, 2000**

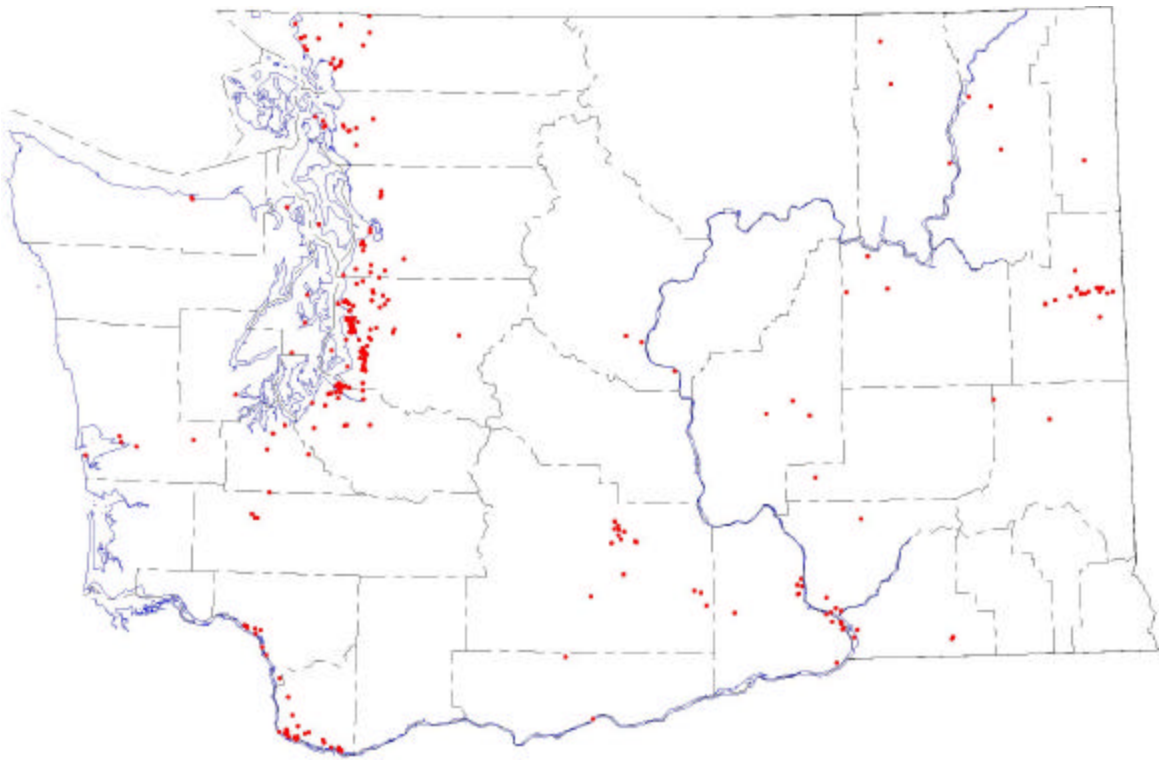
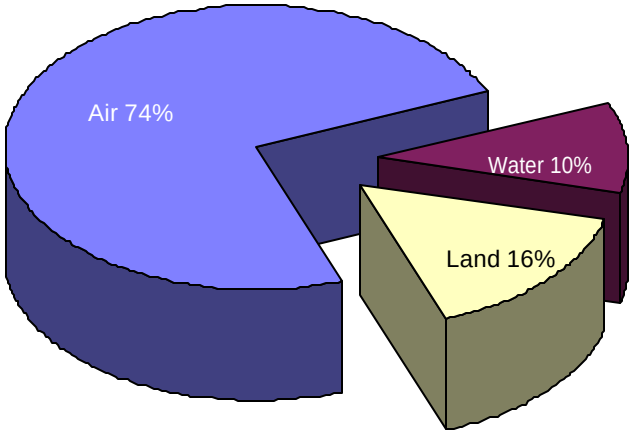


Figure 8: **Washington State TRI by Environmental Media - All Industries, 2000**



For the 2000 reporting year, the facilities reported a total of 26,922,208 pounds of toxic chemicals released to air, water and land (see Figure 8, below). Air releases comprised 74.1% of all releases (19,942,046 pounds). Water releases made up 10.3% (2,777,129 pounds) and land releases accounted for 15.6% (4,203,033 pounds) of releases. No underground injection releases were reported.

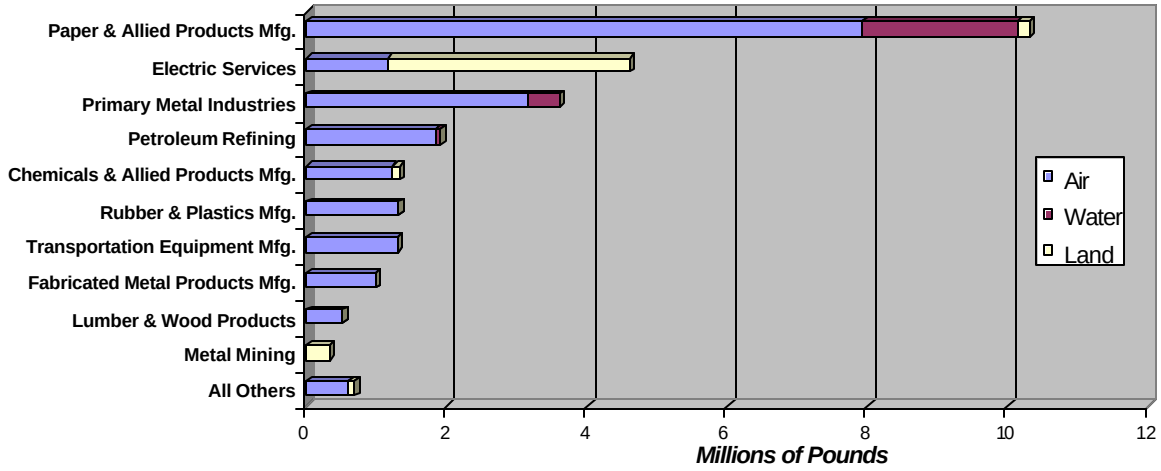
TRI Releases by Industry Category

Four of the industry categories required to report under the TRI were responsible for about 70% of the releases in the state (see Figure 9 below). The paper and allied products manufacturing category reported the largest share of releases, 10.1 million pounds. This amount comprised about 38% of the releases reported in the state and was an increase of 0.2 million pounds from 1999. Electric services was second with 4.6 million pounds reported (17%), an increase of 1.6 million pounds from 1999.

This industry includes only electric services facilities that burn coal or oil to produce electricity commercially. Ranked third was primary metal industries, with 3.6 million pounds (13.4%). The 2000 reported releases decreased by 0.7 million pounds from 1999. Petroleum refining was ranked fourth with 1.9 million pounds (7.1%), about 400,000 pounds more than reported for 1999.

The 10 highest industry categories (Figure 9) reported 98% of the state's total releases. All other classifications combined reported releases of about 590,000 pounds or 2% of the Washington State total.

***Figure 9*. Washington State TRI by Industry, 2000**



Paper & Allied Products

With over 10 million pounds of reported releases, the paper and allied products manufacturing category accounted for nearly 40% of the releases reported in the state. Fifteen different facilities reported in this category in 2000. The amount of releases in this industry category increased by 200,000 from 1999.

Major chemicals reported by the paper and allied products industry include methanol, hydrochloric acid, ammonia, and nitrate compounds.

Electric Services-Burning Coal or Oil for Commercial Electricity Generation
The electric services industry reported the second highest amount of TRI chemicals released in 2000, a total of 4.6 million pounds. Nine facilities reported in this industry category. One facility, the Transalta Centralia Generation & Mining reported releases of 4.2 million pounds. These releases are primarily hydrogen fluoride, sulfuric acid and hydrochloric acid releases to air and barium, manganese and vanadium compound releases to land.

Primary Metal Industries
The primary metal manufacturing industry reported releases of 3.6 million pounds. This is a decrease from the 4.3 million pounds reported released in 1999. There were twenty-four facilities reporting in this category. Major chemicals reported by this industry are hydrogen fluoride, carbonyl sulfide and hydrochloric acid.

The primary metal industries, including aluminum manufacturing were affected by changes in the economy in 2000, particularly changes in the cost of electrical power. This downturn may account for the decrease in releases.

Top Reporting Facilities for Total Releases

For the 2000-reporting year, the top 20 reporting facilities for total releases on-site are listed in Table 1 below. Transalta Centralia Generation & Mining was the facility reporting the highest total releases of 4.2 million pounds. The second highest releases were reported by Weyerhaeuser Co., Longview, 2.7 million pounds. The third highest reporting facility for total releases was Fort James Camas LLC in Clark County, 1.6 million pounds. Six of the top 10 ranked facilities are in the paper and allied products manufacturing category. The top 20 reporting facilities for releases represent 20.2 million pounds of the state's 26.9 million pound total or about 75%.

Table 1. Washington State TRI Releases Top 20 Reporting Facilities, 2000

Facility	City	County	Air	Water	Land	2000 Releases	2000 Transfers	1999 Releases	1999 Transfers
Transalta Centralia Generation / Mining	Centralia	Lewis	789,939	645	3,453,059	4,243,643	228,609	3,002,489	48,819
Weyerhaeuser Company	Longview	Cowlitz	2,576,651	101,186	0	2,677,836	133,443	2,857,741	131,484
Fort James Camas LLC	Camas	Clark	1,140,681	408,547	1,318	1,550,546	8,220	2,852,055	66,900
Boise Cascade Paper Division	Wallula	Walla Walla	1,344,939	140,886	6,816	1,492,641	7	1,750,793	11
Kimberly Clark Corp	Everett	Snohomish	670,744	534,266	84,510	1,289,520	128,615	734,914	173,350
Tesoro Northwest Company	Anacortes	Skagit	884,774	1,711	1,016	887,501	1,662	695,829	8,684
Agrium U.S. Inc, KFO Kennewick	Kennewick	Benton	762,145	9,785	78,805	850,735	148,230	774,765	344,400
Simpson Tacoma Kraft Co	Tacoma	Pierce	678,143	142,242	0	820,385	268	980,798	103
Longview Fibre Company	Longview	Cowlitz	629,020	96,222	0	725,242	159,002	746,885	180,400
Alcoa Wenatchee Works	Malaga	Chelan	683,889	0	0	683,889	43,713	695,534	21,134
Port Townsend Paper Corp	Pt Townsend	Jefferson	520,170	39,330	88,029	647,528	11	477,630	0
Lasco Bathware Inc	Yelm	Thurston	623,470	0	0	623,470		498,104	250
Reynolds Metals Co Longview Reduction Plant	Longview	Cowlitz	574,024	1,753	0	575,776	1,869,111	331,351	2,452,887
Intalco Aluminum Corp	Ferndale	Whatcom	575,440	0	0	575,440		615,217	5,000
Kaiser Aluminum & Chemical Corp – Mead Works	Mead	Spokane	521,662	266	4	521,932	2,609	912,060	10,750
Sandvik Special Metals Corp	Kennewick	Benton	170	452,000	0	452,170		525,686	0
Georgia-Pacific West Inc	Bellingham	Whatcom	133,441	317,832	0	451,273	27,387	1,370,791	37,818
BP Cherry Point Refinery	Blaine	Whatcom	398,876	35,933	803	435,612	36,223	406,396	40,146
Boeing Commercial Airplane Group Everett	Everett	Snohomish	394,586	328	0	394,914	614,041	616,573	780,696
Kettle River Operations Mill	Republic	Ferry	20	0	337,010	337,030	4	478,462	17

Facilities Showing Changes in Total Releases in 2000 from 1999

The facility showing the greatest decrease from 1999 to 2000 was the Fort James Camas LLC in Clark County, showing a 1.3 million-pound decrease. The company with the second highest decrease was Georgia Pacific West in Bellingham, Whatcom County, down 920,000 pounds. This facility halted operations of some of its activities during 2000.

Six other facilities also reported decreases of over 150,000 pounds: Weyerhaeuser Company, Longview; Simpson Tacoma Kraft, Tacoma; Boeing Commercial Airplane Group, Everett; Vanalco Inc, Vancouver; Boise Cascade Paper Division, Wallula; and Kaiser Aluminum – Mead Works. One hundred six of the state's 266 reporting facilities reported decreases for 2000 as compared to 1999.

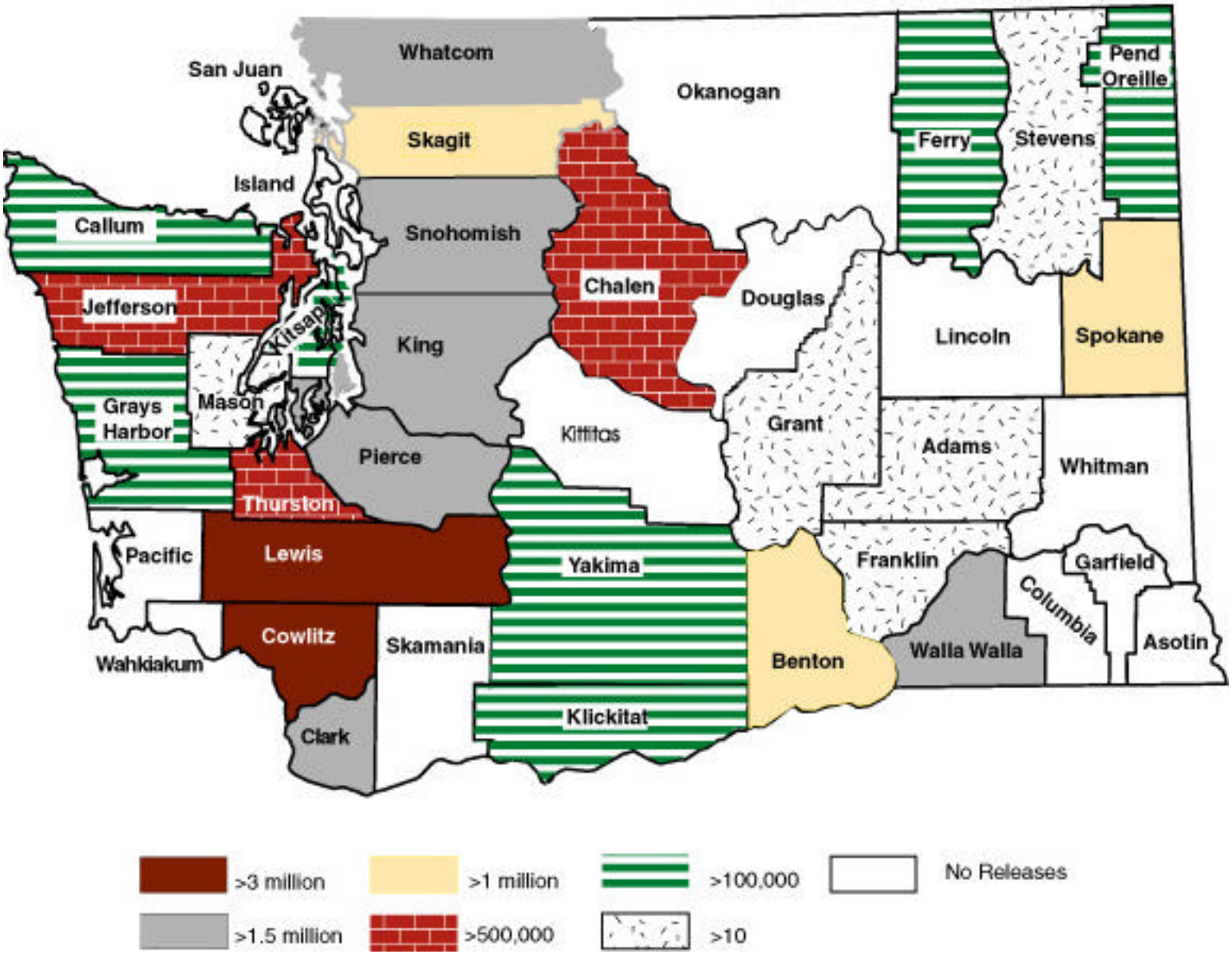
The facility showing the greatest increase in total pounds released from 1999 to 2000 was Transalta Centralia Generation / Mining. They reported an increase of 1.2 million pounds. The second highest increase in total pounds was Kimberly Clark Corp. in Snohomish County (554,000 pounds).

Three other companies also showed an increase in reported releases of more than 150,000 pounds for 2000 compared to 1999: Reynolds Metals Co., Longview Reduction Plant, Tesoro Northwest Company in Anacortes and Port Townsend Paper Corp. In all, seventy-eight of the state's 266 reporting facilities show increases in reported releases from 1999 to 2000.

TRI Releases by County

Of Washington's 39 counties, 26 had facilities that reported under TRI (see Appendix 6, published separately). Reporters in Lewis and Cowlitz County acknowledged releases that totaled over four million pounds (see Figure 10, page 20). Six counties (Snohomish, Clark, Whatcom, Pierce, Walla Walla, and King), had between 1.5 and 2.0 million pounds of reported releases and three other counties (Spokane, Skagit and Benton) each totaled between 1 and 1.5 million pounds released per county. The releases in these ten counties accounted for 86% of all TRI releases statewide.

Figure 10: **Washington State TRI by County, 2000**



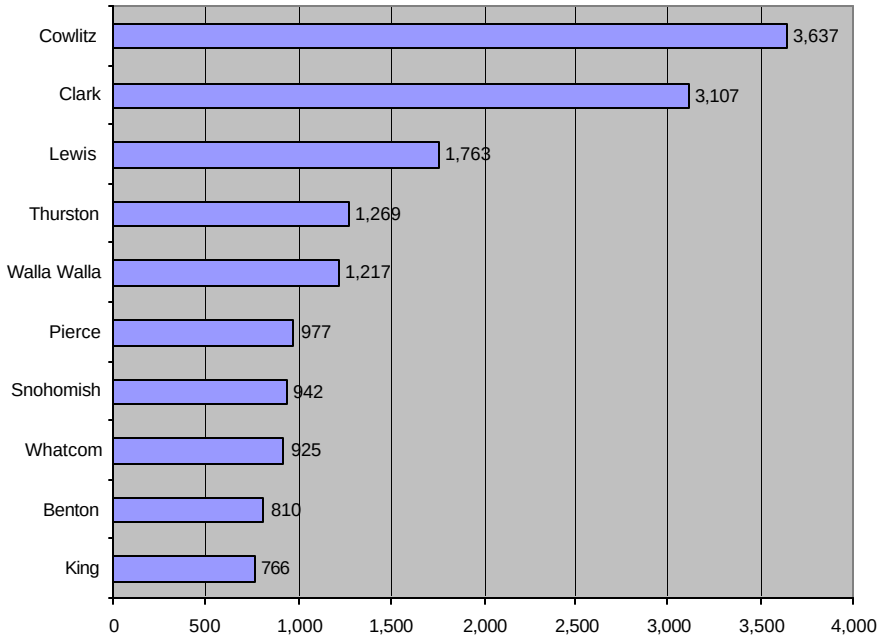
Lewis County reported the largest amount of chemicals released in the state in 2000. The 4.2 million pounds accounted for 14% of the state total. Four facilities reported in Lewis County. All but 1,000 pounds of the releases were reported by Transalta Centralia Generation / Mining. Cowlitz County ranked second with 4.1 million pounds. Nine facilities reported in Cowlitz County including Reynolds Metals Company Longview Reduction Plant (575,000 pounds), Weyerhaeuser Company, Longview (2.7 million pounds) and Longview Fibre (725,000 pounds). Snohomish County and Whatcom County were third and fourth with just under 2 million pounds reported each.

Counties Ranked-Pounds per Square Mile

County rankings relating TRI releases per square mile appear in Figure 11 below. A county may rank higher on releases per area, but lower on the overall county rankings because of its relatively smaller size, even though its releases were also a relatively small number.

Cowlitz County ranked first with 3,637 pounds per square mile. Cowlitz County has a relatively small area and ranked second in the counties in total releases. These two factors give it a high number for pounds per area. Clark County ranked second with 3,107 pounds per square mile. Lewis County was third with 1,763 pounds per square mile. Thurston, Walla Walla and Pierce counties placed fourth, fifth and sixth respectively. Statewide releases averaged 404 pounds per square mile, up from 387 pounds per square mile in 1999 and down from 460 pounds per square mile in 1998.

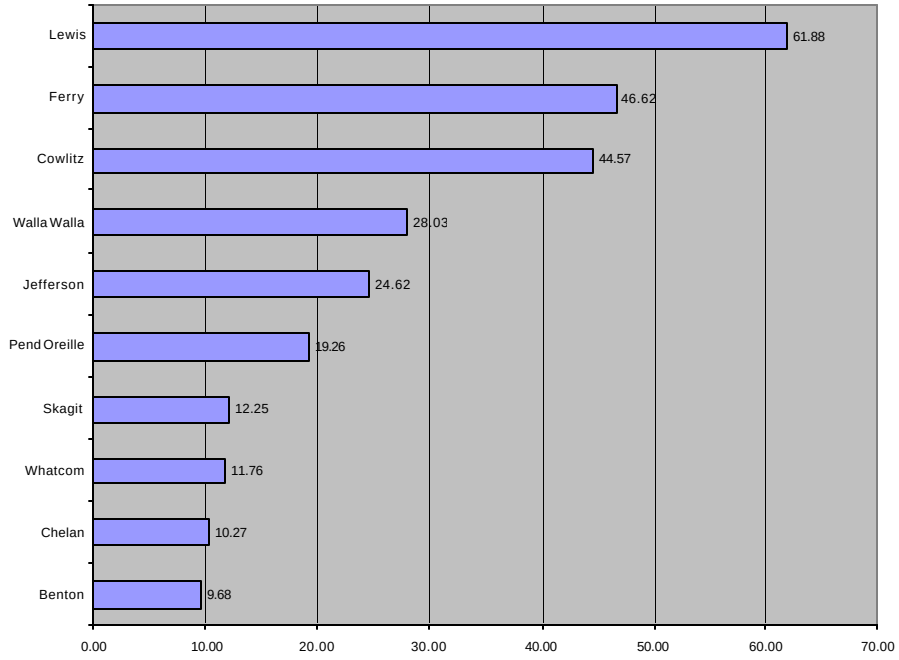
***Figure 11*: Washington TRI Top Counties, Pounds per Square Mile, 2000**



Counties Ranked-Pounds by Population

Lewis County was first for TRI releases ranked by estimated 2000 population in pounds per person - 61.9 pounds per person (see Figure 12, below). Ferry County reported 46.6 pounds of chemical releases per person. Cowlitz County reported 44.5 pounds per person. Walla Walla, Jefferson and Pend Oreille counties ranked fourth through sixth with 28.0, 24.6 and 19.3 pounds per person reported respectively. Statewide, releases averaged 4.5 pounds per person. This does not mean that each person was exposed to these "pounds" of chemicals.

Figure 12: **Washington TRI Top Counties, Pounds per Person, 2000**



Counties that appear high on this list often have fairly high release amounts and average populations (Lewis) or moderate releases with very small populations (Ferry). Counties like King and Pierce counties, with very large populations, do not show up in the ranking of top ten counties even though they had high total release amounts.

TRI Releases by Water Body

Releases of TRI chemicals to water in Washington State have ranked high nationally both in total chemicals and releases of known or suspected cancer-causing chemicals. One report ranked the state number one for releases of carcinogens from 1989 to 1996. Water releases in the state were 3.9 million pounds in 2000. This is a decrease of about 250,000 pounds from 1999. Chemicals classified by the Occupational Health and Safety Administration (OSHA) as known or suspected carcinogens totaled 96,000 pounds of the water releases, increasing by 13,000 pounds from 1999.

Bellingham Bay was the water body with the greatest reported amounts of carcinogens releases (31,820 pounds). The Columbia River was reported as receiving the highest amount of total water releases (1.2 million pounds). The water body with the second highest reported releases was Everett Harbor. Figure 13 below shows water releases by water body.

***Figure 13*: Washington State TRI by Water Body, 2000**

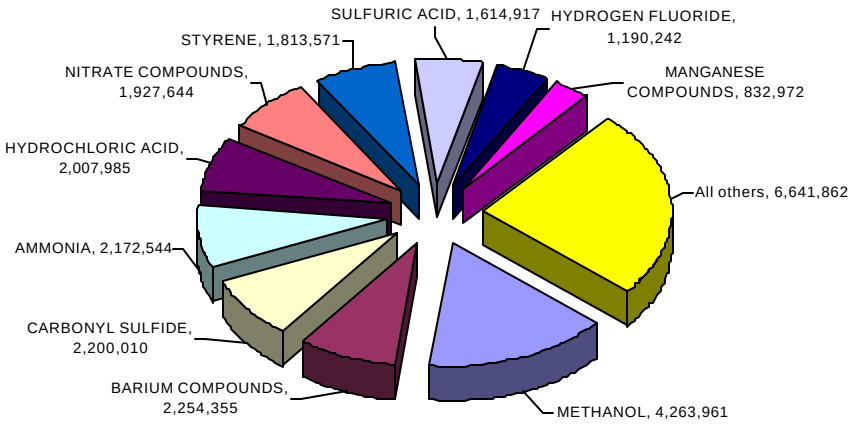
Water Body	Other Chemicals	Carcinogens
Columbia River	1,185,297	27,960
Everett Harbor	521,026	13,240
Bellingham Bay	286,012	31,820
Pend Oreille River	226,000	
Commencement Bay of Puget Sound	122,620	19,622
Grays Harbor	115,350	256
Strait of Juan De Fuca	96,505	
Strait of Georgia	73,772	2
Port Townsend Bay	38,500	830
Fidalgo Bay	5,939	2
All Others	10,126	2,249

TRI Releases by Chemical

114 of the approximately 600 chemicals or chemical categories reported under TRI, were reported by one or more facilities in Washington State (see Appendix 3 on page 47).

The top 10 chemicals in amount of releases cover nearly 70% of all chemical releases reported in the state (Figure 14, below). In descending order, the top 4 chemicals reported were methanol, barium compounds, carbonyl sulfide, and ammonia.

***Figure 14:* Washington State TRI by Chemical, 2000**



Methanol
Methanol is generated through chemical reactions and occurs naturally in the breakdown of wood fibers. The pulping process releases this chemical from the wood fibers. The primary reporters of methanol operate in the paper and allied products industry category. Methanol is a flammable solvent and was the most reported chemical for 2000. Methanol releases in 2000 were 4.3 million pounds, 1.3 million pounds less than in 1999. Twenty-seven facilities reported releases of methanol in 2000. Weyerhaeuser Inc., Longview, reported 1.4 million pounds. Fort James Camas LLC reported 793,000 pounds and three other facilities reported more than 200,000 pounds of releases: Simpson Tacoma Kraft, Boise Cascade Paper Division, Wallula and Longview Fibre Company.

Barium Compounds
Barium compounds were the second most reported chemical in 2000. A total of 2.2 million pounds was reported released to the environment by the eight facilities reporting this chemical. This 2.2 million pounds is an increase of about 1.5 million pounds from 1999. Of this amount, all but 20,000 pounds was reported released to land by Transalta Centralia Generation / Mining as part of their mining process. This single increase accounts for the increase in state releases for the 2000 reporting year.

Carbonyl Sulfide
Carbonyl sulfide was the third most reported chemical in 2000. Carbonyl sulfide is a by-product of the aluminum manufacturing process. A total of 2.2 million pounds was reported released to the environment by eight facilities reporting this chemical. This 2.2 million pounds is a decrease of about 100,000 pounds from 1999. These eight facilities are in the primary metal products industry category. Alcoa Wenatchee Works reported releases of 588,000 pounds. Intalco Aluminum Corp. in Ferndale reported 480,000 pounds. Kaiser Aluminum – Mead Works reported 411,000 pounds.

Ammonia
Ammonia was the fourth highest reported chemical in 2000. Reported releases of ammonia totaled 2.2 million pounds. In 1999, ammonia releases totaled 1.9 million pounds. Ammonia is widely used as a fertilizer, a refrigerant and as a wastewater treatment nutrient addition.

EPA added a qualifier to the reporting of ammonia under TRI in 1994. The qualifier for ammonia means that anhydrous forms of ammonia are 100% reportable; but solutions of ammonia and water are limited to ten percent of total aqueous ammonia. In past years, aqueous forms of ammonia were 100% reportable. For this reason, reported releases for ammonia for years prior to 1995 (when ammonia was the number one reportable chemical in the state) are not comparable to the 1995 and following years' values.

Ammonia was reported by 40 facilities in 2000. Agrichem U. S. Inc. KFO Kennewick reported about 765,000 pounds of ammonia releases to the environment, about one-third of the state total. Other facilities reporting over 100,000 pounds of ammonia releases were Boise Cascade Paper Division in Wallula, Georgia Pacific-West in Bellingham, Fort James Camas LLC in Camas, Weyerhaeuser Company in Longview and Simpson Tacoma Kraft in Tacoma.

Carcinogens
Reported releases of carcinogens (noted in Appendix 3 on page 47) were 3.9 million pounds in Washington State in 2000. One hundred thirty-nine facilities reported releases of one or more pounds of known or suspected carcinogens. Of these, 672,000 pounds were reported released by Weyerhaeuser Company, Longview. Lasco Bathware Inc., Yelm, reported releasing 623,000 pounds. These compounds which are listed as known or suspected cancer-causing agents by OSHA were reported at 4.2 million pound in 1999, 4.0 million pounds in 1998, 3.2 million pounds in 1997, and 3.4 million pounds in 1996. The top chemicals were styrene (1.8 million pounds), acetaldehyde (715,000 pounds), chloroform (279,000 pounds), and formaldehyde (199,000 pounds).

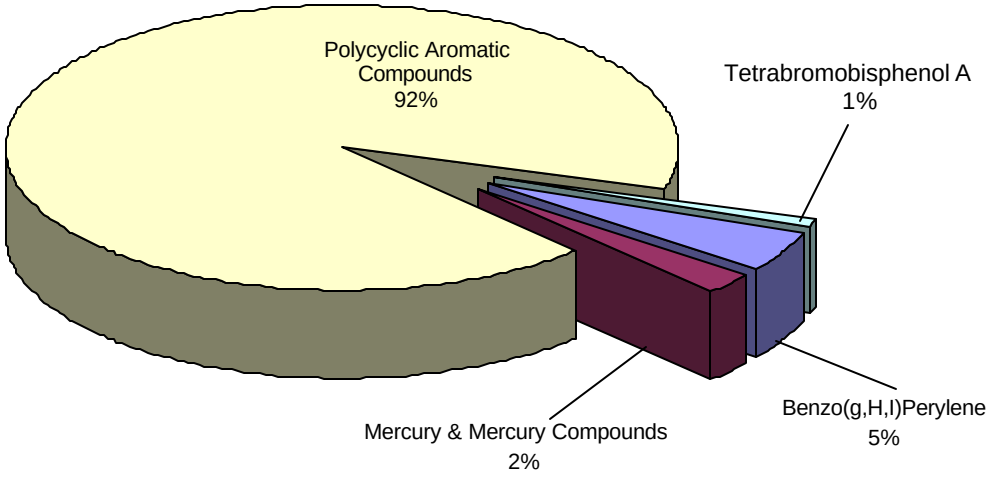
Washington TRI PBT Reporting, 2000

EPA added the chemical dioxins and other persistent, bioaccumulative toxins (PBTs) to its TRI list of chemicals. PBTs are of concern in the environment because:

- They **persist** in the environment for a long time without breaking down;
- They build up in the tissues of humans, fish and animals ("**bioaccumulative**");
- They have **toxic** effects (cancer and other health problems) on living organisms.

Many of these substances are man-made and have only been in the environment for a short period of human history. Substances like lead and mercury that occur naturally in the environment can create health and environmental problems when they are concentrated and refined. Because these chemicals are often produced or used in very small quantities, only relatively small amounts have shown up in the TRI reportable chemicals over time (52,304 pounds in 1999 and 51,983 pounds in 1998). In order to track these PBT chemicals in the environment, EPA reduced the usage thresholds for reporting these chemicals (Table 4, page 38). As a result of these lowered thresholds for reporting, there has been an increase in the number of facilities reporting these chemicals. Figure 15 shows the most reported PBT chemicals for 2000. Of these, 91% were in the polycyclic aromatic hydrocarbons category. Five percent were benzo (g,h,i) perylene which is a polycyclic aromatic hydrocarbon. Three percent were mercury or mercury compounds. The dioxin and dioxin-like compounds category was a very small percentage of the PBTs reported.

Figure 15: **Washington PBT Releases, 2000 (except Dioxin Category)**



Polycyclic Aromatic Compounds

The polycyclic aromatic compounds (PACs) or polycyclic aromatic hydrocarbons (PAHs) are usually found in the soot after organic materials (like plant or animal materials) are burned. It may also be found in creosote. The PACs have a reporting threshold of 100 pounds when they are manufactured, processed or otherwise used. For example, burning oil fuels can produce or "manufacture" PACs. The polycyclic aromatic compounds are classified as known or suspected carcinogens.

Ninety-one percent of all PBT chemicals reported for 2000 were in this category. Thirty-three companies reported that a total of 88,361 pounds of PACs were released in 2000 in Washington State. This included 87,881 pounds released to the air. The company reporting the highest amount of PACs was the Reynolds Metals Longview Reduction Plant.

Under TRI, benzo(g,h,i)perylene is reported separately from the other PAC compounds. This chemical is produced at the same time other PACs are produced as in the burning of fossil fuels. It has a reporting threshold of 10 pounds, manufactured, processed or otherwise used. Thirty-one companies reported releases of benzo(g,h,i)perylene (total 4,659 pounds). The Reynolds Metals Longview Reduction Plant reported releases of 2,378 pounds.

Mercury and Mercury Compounds

Mercury is used in batteries, switches, and thermometers. It is also used in dental fillings and in pharmaceuticals. Mercury compounds are found in some fossil fuels. For example, coal contains naturally occurring mercury, but when burned, it releases mercury compounds into the atmosphere. Organic forms of mercury have been linked to neurological disorders in infants exposed in prenatal development. Other neurological effects have been observed in children and adults. At high levels of exposure, disorders of the nervous system such as

tremors and changes in vision and hearing have been observed. Exposure to vapors can result in other systemic health effects. The Department of Ecology has targeted mercury as the first PBT chemical addressed and is currently developing an action plan that will include the steps the agency is planning to take to reduce mercury in the environment. For more information visit our website at *http://www.ecy.wa.gov/ programs/ eap/pbt/pbtfaq.html*.

For the reporting year 2000, twenty-four companies reported mercury or mercury compounds (3% of the PBT total). This included 559 pounds of mercury (1%) and 1,697 pounds of mercury compounds (2%). Two mines, the Lamefoot Mine and the K2 Mine, both in Ferry County, reported lead releases of 655 and 776 pounds respectively, as part of the mining process. Transalta Centralia Generation / Mining reported 436 pounds, of which 374 was released to air during the burning of coal.

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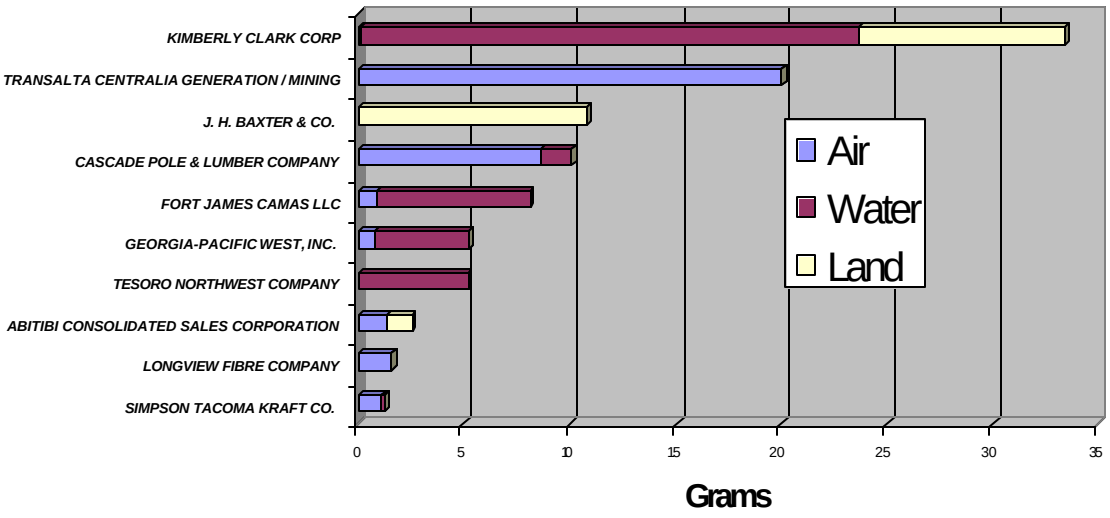
Dioxin and Dioxin-like Compounds

Dioxin has no commercial use. It is found in the environment, in the products and emissions of chemical plants manufacturing chlorinated phenols and in the ash and emission of municipal waste incinerators. Other sources are pulp and paper manufacturing, especially chlorine bleaching plants, and burning of organic compounds. Dioxin is categorized as a known human carcinogen. Dioxin may also cause other developmental disorders. There are 17 dioxin and dioxin-like compounds this category. These differ in toxicity. The Form R allows reporting facilities to report the distribution of the 17 compounds by percentage. Using those percentages, one can calculate the "toxicity equivalency" relative to the most toxic compound, 2,3,7,8-TCDD. When determining the toxicity of any particular dioxin-like compounds category report, the actual toxicity may be overestimated if the entire amount is treated as TCDD.

The threshold for reporting dioxin and dioxin-like compounds is 0.1 grams manufactured, processed or otherwise used. This is the only TRI chemical that is reported in grams. The companies reporting for dioxin and dioxin-like compounds are listed in Appendix 5 on page 55. A total of 106 grams were reported (40 to air, 44 to water and 106 to land). Figure 16 on page 27, shows the top facilities reporting dioxin for 2000.

***Figure 16*. TRI Dioxin Releases, 2000**



TRI Off-site Transfers, 2000

Transfers reported under TRI include chemicals transferred to publicly owned treatment works (POTWs), and chemicals transferred to a facility located geographically or physically separate from the reporting facility. These transfers may be for treatment, energy recovery, recycling or disposal. Transfers are not included in on-site release totals. Total transfers for 2000 were 20.0 million pounds. This includes 17.7 million pounds from manufacturers (20.2 million pounds in 1999) and 2.3 million pounds from new industries (2.1 million pounds in 1999). Table 2 on page 29 shows the top twenty facilities reporting off-site transfers for 2000.

Table 2: Washington State TRI Transfers Top 20 Reporting Facilities

Facility	City	County	Disposal	Energy Recovery	POTW	Recycling	Treatment	Total
Birmingham Steel Corp. Seattle, WA. Steel Div	Seattle	King				5,660,907		5,660,907
Reynolds Metals Co. Longview Reduction Plant	Longview	Cowlitz	1,850,489			14,552	4,070	1,869,111
BCAG - Auburn	Auburn	King	91,843	41,844	120,141	1,109,981	90,400	1,454,209
Emerald Services, Inc.	Tacoma	Pierce	259,592	1,119,720				1,379,312
SEH-America Inc.	Vancouver	Clark	412		1,267,000		4,925	1,272,337
Wafertech LLC	Camas	Clark	301,595	9,174	552,406		47,817	910,992
Jorgensen Forge Co	Seattle	King	712,441					712,441
Framatome Anp Richland, Inc.	Richland	Benton	530		701,250		10,400	712,180
Darigold-Sunnyside	Sunnyside	Yakima			707,190			707,190
Boeing Commercial Airplane Group - Everett	Everett	Snohomish	38,668	106,258	74,933	290,499	103,683	614,041
TTM Technologies,Inc	Burlington	Skagit	1,837		31,916	496,987		530,740
BCAG - Frederickson	Puyallup	Pierce	8,193	3,600	11	241,310	216,122	469,236
Toray Composites (America)	Tacoma	Pierce		126,700		298,000		424,700
TTM Technologies Inc.	Redmond	King			25,407	391,891		417,298
Kaiser Aluminum & Chemical Corp - Trentwood Works	Spokane	Spokane	1,340	174,578		232,852	564	409,334
Ace Galvanizing Inc.	Seattle	King	60			366,038		366,098
Nelson Irrigation Corp.	Walla Walla	Walla Walla	84,380			241,000		325,380
Advanced Silicon Materials LLC	Moses Lake	Grant			298,429			298,429
Honeywell Electronic Materials, Inc.	Spokane	Spokane		2,250	50,306	213,150		265,706
U.S. Dod, U.S. Navy, Puget Sound Naval Shipyard	Bremerton	Kitsap	233,783		179		27,609	261,571

Transfers to Publicly Owned Treatment Works (POTWs)
In 2000, transfers to publicly owned treatment works (POTWs) were 4.2 million pounds, a reported increase of 1.2 million pounds. Nitrate compounds continue to be the most reported chemical transferred to POTWs. SEH America in Vancouver reported POTW transfers of 1.3 million pounds of nitrate compounds, about the same amount that they reported in 1999. Three other companies reported POTW transfers of over 200,000 pounds of nitrate compounds: Framatone ANP Richland, Inc. in Richland (701,000 pounds); Darigold Inc. in Sunnyside (692,000 pounds); and Advanced Silicon Materials LLC (298,000 pounds). Wafertech LLC in Camas reported 511,000 pounds of ammonia released to the POTW. These five chemical reports account for 83% of POTW transfers.

Chemicals sent to a sanitary sewer may be treated by a variety of methods and those chemicals not removed are typically discharged into surface waters. POTWs typically treat incoming chemicals with bacteria. Biological processes may change the chemicals into less toxic compounds before they eventually enter surface water. It is difficult to determine how much of a chemical in the surface water is from a reporting facility. Effluent limits from POTWs are monitored and regulated by permits issued by Ecology. In turn, industrial discharges into sewers are regulated and permitted by the local POTW.

Transfers to Other Off-site Locations
Chemicals reported as transferred to other locations for treatment, storage, disposal, recycling or energy recovery totaled 20.0 million pounds in 2000 for all reporting facilities. This represents a decrease of 2.3 million pounds from 1999. Facilities reporting the highest amount being transferred off-site were: Birmingham Steel Corp in Seattle, sending 5.6 million pounds to off-site recycling; Reynolds Metals in Longview, sending 1.8 million pounds to off-site disposal; and Boeing Commercial Airplane Group in Auburn, sending 1.1 million pounds to off-site recycling, 91,000 pounds to disposal, and 90,000 pounds to off-site treatment.

Pollution Prevention Act Reporting

Table 3: **Pollution Prevention Act Reporting, 2000**

	1999	2000	2001 (projected)	2002 (projected)
Released	29,194,974	31,306,306	30,929,359	31,614,510
Energy recovery on-site	15,356,146	13,770,832	15,748,512	15,518,012
Energy recovery off-site	1,428,293	1,976,074	2,665,972	4,323,258
Recycling on-site	33,231,420	29,571,964	31,981,585	38,026,938
Recycling off-site	11,508,503	13,026,153	11,381,201	11,645,215
Treatment on-site	92,985,826	98,639,404	80,653,271	82,376,709
Treatment off-site	3,548,564	4,726,556	4,128,255	4,349,626
Total waste	187,253,726	193,017,288	177,488,155	187,854,268
One-time release		153,586		

The Pollution Prevention Act of 1990 requires facilities to report all waste processed or disposed. These data elements include the amount of chemicals reported under TRI as generated as waste or recycled and used for energy recovery, or treated both on and off the facility premises (see Table 3, page 30). Facilities must report for the current and prior year and provide projected totals for the next two years. Estimates for 2001 and 2002 indicate that the total waste processed or disposed by those facilities required to report increased in 2000 as compared to 1999 but is projected to decrease in 2001. Facilities estimate that in 2001 and 2002, energy recovery and on-site recycling will increase but off-site recycling will decrease. On-site treatment is projected to decrease by 18,000,000 pounds while off-site treatment will remain constant.

One-time releases, such as remediation and spills were 154,000 pounds in 2000.

Trends in TRI Releases and Transfers

Changes in TRI reporting requirements over time make year-to-year comparisons of TRI data difficult. Even when using normalized values, a single chemical at one facility can greatly impact the results. To be entirely accurate, perhaps we should only look at those chemicals that have been reported by particular facilities for all years. There are some facilities that have modified their chemical use so much that they no longer report. Excluding them from comparative totals would not give credit for reductions in those cases. Comparisons are most accurate when addressing a particular chemical over time. At that level, the original reports will show what has happened at a particular facility. However, the general trends in releases and transfers adjusted for changes in reporting can provide us with valuable information on changes in releases and transfers overall.

TRI releases to all environmental media increased in 2000 by 0.9 million pounds when compared to 1999. Most of this increase is accounted for by the barium compounds category increases (electric utilities industry category).

Figure 17 on page 32 shows the trends in TRI releases where all chemicals reported are included. The general trend over time has been for releases to decline. Releases in the manufacturing sector are at the lowest level since reporting began in 1987. Since 1991, releases of all chemicals by manufacturing facilities (not adjusted for reporting changes) have decreased by 10.1 million pounds, or 32% and by 2.5 million pounds, or 8.6% since 1997. Comparing only those chemicals that have had constant reporting requirements, releases have decreased from 21.0 pounds in 1991 to 14.0 million pounds, a decrease of 33%.

Figure 17: **Washington State TRI Releases, 1990-2000**

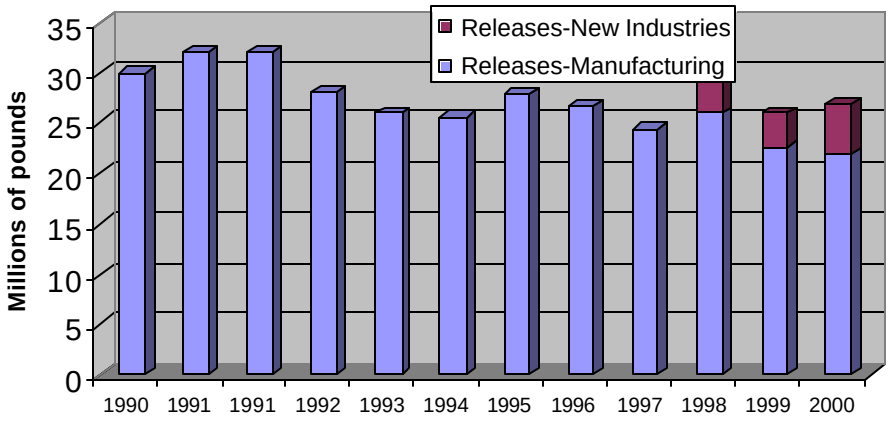
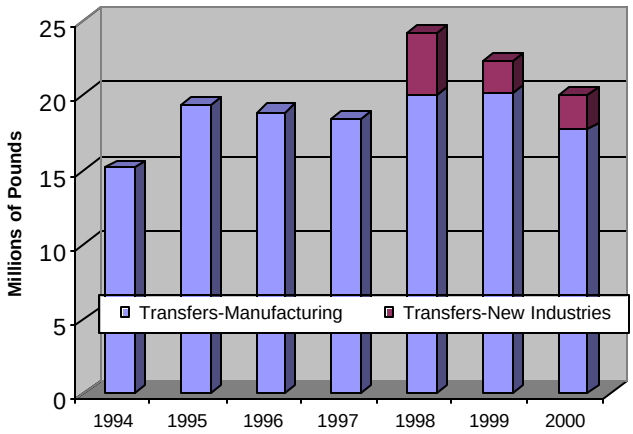


Figure 18 below, shows changes in reporting for off-site transfers since 1994. The Pollution Prevention Act of 1990 significantly expanded reporting for off-site transfers for recycling, energy recovery and treatment. Also, the changes in sulfuric acid reporting beginning with the 1994 reporting year resulted in a 60 million-pound reduction in the state's off-site transfers between 1993 and 1994. The addition of reporting of nitrate compounds has resulted in an increase in reported transfers particularly to POTWs. The addition of the new industries in 1998 resulted in an increase in reported off-site transfers. The 2000 totals show a decreasing trend for the manufacturing industry categories since 1995, but still greater than the 1994 value. The new industries show a decrease in transfers from 1999, but a decrease for the 1998 to 2000 period.

Figure 18: **Washington State TRI Transfers, 1994-2000**



Uses of Chemical Data

Until EPCRA became law (in the mid 1980's), most national and local environmental laws looked at only one element of the environment at a time. Single-media reporting laws, like the Clean Air Act and the Clean Water Act, do not account for the shifting of a waste "stream" between media. The comparison between them has been difficult because of conflicting reporting rules, measurement methods, chemical lists, reporting periods, and inconsistent industry exemptions and/or requirements. For these same reasons, it has been hard to build a comprehensive picture of the cumulative releases from a single facility, let alone multiple facilities in a local area.

Tier Two Data

Tier Two data is of particular value because it reflects chemical storage by facilities in the state of Washington. This information is critical to the SERC, LEPCs and local fire stations. The SERC assembles this information to help the citizens, government, and industry work toward a safer, cleaner state. LEPCs and local fire stations use the information sent by each facility to prepare for a possible incident or natural disaster in the community.

TRI Data

TRI data is of particular value because it reflects toxic chemical releases to all the media around a facility — air, water, land, sewer, transfers off-site, etc. Toxic chemicals are generated from many sources, including manufacturing and non-manufacturing processes, agricultural chemical use, use and disposal of consumer products, transportation, indoor and outdoor burning, and other sources. It is important to note that not all of these sources are tracked by TRI. Non-tracked businesses and organizations, as well as individual and personal use, may also contribute substantial amounts of toxic chemicals to the environment.

Air quality is recognized as a significant indicator of environmental health. While about 70% of TRI releases are to the air, industrial sources contributed only 14% of the state's air pollutants. Other major sources of air pollution include motor vehicles, outdoor burning, and wood-stoves and fireplaces.

With TRI, it is easier for a given facility's host community (and others) to see the 'total' amounts of these toxic releases into one area /community. Communities who utilize TRI data are now in a better position to build a more complete picture of the cumulative releases around them. TRI data also provoke many questions with the public.
Some of the most common questions include:

- Are the releases harmful to the community (human and/or environmental)?
- Who keeps track of all these releases in relation to human and environmental health?
- Are these releases acceptable to the host community?
- If these releases continue, will they harm the community's long-term health and sustainability, including economic viability?
- Who bear's the brunt of these releases?
- What are the cumulative effects of chemical releases?

Environmental Justice

Research shows that in general, low-income populations and communities of color are exposed to greater concentrations and quantities of toxic chemicals via pollution. This is commonly recognized as environmental in-justice, in-equity, or racism. One reason (of many) for this disproportionate impact is the close proximity of low-income residents to polluting facilities and contaminated sites.

Some - but certainly not all - of the state's polluting facilities are represented in this report because they handle (and often release) significant quantities of toxic wastes, and thus report under the "Toxic Release Inventory." Although the TRI focuses on "industrial" facilities, there are many other types of facilities that contribute to urban and rural pollution that are not reflected in this report. Smaller and non-industrial businesses are one broad category of potential polluters that are not reflected in the TRI. And, let's not forget — like most polluting facilities, our cars, some of our purchases, and some of our home-based activities are also responsible for local pollution. These personal types of pollution may be legal, but they too can contribute to combined adverse impacts on the local environment and public health.

The greater combined, or 'cumulative' impact of local pollution – regardless of the source, is of understandable and particular concern to those who live (or work) closest to the pollution. Often, it is residents with lower incomes and/or those who live in communities of color that are most exposed to local pollution. They are also less likely to have the resources to move away from or aggressively address these pollutants. Many don't want to move away — they value their communities and would prefer to stay. They would like to work with local facilities and other resources to reduce the pollution and associated risks. They are interested in increased local public awareness and health and they look to a more sustainable local environment, where they can live their lives without

increased fear and / or actual long-term health risks from local pollution. Cumulative impacts are also of concern to Ecology and state and local public health agencies. Efforts to better coordinate between pollution and the public health-risk issues amongst a number of state and local interests and agencies are increasing — in the name of environmental justice.

Ecology recognizes that environmental justice / equity is an important goal. In 1994, the agency defined environmental equity as "… the proportionate and equitable distribution of environmental benefits and risks among diverse economic and cultural communities. It ensures that policies, activities, and the responses of government entities do not differentially impact diverse social and economic groups. Environmental equity promotes a safe and healthy environment for all people." What does this mean?

The Department of Ecology is actively working to:

1) Ensure our work and services are fairly allocated across the state;
2) Better engage local communities to participate in public involvement opportunities that relate to environmental management. The "Community Right-to-Know" effort (including this report) is one of many ways to support this. It's about bringing the broader community (businesses, residents, schools, community organizations, local health and zoning officials, and more) closer together with common and timely information about the community's local environment, including pollution;
3) Coordinate with the EPA, state and local public health officials, and other environmental-based public agencies on environmental justice efforts, to develop, share, and consolidate resources;
4) Translate more documents (into Spanish, Korean, and Vietnamese –other languages are possible) where appropriate to increase effective communication with locally impacted communities that include significant populations with limited English proficiency;
5) Award grants for cleanup, permits, public involvement, and environmental management projects, etc. equitably. Ecology makes an effort to ensure that communities in need are aware of these resources and are encouraged and assisted to apply.

Washington State's 1994 Legislature requested that this issue be studied by Ecology. In October 1995, *A Study on Environmental Equity in Washington State* (publication #95-413) was delivered to the Legislature. Some of the state's low-income and minority populations were found to be living near a higher number of operating industrial facilities. In some counties, substantially higher amounts of TRI releases were also reported in low-income and / or minority areas. This presents a potential 'environmental justice' issue. This report can be read on Ecology's website at *http://www.ecy.wa.gov/biblio/95413.html*

Ecology also works with the EPA, state and local public health officials to determine populations at greater health risk due to cultural habits, or age, etc. Children, pregnant women and the elderly can be more sensitive to chemical exposures. Health officials provide Ecology risk assessment information and use environmental health data to determine human health threats. This partnership provides an effective process to notify the public of health risks.

For more information about the Department's work regarding environmental justice, and its relationship to Community Right-to-Know and the Toxic Release Inventory, please contact Maria Peeler, in the Hazardous Waste and Toxics Reduction Program, at (360) 407-6704.

New and Pending EPCRA Developments

Regulatory Relief for Retail Gas Stations

Retail gas stations that store gasoline and diesel fuel entirely underground and are in compliance with Underground Storage Tank requirements are subject to new reporting thresholds under EPCRA Section 312 (Tier Two). The new reporting thresholds are:

- 75,000 gallons for all grades of gasoline combined; and
- 100,000 gallons for diesel fuel.

Convenience stores and truck stops that sell gasoline or diesel fuel to the public also meet the definition of retail gas stations. Retail gas stations meeting these criteria have not been required to file Tier Two reports since the 1998 reporting year.

Dioxins and other Persistent, Bioaccumulative Toxins

EPA has added the chemical dioxin and other persistent, bioaccumulative toxins (PBTs) to its TRI list of chemicals. PBTs are of concern in the environment because:

- They **persist** in the environment for a long time without breaking down;
- They build up in the tissues of humans, fish and animals ("**bioaccumulative**");
- They have **toxic** effects (cancer and other health problems) on living organisms.

Many of these substances are man-made and have only been in the environment for a short period of human history. Substances like lead and mercury that occur naturally in the environment can create health and environmental problems when they are concentrated and refined. Because these chemicals are often produced or used in very small quantities, only relatively small amounts have shown up in the TRI reportable chemicals over time (52,304 pounds in 1999 and 51,983 pounds in 1998).

Table 4: **PBT Chemicals**

Chemical Name or Category	*Reporting Threshold (2000 reporting year)*
Aldrin	100 lbs.
Benzo(g,h,I)perylene	10 lbs.
Chlordane	10 lbs.
Dioxin and dioxin-like compounds	0.1 grams
Heptachlor	10 lbs.
Hexachlorobenzene	10 lbs
Isodrin	10 lbs.
Methoxychlor	100 lbs.
Octachlorostyrene	10 lbs.
Pendimethalin	100 lbs.
Pentachlorobenzene	10 lbs.
Polycyclic aromatic compounds category	100 lbs.
Polychlorinated biphenyl (PCBs)	10 lbs.
Tetrabromobisphenol A	100 lbs.
Toxaphene	10 lbs.
Trifluralin	100 lbs.
Mercury	10 lbs.
Mercury compounds	10 lbs.

In 1999, EPA published the final rule to add certain PBT chemicals to the TRI reportable chemicals, to establish a dioxin-like chemical category and to lower reporting thresholds for certain PBT chemicals. Most PBT chemicals (listed in Table 4, page 38 will be reportable at thresholds of 10 or 100 pounds manufactured, processed or otherwise used. Many of these PBT chemicals are pesticides.

Dioxin, one of the PBTs, is a highly toxic compound that is known to cause adverse health effects in humans and animals in very small concentrations. Dioxin is produced in extremely small amounts (a few pounds per facility) by many industrial processes including incineration of waste, pulp and paper production and steel production. Because of this, dioxins have not been reported since their generation was below the minimum triggering thresholds for TRI. With the new reporting threshold for dioxin and dioxin-like compounds category, reporting is triggered when 0.1 grams of the chemical are manufactured, processed or otherwise used.

Along with efforts by EPA to address PBTs through enhancements to the Toxic Release Inventory, Ecology also has a PBT initiative. Specifically, Ecology is implementing a long-term strategy to first reduce and eventually, where possible, eliminate PBTs from Washington State's environment. To date, Oregon is the only other state that has followed Washington's lead in this area. This ambitious but fundamental goal is based upon (and consistent with) Ecology's three essential priorities: clean up existing sites of notable pollution, prevent or reduce future environmental contamination, and support a long-term, sustainable environment for current and future generations.

Based on the widespread uses and releases of mercury in a variety of consumer products, medical devices, electrical equipment, and electrical generation activities, and based on review of several agency databases, Ecology determined that mercury is the highest priority PBT in Washington's environment that needs further attention. Additionally, the Washington State Department of Health has issued statewide fish consumption advisories for certain fish, due to the levels of mercury detected in those fish species. Ecology will address the need for reductions of mercury releases into Washington's environment in two areas:

? Ecology will promote actions that will help ensure the proper removal, recycling, and ultimate disposal of the following consumer products that are in widespread use by many Washingtonians:

- Household mercury fever thermometers
- Residential and commercial mercury thermostats
- Fluorescent light tubes and compact fluorescent lights

? Ecology is developing a "mercury action plan" that will identify the need for and steps to accomplish additional mercury reductions over the long-term in all sectors and sources that release mercury.

Additionally, the state of Washington has an integrated pesticide policy which tracks chemicals such as those listed PBT chemicals. Twenty-three additional chemicals are being considered for addition to the state listing.

Lower Threshold for Lead TRI Reporting

EPA issued a final rule that lowers the threshold for reporting lead releases under TRI. The first year of reporting for lead at these thresholds will be made in the 2001 reports due July 1, 2002. Lead remains in the environment for long periods of time and is toxic to humans, especially to children. Until now, facilities were not required to report lead and lead compound releases to air, water, and land unless they manufacture or process more than 25,000 pounds annually or use 10,000 pounds. These high thresholds severely limited the reporting of lead and lead compounds. Under the new rule, the reporting thresholds would be lowered to 100 pounds per facility, per year. This lower threshold of this toxic chemical will help track releases of lead in the environment.

Information on TRI developments can be obtained from the TRI web page: *http://www.epa.gov/tri* or by calling EPA's EPCRA hotline at 1-800-535-0202.

Appendix 1

Reporting Requirements and Glossary of Terms

Releases to Air
Releases to air are reported as either non-point or "fugitive" or point or "stack" emissions. Fugitive emissions are releases that are not conveyed through stacks, vents, pipes or any other confined air stream. Examples include leakage from valves, pump seals, flanges, compressors, open-ended lines, evaporative losses from surface impoundments and production lines, and releases from building ventilation systems. Stack or point air emissions are releases to air which are conveyed through stacks, vents, ducts, pipes or other confined air streams, and include storage tank emissions and air releases from control equipment.

Releases to Land
Releases to land occur on or near the boundary of the reporting facility. Releases to land include disposal of wastes in a landfill, in which the waste is buried, land treatment / application farming in which a waste is applied onto or incorporated into soil, and surface impoundment which is an uncovered holding area used to volatilize and / or settle waste materials.

Releases to Water
Releases to water include releases to streams, lakes, or other bodies of water.

Standard Industrial Classifications
The SIC code numbers and names listed on page 42 are the general industrial categories, a 2-digit number representing the general categories of manufactured products. Each facility will have one or more 4-digit number(s) that specifically describes its manufacturing process.

Standard Industrial Classification Codes

SIC Code	Name		SIC Code	Name
10	Metal and Coal Mining		33	Primary Metal Products
12	Metal and Coal Mining		34	Fabricated Metal Products
20	Food and Kindred Products		35	Industrial, Commercial Machinery and Computers
21	Tobacco Manufacturers		36	Electronic Equipment and Components
22	Textile Mill Products		37	Transportation Equipment
23	Apparel and Other Textiles		38	Instruments and Related Products
24	Lumber and Wood Products		39	Misc. Manufacturing Industries
25	Furniture and Fixtures		4911	Electric Generating Plants (combusting coal or oil)
26	Paper and Allied Products		4931	Electric Generating Plants (combusting coal or oil)
27	Printing and Publishing		4939	Electric Generating Plants (combusting coal or oil)
28	Chemicals and Allied Products		4953	Hazardous Waste & Treatment Firms
29	Petroleum Refining		5169	Chemical Wholesale Distributors
30	Rubber And Misc. Plastic Products		5169	Wholesale Bulk Petroleum Distributors
31	Leather and Leather Products		7389	Solvent Recyclers
32	Stone, Clay and Glass Products			

Transfers to Public Owned Waste Water Treatment Works (POTW)

A POTW is a waste water treatment facility that is owned by a state or local municipality. Waste waters reported as transported to POTWs are transferred through pipes or sewers. The chemicals contained in the waste water are treated at the POTW through a variety of methods. In general, chemicals are likely to be removed to some extent. Those chemicals not removed by treatment are released by the POTW to surface waters.

Thresholds

These are amounts of chemicals that trigger reporting requirements. If a facility annually manufacturers or processes any listed toxic chemical, the threshold quantity is 25,000 pounds. If a facility "otherwise uses" any listed chemical, in any way other than incorporating it into a product, the threshold quantity is 10,000 pounds. PBT chemicals have a lower threshold for reporting.

Toxics Release Inventory Chemical List

EPA adopted a list of some 600 chemicals which facilities must report under Section 313 of EPCRA. With the Governor's authority, a chemical may be added to the list if it is known to cause or can reasonably be anticipated to cause significant adverse acute health hazards outside a facility as a result of continuous or frequently recurring releases.

In addition, chemicals may be added if they cause or may be reasonably anticipated to cause cancer or birth defects or serious or irreversible reproductive dysfunctions, neurological disorders, heritable genetic or other chronic health effects. A chemical that causes or may cause a significant adverse effect on the environment may also be included. EPA may delete chemicals from the list if there is not sufficient evidence to establish that the chemical meets any of the criteria.

Off-site Transfers
An off-site transfer is the transfer of wastes to a facility that is geographically or physical separate from the manufacturing site. Chemicals are reported as either transfers for treatment, disposal, recycling, and energy recovery or "other" means.

Off-site Transfers for Disposal
Disposal of toxic chemicals usually means either release to land (as in a landfill) or underground injection, in this case, at the off-site location.

Off-site Transfers for Energy Recovery
Energy recovery is the combustion process in industrial furnaces or boilers that generate energy for use at the location. Non-combustible chemicals like metals and halons should not be reported under this category. Treatment or destruction by incineration is not energy recovery.

Off-site Transfers for Recycling
Recycling means the recovery or regeneration of chemicals by a variety of methods including solvent recovery, metals recovery or acid regeneration. Once they have been recovered, the chemicals may be returned to the originating facility or made available for commerce.

Off-site Transfers for Treatment
Treatment of toxic chemicals may include biological treatment, neutralization, incineration or physical separation. Treatment usually results in varying degrees of destruction of the chemical. Treatment may prepare the chemicals for disposal.

Underground Injection
Underground injection is the disposal of fluids by burial of the fluids in a Class I or V well.

Total Waste
The sum of Section 8, Column B on Form R or the total of releases, on- and off-site recycling, on- and off-site energy recovery, and on- and off-site treatment for the current reporting year. Where this total is 500 pounds or less and total chemical use is less than one million pounds, a facility may use the abbreviated Form A or certification Form to report.

Acronyms

Ecology – Washington State Department of Ecology

EHS – extremely hazardous substance, 40 CFR Part 355.30

EPA - Environmental Protection Agency

EPCRA - Emergency Planning and Community Right-to-Know Act of 1986

Form R- Five page individual chemical report filed under EPCRA Section 313, the Toxics Release Inventory

Form A – Two page individual chemical report filed under EPCRA Section 313, the Toxics Release Inventory

LEPC – Local Emergency Planning Committee

OSHA - Occupational Safety and Health Administration

POTW- Publicly owned treatment works

SARA Title III – Superfund Amendments and Reauthorization Act Title III, another name for EPCRA

SERC- State Emergency Response Commission

Tier Two - Emergency Planning and Hazardous Chemical Inventory Reports filed under **EPCRA** Section 312

TRI – Toxic or Toxics Release Inventory, EPCRA 313 and data collected under EPCRA 313

TRIDS – Toxics Release Inventory Display System

Appendix 2

Tier Two Reporting, 2000

County	Number of Reporting Facilities	Number of Chemicals Reported	Number of EHS Reporting Facilities	Number of EHS Chemicals Reported
Adams	39	212	24	64
Asotin	10	22	3	3
Benton	70	346	45	82
Chelan	86	486	54	139
Clallam	52	151	21	28
Clark	126	975	55	155
Columbia	16	55	11	22
Cowlitz	60	506	35	85
Douglas	32	73	19	24
Ferry	8	32	2	4
Franklin	62	747	39	165
Garfield	11	38	5	7
Grant	106	963	50	212
Grays Harbor	66	194	25	38
Island	30	104	9	11
Jefferson	17	67	5	9
King	686	3404	322	582
City Of Auburn	19	134	5	15
City Of Kent	91	871	44	181
King	576	2399	273	386
Kitsap	73	212	39	54
Kittitas	44	95	25	29
Klickitat	11	54	7	13
Lewis	62	189	29	38
Lincoln	36	98	24	35
Mason	17	44	6	7
Okanogan	62	257	36	100
Pacific	19	38	10	13
Pend Oreille	7	41	3	5
Pierce	204	902	107	140
Fort Lewis	1	35	1	7
City Of Puyallup	8	843	7	3
Pierce	195	825	99	130
San Juan	15	25	4	4
Skagit	88	547	27	83
Skamania	10	53	4	5
Snohomish	150	569	68	102
Snohomish (SW)	18	74	59	13
Snohomish	126	486	9	89
Spokane	195	1035	84	146
Stevens	23	95	11	12
Thurston	67	180	26	31
Wahkiakum	5	12	4	7
Walla Walla	54	358	28	65
Whatcom	92	654	36	82
Whitman	64	378	39	81
Pullman	10	51	5	14
Whitman	54	327	34	67
Yakima	174	815	111	253

Appendix 3

Washington State TRI by Chemical, 2000

Chemical	Carcinogen	PBT	Air	Water	Land	2000 Releases	2000 Transfers	1999 Releases	1999 Transfers
1,1-Dichloro-1-Fluoroethane	No	No	32,183	0	0	32,183		41,275	1,829
1,2,4-Trimethylbenzene	No	No	12,432	0	83	12,515	22,611	11,011	10,826
1,3-Butadiene	Yes	No	470	0	0	470		358	0
1,3-Dichloropropylene	No	No	126	0	0	126		195	0
4,4'-Isopropylidenediphenol	No	No	0	0	0	0			
Acetaldehyde	Yes	No	669,985	45,845	0	715,830	3	741,185	0
Acetonitrile	Yes	No	0	0	0	0	11,528	0	12,165
Acrylamide	Yes	No	42	0	0	42	215	32	228
Acrylic Acid	No	No	281	0	0	281		141	0
Aluminum (Fume Or Dust)	No	No	1,101	0	0	1,101	136,984	1,657	5,250
Ammonia	No	No	1,853,447	281,990	37,107	2,172,544	788,069	1,879,050	253,304
Antimony Compounds	No	No	0	0	0	0	24,313	0	12,576
Arsenic Compounds	Yes	No	12	18	3,985	4,015	796	14,007	593
Asbestos (Friable)	Yes	No	1	0	0	1		1	0
Barium Compounds	No	No	465	10,478	2,243,412	2,254,355	464,703	891,285	325,688
Benzene	Yes	No	103,630	100	81	103,811	6,516	99,486	3,172
Benzo(G,H,I)Perylene	No	Yes	4,626	24	9	4,659	63,460	1	0
Benzoyl Peroxide	No	No	25	0	0	25		20	356
Biphenyl	No	No	1,279	1	0	1,280	4,028	3,751	3,876
Cadmium Compounds	Yes	No	10	0	0	10	65	0	60
Carbon Disulfide	No	No	11,245	3	0	11,248		18,174	2
Carbonyl Sulfide	No	No	2,200,010	0	0	2,200,010		2,386,374	0
Catechol	Yes	No	650	434	0	1,084	8,705	517	19,603
Certain Glycol Ethers	No	No	436,470	2,340	0	438,810	115,094		

Chemical	Carcinogen	PBT	Air	Water	Land	2000 Releases	2000 Transfers	1999 Releases	1999 Transfers
Chlorine	No	No	141,066	24,179	0	165,245	250	255,269	0
Chlorine Dioxide	No	No	8,335	0	0	8,335		7,308	0
Chlorodifluoromethane	No	No	14,659	0	0	14,659		17,013	261
Chloroform	Yes	No	261,448	17,317	0	278,765	1	380,570	0
Chloromethane	No	No	538	0	0	538	11,978		
Chloropicrin	No	No	3	0	0	3		4	0
Chromium	Yes	No	1,705	72	10,920	12,697	123,896	3,948	47,508
Chromium Compounds	Yes	No	1,223	9,069	98,588	108,880	207,773	225,511	321,436
Cobalt Compounds	Yes	No	120	97	49,909	50,126	10,790	51,197	12,013
Copper	No	No	1,788	695	12,462	14,945	2,602,321	28,986	2,552,787
Copper Compounds	No	No	13,972	1,075	203,260	218,307	841,675	212,984	380,218
Creosote	Yes	No	1,947	207	0	2,154	2,843	1,875	13,016
Cresol (Mixed Isomers)	No	No	2,578	212	16	2,806		4,483	6
Cumene	No	No	2,902	0	3	2,905	152	2,783	298
Cyanide Compounds	No	No	44	0	11,000	11,044	25,897	13,000	11
Cyclohexane	No	No	34,431	98	8	34,537	303	26,112	506
Decabromodiphenyl Oxide	No	No	0	0	0	0	53,843	0	5,224
Di(2-Ethylhexyl) Phthalate	Yes	No	211	0	0	211	1,474	247	1,096
Dibenzofuran	No	No	257	0	0	257	1,477		
Dibutyl Phthalate	No	No	3,401	0	0	3,401	468	5,488	530
Dichlorodifluoromethane (Cfc-	No	No	11,000	0	0	11,000		21,548	8,668
Dichloromethane	Yes	No	103,300	23	0	103,323	20,943	103,936	16,560
Diethanolamine	No	No	27,159	3,100	0	30,259	5,960	69,230	25,255
Diisocyanates	No	No	78	0	0	78	20,767	69	21,163
Dimethyl Phthalate	No	No	141	0	0	141		130	0
Dimethyl Sulfate	No	No	0	0	0	0			
Dimethylamine	No	No	6	7	0	13		16	0
Diphenylamine	No	No	0	0	250	250		250	0
Diuron	No	No	0	0	0	0			
Ethylbenzene	Yes	No	27,668	0	57	27,725	4,985	21,494	5,552
Ethylene	No	No	50,863	0	0	50,863		58,365	0
Ethylene Glycol	No	No	55,936	0	225	56,161	368,995	10,968	390,803
Folpet	No	No	36	0	0	36			

Chemical	Carcinogen	PBT	Air	Water	Land	2000 Releases	2000 Transfers	1999 Releases	1999 Transfers
Formaldehyde	Yes	No	180,050	18,953	0	199,003	5,355	192,122	4,346
Formic Acid	No	No	1,772	6,380	0	8,152		9,472	0
Freon 113	No	No	43,439	0	0	43,439	16,662	74,005	20,130
Heptachlor	No	Yes	0	0	0	0			
Hexachlorobenzene	No	Yes	0	0	0	0	0		
Hydrochloric Acid	No	No	2,007,985	0	0	2,007,985	1,561	1,586,848	1,440
Hydrogen Fluoride	No	No	1,190,242	0	0	1,190,242	13,337	1,819,109	8,542
Hydroquinone	No	No	0	0	0	0			
Lead	Yes	No	611	590	16,362	17,563	87,015	17,135	55,403
Lead Compounds	Yes	No	3,569	7	142,839	146,415	801,347	259,762	362,365
Lithium Carbonate	No	No	1,345	250	0	1,595		1,668	0
Manganese	No	No	1,296	556	16,005	17,857	607,776	22,022	139,132
Manganese Compounds	No	No	9,546	285,827	537,599	832,972	864,217	1,790,416	718,966
Mercury	No	Yes	477	0	81	559	146		
Mercury Compounds	No	Yes	102	50	1,546	1,697	33,487	838	35,245
Metham Sodium	No	No	9,342	40	0	9,382	8,509	10,024	14,174
Methanol	No	No	3,918,781	345,175	5	4,263,961	309,256	5,661,903	775,635
Methoxychlor	No	Yes	0	0	0	0			
Methyl Ethyl Ketone	No	No	762,985	456	0	763,441	787,817	873,221	1,252,069
Methyl Isobutyl Ketone	No	No	136,148	0	0	136,148	164,212	123,685	147,614
Methyl Methacrylate	No	No	72,197	0	0	72,197	193	1,000	750
Methyl Tert-Butyl Ether	No	No	1,239	0	0	1,239	890	422	116
Molybdenum Trioxide	No	No	260	5	0	265	74,705	265	35,755
Naphthalene	No	No	5,238	0	23	5,261	7,396	3,911	7,515
N-Butyl Alcohol	No	No	418,512	0	0	418,512	79,606	420,979	24,576
N-Hexane	No	No	132,272	200	123	132,595	54,142	120,748	2,917
Nickel	Yes	No	1,765	877	9,372	12,014	136,530	32,658	113,747
Nickel Compounds	Yes	No	473	1,130	48,869	50,472	61,250	115,593	83,181
Nitrate Compounds	No	No	536	1,697,048	230,060	1,927,644	589,527	2,102,133	3,425,888
Nitric Acid	No	No	7,309	10	5	7,324	415,718	4,333	402,211
N-Methyl-2-Pyrrolidone	No	No	13,246	0	0	13,246	566,939	6,766	258,636
Ozone	No	No	1,905	0	0	1,905		837	0
Pentachlorophenol	Yes	No	84	0	24	108	1,701		

Chemical	Carcinogen	PBT	Air	Water	Land	2000 Releases	2000 Transfers	1999 Releases	1999 Transfers
Phenanthrene	No	No	1,365	1	0	1,366	2,142	1,289	2,184
Phenol	No	No	152,419	795	0	153,214	7,340	135,990	13,629
Polychlorinated Biphenyls	Yes	Yes	0	0	0	0	61		
Polycyclic Aromatic Compounds	Yes	Yes	87,881	254	226	88,361	1,811,473	52,755	2,439,156
Propylene	No	No	53,264	0	0	53,264		61,601	0
Quinoline	No	No	14,462	1	0	14,463	759	384	633
Sec-Butyl Alcohol	No	No	28,800	0	0	28,800	24,710	37,001	15,961
Silver	No	No	0	0	0	0	153,863	0	114,565
Sodium	No	No	159	4	0	163	336	165	216
Sodium Nitrite	No	No	8	0	0	8			
Styrene	Yes	No	1,813,467	104	0	1,813,571	64,664	1,502,730	22,027
Sulfuric Acid	No	No	1,614,917	0	0	1,614,917		1,385,381	0
Tetrabromobisphenol A	No	Yes	930	0	0	930	464		
Tetrachloroethylene	Yes	No	19,101	0	0	19,101	40,182	20,563	29,437
Toluene	No	No	610,060	63	507	610,630	862,352	681,928	667,969
Toluene Diisocyanate (Mixed	Yes	No	364	0	0	364		346	0
Trans-1,3-Dichloropropene	No	No	60	0	0	60		85	0
Trichloroethylene	Yes	No	154,821	5	0	154,826	27,268	196,517	16,708
Trifluralin	No	No	51	0	243	294			
Vanadium Compounds	No	No	345	79	397,726	398,150	26,250		
Vinyl Acetate	Yes	No	7,403	880	0	8,283		9,080	0
Xylene (Mixed Isomers)	No	No	307,819	64	2,299	310,182	219,903	269,380	198,449
Zinc (Fume Or Dust)	No	No	2,732	500	0	3,232	2,962	7,190	3,987
Zinc Compounds	No	No	51,442	19,441	127,744	198,627	5,923,588	494,685	5,045,660

Appendix 4

Washington State Certification Form Reporters, 2000

Facility	City	County	Chemical
Achilles Usa Inc	Everett	Snohomish	Cadmium Compounds
			Zinc Compounds
			Barium Compounds
			Antimony Compounds
Adm Animal Health & Nutrition Div.	Spokane	Spokane	Selenium Compounds
			Manganese Compounds
			Copper Compounds
Air Liquide America Corp	Tacoma	Pierce	Propylene
Allweather Wood Treaters	Washougal	Clark	Arsenic Compounds
			Chromium Compounds
			Copper Compounds
Asahipen America Inc	Seattle	King	Ethylene Glycol
Ball Metal Beverage Container Corp.	Kent		Manganese
Bardahl Mfg. Corp.	Seattle		Lead Compounds
Basic American Foods	Moses Lake	Grant	Ammonia
Betzdearborn - Washougal	Washougal	Clark	Formic Acid
			Acrylic Acid
			Xylene (Mixed Isomers)
			Diethanolamine
			Copper Compounds
			Toluene
			Cobalt Compounds
			Cresol (Mixed Isomers)
			Cyclohexanol
			Phenol
			2,4-Dimethylphenol
			Ethylbenzene
			M-Cresol
Brooks Manufacturing Co.	Bellingham	Whatcom	Pentachlorophenol
Canam Steel Corporation Sunnyside, Wa Plant	Sunnyside	Yakima	Barium Compounds
			Phosphorus (Yellow Or White)
			Zinc (Fume Or Dust)
			Copper
			Chromium
			Nickel
			Lead
			Aluminum (Fume Or Dust)
			Manganese
Cargill, Incorporated	Burlington	Skagit	Zinc Compounds
			Manganese Compounds
Cascade Columbia Distribution	Seattle	King	Trichloroethylene
Cascade Columbia Distribution	Seattle	King	Ethylene Glycol
			Nitric Acid
Cascade Pole & Lumber Company	Tacoma	Pierce	Pentachlorophenol
			Arsenic Compounds
			Copper Compounds
			Chromium Compounds

Facility	City	County	Chemical
Ch2o, Inc.	Olympia	Thurston	Nitrate Compounds
			Sodium Nitrite
			Nitric Acid
Chemco, Inc.	Ferndale	Whatcom	Arsenic Compounds
			Chromium Compounds
			Copper Compounds
Columbia Machine Inc	Vancouver	Clark	Methanol
Connelly Skis Inc.	Lynnwood	Snohomish	Diisocyanates
Cutler - Hammer	Kent	King	Copper
Cytec Industries, Inc.	Longview	Cowlitz	Methanol
			Hydrochloric Acid (1995
And After			
			Acrylic Acid
			Ammonia
Exotic Metals Forming Co.	Kent	King	Chromium Compounds
			Nickel Compounds
Farwest Paint Mfg Co	Tukwila		Xylene (Mixed Isomers)
			Toluene
Fiberglass Technology Industries, Inc.	Spokane	Spokane	Dimethyl Phthalate
Fleetwood Homes Of Washington #31	Woodland	Cowltz	Diisocyanates
Fluke Corporation	Everett	Snohomish	Copper
Foamex Lp - Kent	Kent	King	Diethanolamine
Foamex Lp - Lakewood	Lakewood	Pierce	Diisocyanates
Fort James Camas Llc	Camas	Clark	Catechol
			Potassium
Dimethyldithiocarbamate			
			Nitric Acid
			Diethanolamine
Gaco Western, Inc.	Tukwila	King	Toluene Diisocyanate
(Mixed			
Glacier Northwest, Inc. Kenmore Ready-Mix Plant	Kenmore		Nitrate Compounds
Goldendale Aluminum Company	Goldendale	Klickitat	Chromium
			Copper
			Manganese
			Chlorine
Hobart Bakery Systems	Orting	Pierce	Diisocyanates
Inchelium Tribal Wood Treatment	Inchelium	Ferry	Copper Compounds
			Chromium Compounds
			Arsenic Compounds
Intalco Aluminum Corporation	Ferndale	Whatcom	Chromium
			Copper
			Manganese
Janicki Machine Design Inc	Sedro Wooley	Skagit	Diisocyanates
			Styrene
Jci Jones Chemicals, Inc.	Tacoma	Pierce	Ammonia
Jeld-Wen Coatings	Tukwila	King	Zinc Compounds
Kelly-Moore/Preservative Paint Co.	Seattle		N-Butyl Alcohol
			Manganese Compounds
			Zinc Compounds
			Cobalt Compounds
			Barium Compounds
			Certain Glycol Ethers
			Ammonia
			Methanol
			Dibutyl Phthalate
			Toluene
			Xylene (Mixed Isomers)

Facility	City	County	Chemical
Land O'lakes Inc	Chehalis	Lewis	Manganese Compounds
			Copper Compounds
			Zinc Compounds
Land O'lakes Inc Everson	Everson	Whatcom	Zinc Compounds
			Manganese Compounds
			Cobalt Compounds
Lincoln Mutual Service In #1	Almira	Lincoln	Benzene
			1,2,4-Trimethylbenzene
			Xylene (Mixed Isomers)
			Toluene
			Ethylbenzene
Lister Chain And Forge	Blaine	Whatcom	Manganese
Mica Brick Plant	Mica	Spokane	Manganese Compounds
			Chromium Compounds
Mikron Industries Inc.	Kent	King	Antimony Compounds
			Chromium Compounds
Newcastle Brick Plant	Renton		Barium Compounds
			Manganese Compounds
Northwest Casting Inc	Seattle		Chromium
			Manganese
Northwest Terminalling Company (Pasco)	Pasco	Franklin	Cresol (Mixed Isomers)
O'brien Intl Inc	Redmond	King	Diisocyanates
Ponderay Newsprint Company	Usk	Pend Oreille	Potassium
Dimethyldithiocarbamate			
Purina Mills Inc	Spokane	Spokane	Copper Compounds
			Manganese Compounds
			Zinc Compounds
R. A. Pearson Company	Spokane	Spokane	Chromium Compounds
Saint-Gobain Containers	Seattle	King	Chromium Compounds
Savage Western Transports Inc.	Pasco	Franklin	Ammonia
Snokist Growers - Cannery	Yakima	Yakima	Chlorine
			Ammonia
St John Grange Supply Inc	Saint John	Whitman	Ammonia
Telect Inc	Liberty Lake	Spokane	Lead
			Diisocyanates
Tessenderlo Kerley, Inc.	Kennewick	Benton	Nitrate Compounds
			Dimethylamine
			Sodium
Dimethyldithiocarbamate			
Trident Seafoods Corp	Anacortes	Skagit	Ammonia
U.S. Oil & Refining Co.	Tacoma	Pierce	Certain Glycol Ethers
Vanalco Inc.	Vancouver	Clark	Chlorine
			Nickel
			Phenanthrene
Vopak Usa Inc.	Spokane	Spokane	Methyl Ethyl Ketone
			Methanol
			Ethylene Glycol
	Kent	King	N-Butyl Alcohol
			Methyl Isobutyl Ketone
			Nitric Acid
			Tetrachloroethylene
			Certain Glycol Ethers
			Diethanolamine
			Xylene (Mixed Isomers)
			Ethylene Glycol
			Toluene
Western Pneumatic Tube Co.	Kirkland		Nickel
			Chromium

Facility	City	County	Chemical
Western Recreational Vehicles Inc.	Yakima	Yakima	Xylene (Mixed Isomers)
			N-Butyl Alcohol
			Zinc Compounds
			Certain Glycol Ethers
			Diisocyanates
			Methyl Isobutyl Ketone
			Methyl Ethyl Ketone
			Ethylbenzene
			Toluene
Western Sintering Co. Inc.	Richland	Benton	Copper
			Ammonia
Western Steel Casting Co	Seattle	King	Nickel
			Manganese
			Chromium
Western Wood Preserving Co	Sumner	Pierce	Arsenic Compounds
			Copper Compounds
			Chromium Compounds
Yakima Bait Co/ Worden's Lure	Granger	Yakima	Lead
Yakima Cooperative Inc	Yakima		Naphthalene
			Cyclohexane
			N-Hexane
			Ethylbenzene
			Benzene
			1,2,4-Trimethylbenzene
			Toluene
			Xylene (Mixed Isomers)

Appendix 5

Washington State TRI Dioxin and Dioxin-like Compounds, 2000 (in Grams)

Facility	City	County	Air	Water	Land	Total	Transfers
Abitibi Consolidated Sales Corporation	Steilacoom	Pierce	1.347	0	1.184	2.531	
Ash Grove Cement Co	Seattle	King	0.454	0	0	0.454	
Bfgoodrich Kalama, Inc.	Kalama	Cowlitz	0.15	0	0	0.15	
Boise Cascade Kettle Falls Plywood Mill	Kettle Falls	Stevens	0.1309	0	0	0.1309	0.0061
Boise Cascade Paper Division	Wallula	Walla Walla	0.594	0.255	0.2338	1.0828	
Boise Cascade Yakima Complex	Yakima	Yakima	0.1351	0	0	0.1351	0.0063
Brooks Manufacturing Co.	Bellingham	Whatcom	0.0271	0.1686	0	0.1957	3.33
Cascade Pole & Lumber Company	Tacoma	Pierce	8.6062	1.5062	0	10.1124	163.839
City Of Tacoma Steam Plant No 2	Tacoma	Pierce	0.597005	0	0.000009	0.597014	0.017
Daishowa America Co. Ltd.	Port Angeles	Clallam	0.35	0.68	0	1.03	2.75
Fort James Camas Llc	Camas	Clark	0.8599	7.2379	0.0081	8.1059	0.0384
Georgia-Pacific West, Inc.	Bellingham	Whatcom	0.80068	4.42411	0	5.22479	0.25437
Grays Harbor Paper Lp	Hoquiam	Grays Harbor	0.0015	0	0.0027	0.0042	0.0027
J. H. Baxter & Co.	Arlington	Snohomish	0.0124	0	10.7801	10.7925	779.3096
Kaiser Aluminum & Chemical Corporation - Trentwood Works	Spokane	Spokane	1.222	0	0	1.222	1.189
Kimberly Clark Corp	Everett	Snohomish	0.094	23.603	9.757	33.454	14.944
Longview Fibre Company	Longview	Cowlitz	1.56	0	0	1.56	0.281
Port Townsend Paper Corp.	Port	Jefferson	0.39	0	0.08	0.47	
Reynolds Metals Co Longview Reduction Plant	Longview	Cowlitz	0.211	0	0	0.211	
Simpson Tacoma Kraft Co.	Tacoma	Pierce	1.111	0.1453	0	1.2563	47.5254
Tesoro Northwest Company	Anacortes	Skagit	0.0006	5.2	0	5.2006	1.2
The Oeser Company	Bellingham	Whatcom	0.0018	0.1328	0	0.1346	
Tosco Refining Company Ferndale Refinery	Ferndale	Whatcom	0.16	0	0	0.16	
Transalta Centralia Generation / Mining	Centralia	Lewis	20.077	0	0	20.077	
Weyerhaeuser Company	Longview	Cowlitz	1.203	0.03	0	1.233	4
Weyerhaeuser Pulp Mill	Cosmopolis	Grays Harbor	0.22	0.8767	0	1.0967	0.0622
			Grand Total 40.316185	**Grand Total** 44.25961	**Grand Total** 22.045709	**Grand Total** 106.621504	**Grand Total** 1018.75507