



Toxic Release Inventory



Ohio Environmental Protection Agency
Division of Air Pollution Control

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UPDATE March 31, 2005

Prior to printing the hard copy reports, Ohio EPA became aware of a data discrepancy that affected some information in this report. It related to comparison of current year and prior year data only. The discrepancy is discussed below:

It was determined that for Envirite of Ohio, Inc. in Canton (Stark County), through a data processing error on the part of Ohio EPA, not all the transfers reported by Envirite had been entered into Ohio's 2002 TRI database. The off-site disposal listed in the database was deficient by 3.7 million pounds and the off-site recycling number was deficient by 190 thousand pounds. The incorrect data showed 1.97 million pounds transferred off-site for disposal and 73 thousand pounds transferred off-site for recycling. The corrected data now indicates 5.7 million pounds to off-site disposal and 263 thousand pounds to off-site recycling.

The following portions of the report were changed to reflect the corrected data: The Table 1 statewide comparison reported 2002 – 2003 changes for off-site disposal/treatment, off-site recycling, and total releases and transfers as 1.62%, -10.2% and -0.46% respectively. These should have been -3.94%, -10.3% and -1.72%, respectively and are reflected in the updated Table 1.

These changes appear on pages i and iv in the Executive Summary and page 13 in the report body. Changes from the original issue have been noted in red and, where possible, the old text highlighted in red and lined out.

Executive Summary

Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) provides for the collection and public release of annual Toxic Release Inventory (TRI) reports regarding the release of toxic chemicals within the community. Since the first TRI reports were made available to the public in 1987, TRI has expanded to include information on waste generation, additional reportable chemicals and new industrial sectors (based on Standard Industrial Classification (SIC) codes). The most recent significant expansion, the persistent, bioaccumulative toxic (PBT) chemicals rule, is in effect for its fourth year. Under this rule, the threshold quantities for several chemicals were significantly reduced and other chemicals were reportable under TRI for the first time in 2000. Reporting year 2001 recognized lead and lead compounds as PBT chemicals and, with a few exceptions, reduces the reporting threshold for lead to 100 pounds. This year's chemicals and thresholds remain the same as last year.

For reporting year 2003, Ohio EPA received nearly 6,300 TRI reports from about 1,650 facilities. While about one-third of these facilities reported a single chemical, the average number of chemicals reported was four. Table 1 compares reporting years 2002 and 2003 TRI data for all reporting facilities.

Table 1: Comparison of 2002 and 2003 TRI Data

Comparison	2002 Amount	2003 Amount	Change
Releases to Air	133,989,734	132,881,573	-0.83%
Releases to Water	7,731,746	6,668,590	-13.8%
Deepwell Injection	29,605,594	29,289,527	-1.07%
Releases to Land On-Site	37,710,006	37,595,966	-0.30%
Discharges to POTW	17,154,312	17,384,445	1.34%
Off-Site Disposal / Treatment	68,244,867	65,558,181	-3.94%
Total Releases and Transfers	294,436,259	289,378,282	-1.72%
Energy Recovery On-Site	104,618,827	75,382,604	-27.9%
Energy Recovery Off-Site	53,803,977	42,787,677	-20.5%
Recycling On-Site	156,812,790	167,678,115	6.93%
Recycling Off-Site	164,940,467	147,910,847	-10.32%
Treatment On-Site	271,304,757	429,658,952	58.37%
Number of Chemicals Reported	322	316	-1.86%
Number of Facilities Reporting	1,701	1,647	-3.17%
Number of Form Rs	5,643	5,558	-1.51%
Number of Form As	792	734	-7.32%

Total releases and transfers decreased by about 1.7% between 2002 and 2003, with the number of reporting facilities also decreasing slightly. There is significant variation among the various releases and transfers among the reporting facilities. Individual increases or decreases are attributable to many factors including changes in production, accuracy and types of

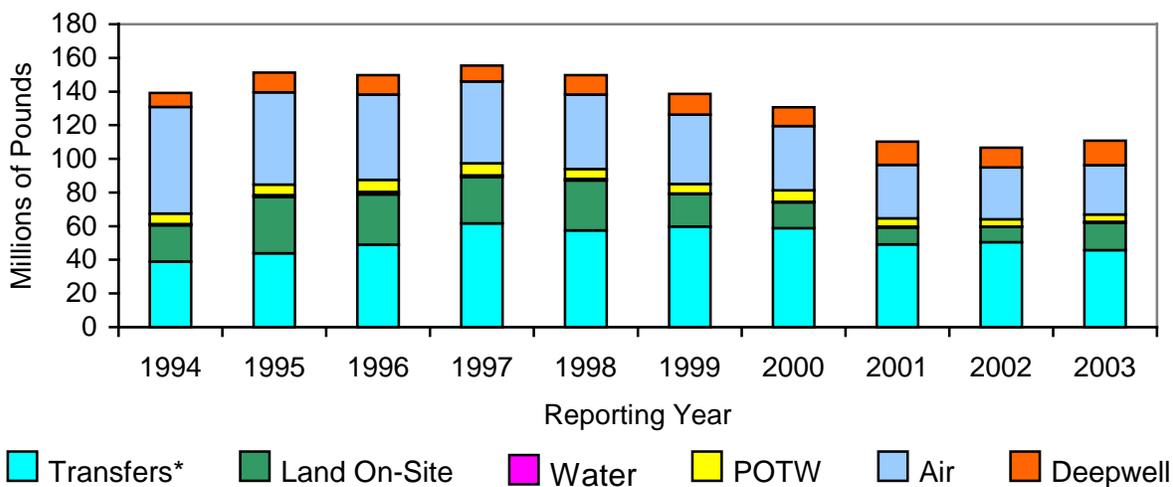
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measurement used, and pollution prevention efforts to minimize releases and develop uses or find markets for what might otherwise be a waste. For many Resource Conservation and Recovery Act (RCRA) facilities, which became subject to TRI reporting in 1998, minor waste stream and market changes greatly affect TRI reporting. There are subtle differences in what makes a material a "waste" and whether it is treated, recycled or used for energy recovery.

The information presented here summarizes the information collected under Ohio's TRI program. Changes, some significant, are routinely processed as facilities perform "self-audits" or otherwise discover errors. Sometimes such reassessments are prompted by seeing data presented in different ways in various reports or re-reviewing the data in response to citizen inquiries, subsequent to their review and evaluation of such data. Ideally, state and federal TRI data should be the same as facilities are required to submit TRI reports to both Ohio EPA and U.S. EPA. However, since the state and federal databases are maintained and updated separately, changes are not always made at the same time and some variation is always possible.

Ohio EPA contacted many of the facilities which reported significant changes in waste management or releases between 2002 and 2003 to determine the reasons for the changes. The following information was developed through review of summary data and facility responses, and is included to provide better insight to the dynamics of the annual reporting. We invite you to contact us or the individual reporting facilities for more information concerning toxic releases or other waste management.

Figure 1: 10-Year TRI Trends
(Original Industries and Chemicals Only)



* - Transfers off-site for disposal and treatment.

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- Air Releases** Overall air releases for 2003, 132.9 million pounds, were down less than 1% from 2002. Power plants again reported some of the largest TRI releases, primarily hydrochloric and sulfuric acid aerosols resulting from combustion of coal. The largest ten power plant emitters collectively released over 60 million pounds. FirstEnergy's Sammis Plant was the largest single reporter, with 14.9 million pounds of air releases, up 1.7 million pounds due to increased electricity production. Cardinal Operating Company's Cardinal Plant, the third largest air release reporter showed the largest increase, 1.9 million pounds or approximately 25%. The biggest decrease was also a power plant, Ohio Valley Electric's Kyger Creek Plant, down 1.2 million pounds. Power plant increases or decreases were somewhat evenly split. Seven of the top ten increases were power plants reporting an average increase of about 750,000 pounds. Six of the top ten decreases were also power plants, with an average decreases in excess of 500,000 pounds.
- Water Releases** Releases to Ohio's waterways were down for the third consecutive year. The 2003 reduction of approximately 13% exceeded the prior reporting year reduction of 7%. Nitrates, generated from the treatment of nitric acid, remain the most released chemical into Ohio waterways. As in previous years, AK Steel's Zanesville and Coshocton facilities led the state both in releases and reductions in releases. AK Steel's Coshocton facility release of 3.1 million pounds is almost 20% less than last year. Problems with on-site wastewater treatment necessitated off-site waste treatment, resulting in a decrease of the released nitrates into the Coshocton River. AK Steel's Zanesville facility reductions were primarily production related.
- Deepwell Injection** Three Ohio facilities reported deepwell injection – BP Chemicals in Lima (Allen County), Vickery Environmental Services in Vickery (Sandusky County) and Arvesta Corp. in Perry (Lake County). As a Resource Conservation and Recovery Act (RCRA) facility, Vickery reports TRI listed components of hazardous waste. These include over 6 million pounds of nitric acid, 3.5 million pounds of hydrogen fluoride and 1 million pounds of chromium and chromium compounds. BP Chemicals injected almost 10 million pounds of waste acetonitrile. BP notes that this increased release of acetonitrile is due to extra purification efforts required for higher purity. A slight change in the concentration of the deepwell stream results in a dramatic increase in TRI reporting. (BP manufactures various chemicals including acetonitrile. These are sold as feed stocks for the manufacture of plastics and pharmaceuticals.)
- Land Releases On-Site** Releases to land on-site remained almost constant from 2002 levels. There are significant variation among individual reporting facilities. Envirosafe Services, a RCRA facility in Lucas County, reported a decrease in excess of 8 million pounds, a reduction of over 50%, primarily from zinc waste in electric arc furnace dust. Envirosafe attributes this change to significantly increased recycling of this waste stream by their customers.

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Land Releases On-Site (cont.)

Millennium Inorganic Chemicals reported more than 5.5 million pounds of on-site disposal, primarily manganese. This reported release was due to a small concentration change which resulted in a concentration above the TRI de minimus concentration, triggering TRI reporting. ISG Cleveland also reported significantly increased on-site disposal, due to increased production and on-site disposal of wastewater treatment sludge and bag house dust, containing over 2 million pounds of zinc compounds. 2003 was the first full year of production ISG Cleveland reported under TRI. Overall releases were 3.5 million pounds while on-site land was 2.6 million pounds. On site release of manganese, zinc and their respective compounds accounts for over half of the total land releases on-site.

POTW Releases

TRI reportable chemicals released to Ohio's Publicly Owned Treatment Works (POTWs) were up slightly for 2003, this 1.3% increase was due to both revisions of 2002 TRI reports which lower the total releases in 2002 and increases in 2003 reported releases. Hamilton County facilities remain among the largest dischargers to POTWs. The four largest 2003 dischargers release to Cincinnati's Metropolitan Sewer District, where such discharges are subject to terms and surcharges of the municipal pretreatment program. Grace Davidson's 450,000 pound increase is attributable to increased production. Similarly, PMC Specialties Group attributed a nearly 68% increase to a business recovery, greater production and a product mix that led to the generation and discharge of more reportable chemicals. GFS Chemicals in Columbus reported an almost 200,000 pound increase, largely nitrates, due to increased product demands.

Off-Site Disposal and Treatment

~~Statewide transfers off-site for disposal and treatment were down about 4%, approximately 2.7 million pounds. Envirote of Ohio (Stark County) led the state in increases at over 4 million pounds while~~ Enviro-safe of Ohio (Lucas County) led in decreases with over 8 million pounds. ~~Both Envirote and Enviro-safe is a commercial hazardous waste treatment and disposal facility.~~ AK Steel's Mansfield Works, BP Chemical Lima, and Millennium Inorganic Chemicals' two Ashtabula facilities led the manufacturing sector with average increases over 3 million pounds. AK Steel's Mansfield Works increased disposal is primarily chromium and zinc compounds, largely from electric arc furnace dust, which was sent to Enviro-safe instead of a recycler as a business decision.

Gabriel Performance Products (Ashtabula County) significantly reduced its off-site treatment by installing a methanol recovery column, allowing increased on-site recycling. Gabriel also stopped production of two products due to market conditions.

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Energy Recovery On-Site

Statewide energy recovery on-site showed one of the more significant changes from 2002, a reduction of almost 30% (over 30 million pounds). This is primarily due to reductions at two facilities: Sunoco R&M's Haverhill Plant (Scioto County) at 17 million pounds and Lafarge North America/Systech Environmental (Paulding County) at 12 million pounds.

Lafarge North America/Systech Environmental significantly reduced energy recovery on-site for 2003. Systech is a RCRA permitted facility for the storage and blending of wastes into waste-derived fuel. Last year, the facility reported an increase of 20 million pounds, while this year on-site energy recovery is down over 12 million pounds. The waste-derived fuel is used to operate the Lafarge cement kiln, and changes in customers results in variations in the materials that make up the waste-derived fuel, which can result in significant variations in TRI Reporting. Perstorp in Lucas County reported a 1 million pound increase in energy recovery on-site, noting they are now using methanol as fuel for a process boiler as part of their waste minimization efforts.

Energy Recovery Off-Site

Overall, there was about a 20% decrease in off-site energy recovery from 2002 to 2003. RCRA facilities lead in such changes. Onyx Environmental Services, which shows a reduction of approximately 15 million pounds in off-site energy recovery, is a RCRA facility. As many such facilities note, the hazardous waste industry is ever-changing, as the types and amounts of chemicals received greatly depends on customer requirements.

Recycling On-Site and Off-site

Total recycling of reportable chemicals (on-site plus off-site) was down less than 2% between 2002 and 2003. However, with an increase of almost 7% in on-site recycling and a decrease of just over 10% in off-site recycling, it appears facilities are finding more efficient, cost effective and innovative ways to recycle at the facility rather than transfer the chemicals to a broker for off-site recycling.

Bailey-PVS Oxides is a new facility, specializing in recycling steel mill pickle liquor waste to regenerate hydrochloric acid and iron oxides. They reported 15 million pounds of hydrochloric recycled for 2003. Thomas Steel Strip Corporation's (TSSC) releases are also related to recycling of steel processing hydrochloric acid. TSSC showed a 6.8 million pound increase due to a revised reporting methodology.

Techneglas in Columbus reduced on-site recycling by over 8 million pounds due to a curtailment in one area of production.

PBT Chemicals

Nearly 950 Form Rs for persistent bioaccumulative toxic (PBT) chemicals were submitted for 2003. The PBT chemical list consists of 16 individual chemicals and 4 chemical categories. The chemical categories are dioxin and dioxin like compounds, lead compounds, mercury compounds and polycyclic aromatic compounds (PACs). Of these 16 chemicals and 4 categories, lead, mercury and their compounds are listed as metals.

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PBT Chemicals (cont.)

The 4 PBTs with the largest volume of reported releases, transfers and treatment in Ohio for 2003 were (in descending order) lead and its compounds, pendimethalin, PACs, and mercury and its compounds. These, along with dioxins, are discussed below.

Nearly 600 reports were submitted for lead or lead compounds (which is about the same as 2002). Lead or lead compounds was reported from nearly every major SIC code classification required to report to TRI.

Pendimethalin is a selective herbicide used to control most annual grasses and certain broadleaf weeds in field corn, potatoes, rice, cotton, soybeans, tobacco, peanuts and sunflowers. It is also used on crops and residential lawns and ornamentals. Animal studies have show that pendimethalin has a low toxicity. It is slightly toxic if exposure is by ingesting contaminated food or water. It is also toxic if it gets in the eyes. Pendimethalin was reported by four facilities in 2003, two in SIC code 2875 (fertilizers, mixing only), in SIC code 3999 (manufacturing industries, not elsewhere classified) and in SIC code 4953 (RCRA Subtitle C refuse systems).

Most PACs and the individually listed benzo(g,h,i)perylene are constituents of fossil fuels. Other industrial processes are also sources of PACs, such as hot mix asphalt plants, asphalt roofing manufacturers, iron foundries, primary aluminum producers, coke ovens, pulp mills, Portland cement kilns and carbon black manufacturing. Over 150 Ohio facilities reported PACs and/or benzo(g,h,i)perylene in 2003.

Mercury or its compounds were reported by just over 100 facilities which is approximately the same number of reporters as in 2002. Reporting facilities were in many SIC groups, including power plants, paper mills, steel works, refuse systems, glass manufacturing and electric light manufacturing.

Dioxin and dioxin-like compounds were reported by just under 60 facilities which is down slightly from the number of reporters in 2002. Those industries reporting dioxin and dioxin-like compounds include fossil fueled power plants, paper mills, foundries and petroleum refiners. Small quantities of dioxins are formed as a result of combustion processes, chlorine bleaching of pulp and paper, certain types of chemical manufacturing and processing, and other industrial processes.

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What's New This Year

Form R Changes

In reporting year 2003 U.S. EPA implemented significant changes to the reporting form (Form R) to provide more detail for some releases. These changes are summarized below:

- In Part II, Section 5.5.3, "Surface Impoundments" was divided into two sections, 5.5.3A, "RCRA Subtitle C Surface Impoundments" and 5.5.3B, "Other Surface Impoundments."
- In Part II, Section 8.1 was divided into was divided into four sections: 8.1a "Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills," 8.1b, "Total other on-site disposal or other releases," 8.1c, "Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills," and 8.1d, "Total other off-site disposal or other releases."
- The waste management codes ("M codes") used in Column C of Section 6.2 of the form was updated to provide more detail for some of the waste management – disposal activities. M63 ("Surface Impoundment") was deleted and replaced by M codes M66 ("RCRA Subtitle C Surface Impoundment") and M67 ("Other Surface Impoundments"). M71 ("Underground Injection") was deleted and replaced by M codes M81 ("Underground Injection to Class I Wells") and M82 ("Underground Injection to Class II-V Wells").

Electronic Facility Data Release (e-FDR)

In response to requests from stakeholders for more timely annual TRI data, U.S. EPA made the 2003 TRI data available prior to the Public Data Release. This pre-release data allows the public to access individual reports for reporting facilities, through the Internet. This data has not been fully reviewed by U.S. EPA prior to release. Each year, both Ohio EPA and U.S. EPA review the TRI reports to identify incomplete submissions, math errors, and potential over or under reporting. The reports which are available through the e-FDR, U.S. EPA's electronic facility data release, may be revised prior to Ohio EPA and U.S. EPA's formal data release. The e-FDR is available at <http://www.epa.gov/tri-efdr> until the formal data release, at which time the fully verified data, analysis and trends will become available through TRI Explorer, Envirofacts, the TRI Web site and the TRI report.

Understanding and Using TRI Information

SARA Overview

The Superfund Amendments and Reauthorization Act, "SARA," was passed in 1986. SARA is also known as the Emergency Planning & Community Right to Know Act, or "EPCRA." It was passed in part due to concerns following an incident which occurred in Bhopal, India. In December, 1984 a methyl isocyanate (MIC) gas leak from a plant operated by Union Carbide India Limited injured or killed thousands of people. SARA required that a chemical emergency response network be expanded to ensure national coverage. State Emergency Response Commissions (SERCs) coordinating with Local Emergency Planning Committees (LEPCs) and local fire departments are responsible for this network. SARA also created or updated four reporting requirements to ensure that chemical storage, use and release information was available to the potential emergency responders and the community. These reporting programs overlap depending upon whether the materials are "oils," "hazardous chemicals," "hazardous substances," "extremely hazardous substances" (EHSs) or toxic chemicals. Brief explanations of each requirement, including the SARA and enabling Ohio Revised Code (ORC) citations, are listed below.

EHS Notification (SARA 301-303, ORC 3750.02-.05) This notification provision is triggered by storage of one or more EHSs. There are 360 listed EHS chemicals, which are considered immediately dangerous to life or health. Chlorine gas is an example. A specific "threshold planning quantity" (TPQ) is specified for each chemical. TPQs vary, and, while 500 pounds is an approximate average, the TPQ may be as low as one pound. When a facility meets or exceeds the TPQ for a chemical, it must notify the response community (SERC, LEPC and local fire department) and designate contacts and coordinators to pre-plan emergency response activities and serve as emergency contacts. Contact the "Right-To-Know"/SERC Unit in the Division of Air Pollution Control (DAPC), for assistance or for a referral to the appropriate LEPC (614-644-2260).

Emergency Release Notification (SARA 304, ORC 3750.06) Release or spill reporting may be required when there is an offsite release of oil, a hazardous substance, or an extremely hazardous substance. The reporting triggers, known as the "Reportable Quantity" (RQ) varies, ranging from one to 5,000 pounds. The definition of "facility" includes trucks and tankers. Gasoline is included under the definition of "oil" and oil is reportable at 25 gallons or at any quantity entering the waters of the State. Spills or releases should be reported upon discovery to the Ohio EPA/SERC at 1-800-282-9378 or 1-614-224-0946. Hazardous substance spills may require National Response Center reporting. The Ohio EPA Spill Unit of the Division of Emergency and Remedial Response (DERR) can provide additional information (614-644-2080).

Chemical Inventory Reporting (SARA 311-312, ORC 3750.07-.08) The location, quantity, storage conditions and properties of EHSs or "hazardous chemicals" (hazardous due to OSHA hazard communication attributes) must be reported. Such reporting for EHSs is triggered when stored at quantities greater than 500 pounds or the chemical-specific TPQ (whichever is lower). Reporting for hazardous chemicals, a large universe determined by the attributes noted on the Material Safety Data Sheet (MSDS), is triggered by the storage of 10,000 pounds. Like EHS notifications, reports must be submitted to the SERC, LEPC and local fire department.

Ohio SERC forms (or Tier II forms) are used for "inventory reporting" and are due March 1st for the prior calendar year. Contact the "Right-To-Know"/SERC Unit in DAPC (614-644-2260) or the appropriate LEPC for assistance.

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Toxic Release Inventory Reporting (SARA 313, ORC 3751) Facilities within SIC codes 20-39 and seven other selected non-manufacturing SIC codes with 10 or more employees or equivalent are required to annually report "Form R" or "Form A" information if they manufacture, process or otherwise use any listed chemicals in amounts exceeding the reporting threshold. TRI "toxic" chemicals include 582 individually listed chemicals and 30 chemical categories, including 3 delimited categories containing 58 chemicals, for a total of 667 separate chemicals. Reported TRI information includes chemical use, release, recycling, energy recovery and treatment information, as well as pollution prevention activities at the facility. TRI reporting is on a calendar year basis with reports due July 1st for the prior calendar year. Reported information is readily available from Ohio EPA or U.S. EPA TRI Web sites (see page 27 for Web site information). The Ohio EPA TRI Unit can be contacted at 614-644-2270.

Ohio's TRI Program

In 1988, the Ohio General Assembly passed the Ohio Right-to-Know Act, Substitute Senate Bill 367. This law provided for state implementation of EPCRA. Under this law, Ohio EPA is charged with the administration of Section 313 (Ohio Administrative Code 3745-100). The law gave Ohio EPA authority to enforce Section 313 and established filing fees for covered facilities to support the TRI Program. Ohio EPA's Division of Air Pollution Control coordinates the TRI Program.

Ohio EPA inspects potential non-reporting facilities each year. Typically, approximately 5% of the inspections result in enforcement actions against facilities which did not properly file TRI reports.

Who Must Report

Facilities are required to report if they meet the following requirements (they must meet all three):

1. Has 10 or more full-time employees (or the equivalent of 20,000 hours worked per year).
2. Is included in the manufacturing facilities in Standard Industrial Classification (SIC) codes 20 through 39 or in any of seven non-manufacturing industrial sectors added on May 1, 1997. The non-manufacturing industrial sectors are: metal mining, coal mining, coal and oil-fired electricity generating facilities, commercial hazardous waste treatment facilities, chemicals and allied products (wholesale), petroleum bulk stations (wholesale), and solvent recovery services. Reports for these non-manufacturing industrial sectors were first filed July 1, 1999, covering calendar year 1998.
3. Manufactured, imported, processed or otherwise used a reportable toxic chemical in quantities exceeding the applicable threshold established by U.S. EPA for that year, chemical and usage. For most reportable chemicals, the thresholds for manufacturing, importing or processing are 25,000 pounds and "otherwise use" is 10,000 pounds. PBT chemicals have notably lower reporting thresholds of 100 pounds or less.

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Facilities, which are defined as “all buildings, equipment, structures, and stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person,” must submit a Form R for each listed chemical used in amounts that exceed the reporting threshold, even if the chemical is not released to the environment.

Facilities using less than one million pounds of a listed toxic chemical in a calendar year and having less than 500 pounds of that toxic chemical as a reportable amount (released to the environment, treated, recycled or used for energy recovery) can file a certification statement (Form A) instead of the more detailed Form R. Form A cannot be used for reporting PBT chemicals.

Reportable Chemicals

The list of reportable toxic chemicals has evolved since the enactment of Section 313. Over 600 toxic chemicals and chemical categories (667 individual chemicals) are currently subject to reporting under Section 313. These chemicals vary widely in form (solid, liquid and gas) and in toxicity.

The Administrator of U.S. EPA has the authority to modify the list of chemicals that must be reported. Petitions to add and delete chemicals have been submitted by industry, environmental groups, and the state governors. U.S. EPA evaluates chemicals that may be added or deleted from the list of reportable chemicals. Chemicals are removed from the list because they have not been shown to cause significant adverse human health or environmental effects. The list of reportable chemicals can be obtained from Ohio EPA, U.S. EPA, or on the Internet at <http://www.epa.gov/tri/chemical/index.htm> and select “Current List of TRI Chemicals.”

Chemical Qualifiers

Some TRI reportable chemicals have qualifiers associated with them. Most TRI chemicals are not listed with a qualifier, and are subject to reporting in all forms that they may be manufactured, processed, or otherwise used. TRI reportable chemicals with qualifiers are discussed below:

<u>Chemical</u>	<u>Qualifier</u>
Aluminum	Only fume or dust is reportable.
Aluminum oxide	Only fibrous forms are reportable.
Ammonia (aqueous)	10% of total aqueous ammonia from water dissociable salts and other sources is reportable (100% of anhydrous ammonia is reportable).
Asbestos	Friable forms (can be crumbled or reduced to powder with hand pressure) only.
Chromium compounds	Reportable only if not chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the chromite ore processing residue (COPR).
Dioxin and dioxin-like compounds	PBT chemicals reportable if manufactured at the facility or processed or otherwise used when present as contaminants in a chemical but only if they were created during the manufacture of that chemical. Reported in grams instead of pounds (454 grams = 1 pound).

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Chemical	Qualifier
Hydrochloric acid	Acid aerosols only.
Isopropyl alcohol	Reportable only if manufactured by the strong acid process.
Lead and lead compounds	Reportable as a PBT (100 pound threshold) unless contained in a stainless steel, bronze or brass alloy (in which case it is reportable at a 25,000 pound processing threshold).
Nitrate Compounds	Water dissociable; reportable only when in aqueous solution.
Phosphorus	Only the yellow and white forms are reportable.
Saccharin	Only manufacturers must report.
Sulfuric acid	Acid aerosols only.
Vanadium	Only reportable if not an alloy constituent.
Zinc	Only fume or dust is reportable.

TRI Data Uses and Limitations

Users of the TRI data should be aware of the limitations of the data in order to accurately interpret its significance. The TRI data has some significant limitations:

- TRI covers only certain manufacturing and seven non-manufacturing industries. Many other industries release toxic chemicals into the environment. The seven additional non-manufacturing industrial sectors reported for the sixth time on July 1, 2004.
- For reporting year 2003, TRI covers over 600 toxic chemicals and chemical categories. The TRI data does not represent all chemicals used by all industry.
- Releases are reported as total annual releases without reference to frequency or duration. The annual release totals alone are not sufficient to assess the health or environmental impact of the toxic chemicals released.
- The majority of releases are based on estimates. Facilities are required to base releases on monitoring data if it is available. When monitoring data is not available, estimates are used. Estimates result in significant variability among reporting facilities.
- High volume releases of relatively non-toxic chemicals may appear to be a more serious problem than lower volume releases of highly toxic chemicals, when just the opposite may be true. **TRI data summaries must be interpreted with care.**
- The TRI report contains information regarding the release of chemicals, not the public's exposure to the chemicals. Some chemicals break down when exposed to the environment. Some chemicals disperse rapidly when released, eliminating their threat to public health and to the environment. Other highly toxic chemicals may not disperse when released. Disposal of toxic chemicals in underground injection wells does not expose the public since the material is injected

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thousands of feet below the ground. Also, off-site transfers may not expose the community to chemicals. Screening risk assessments must be completed before health and environmental assessments can be made.

- The addition of non-manufacturing industrial sectors can lead to double counting of toxic releases. To calculate total releases and transfers, Ohio EPA identified transfers off-site to a facility which reported TRI releases of the same chemical, and subtracted the transfer off-site from the total releases. If the off-site location name or permit number did not match a reporting facility, the transfer off-site was included in the total releases and transfers. Inconsistent reporting of facility names can lead to double counting.

Ohio EPA conducts extensive data quality efforts to make every attempt to ensure that the data compiled in this report accurately reflects the data reported by the facilities; however, we acknowledge the possibility of errors due to data entry or problems with the reporting software. Because the TRI data is based on estimates, facilities are encouraged to revise their reports when the estimates are improved.

TRI Rule Changes

While no new rules were applicable for this reporting year, there are proposed rules to simplify and streamline the reporting process and to adopt the North American Industry Classification System (NAICS). NAICS is a new industry classification system that could replace the Standard Industrial Classification (SIC) system that has traditionally been used. The following list summarizes significant changes that U.S. EPA has finalized in the past several years.

Federal Register/Date	Title	Summary
66 FR 10585 / February 16, 2001	Lead and Lead Compounds; Lowering of Reporting Thresholds; Delay of Effective Date	Delayed (by 60 days) the effective date of this rule in accordance with the memorandum of January 20, 2001, from the Assistant to the President and Chief of Staff, entitled "Regulatory Review Plan."
66 FR 4500 / January 17, 2001	Lead and Lead Compounds; Lowering of Reporting Thresholds	Lowered reporting thresholds to 100 pounds for lead and all lead compounds except for lead contained in stainless steel, brass, and bronze alloys.
65 FR 39552 / June 26, 2000	Phosphoric Acid	Deleted phosphoric acid from the list of chemicals subject to reporting requirements under TRI.
64 FR 58666 / October 29, 1999	Persistent Bioaccumulative Toxic (PBT) Chemicals; Lowering of Reporting Thresholds for Certain PBT Chemicals; Addition of Certain PBT Chemicals	Lowered the reporting thresholds for certain persistent bioaccumulative toxic (PBT) chemicals subject to TRI reporting. Added a category of dioxin and dioxin-like compounds to the TRI list of toxic chemicals and established a 0.1 gram reporting threshold for the category. Added certain other PBT chemicals to the TRI list of toxic chemicals and established lower reporting thresholds for these chemicals. Removed the fume or dust qualifier from vanadium and added all forms of vanadium with the exception of vanadium when contained in alloys. Also added vanadium compounds to the TRI

Understanding and Using TRI Information

Federal Register/Date	Title	Summary
64 FR 58666 / October 29, 1999 (cont.)	Persistent Bioaccumulative Toxic (PBT) Chemicals; Lowering of Reporting Thresholds for Certain PBT Chemicals; Addition of Certain PBT Chemicals	list of toxic chemicals. However, EPA did not lower the reporting thresholds for either vanadium or vanadium compounds.
63 FR 19838 / April 22, 1998	Deletion of Certain Chemicals	Deleted several chemicals and chemical categories from the list of chemicals subject to reporting. Section 372.65 was amended by deleting the entries for 2-bromo-2-nitropropane-1,3-diol, dimethyldichlorosilane, 2,6-dimethylphenol, methyltrichlorosilane, and trimethylchlorosilane under paragraph (a), and deleting the entire CAS No. entries for 52-51-7, 75-77-4, 75-78-5, 75-79-6, and 576-26-1 under paragraph (b).
62 FR 23834 / May 1, 1997	Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use	Added seven industry groups to the list of facilities subject to TRI reporting requirements. These industry groups are metal mining, coal mining, electric utilities, commercial hazardous waste treatment, chemicals and allied products-wholesale, petroleum bulk terminals and plants-wholesale, and solvent recovery services. Revised the interpretation of the threshold activity, "otherwise use" to include treatment for destruction, disposal, and waste stabilization.
59 FR 61432 / November 30, 1994	Addition of Certain Chemicals	Added 286 chemicals and chemical categories, including 39 chemicals as part of two delineated categories, to the list of reportable toxic chemicals. Addition of these chemicals and chemical categories was based on their acute human health effects, carcinogenicity or other chronic human health effects, and/or their adverse effects on the environment. Reporting for these chemicals and chemical categories was required beginning with the 1995 calendar year.
59 FR 61488 / November 30, 1994	Alternate Threshold for Facilities With Low Annual Reportable Amounts	Allows reporting TRI chemicals on a simplified certification form (Form A) if the amount of the chemical manufactured, processed or otherwise used is not greater than a million pounds and the reportable amount is less than 500 pounds in that year.

Understanding and Using TRI Information

Ohio EPA Programs Related to TRI Chemicals

The availability of TRI data has increased awareness of toxic chemicals within Ohio, and has focused attention on the reduction and management of these chemicals. TRI does not mandate the control of toxic releases or require reduction of the releases of toxic chemical or chemical usage. There are numerous other programs within Ohio EPA that directly impact the management of TRI chemicals through the issuance of permits or through other regulatory or non-regulatory activities. Most releases reported under TRI are regulated through air, water, and/or land disposal permits. The following descriptions provide an understanding of how some of these programs contribute toward reducing TRI releases, waste generation, and the risks associated with toxic chemicals.

Pollution Prevention: Ohio EPA's Office of Pollution Prevention (OPP) works with companies on a voluntary, non-regulatory basis to help them modify their operating processes to generate less pollution in a cost-effective and technically feasible manner. OPP provides several services to industrial facilities. OPP provides free on-site and other types of technical assistance for pollution prevention activities. Copies of hundreds of pollution prevention documents are available upon request or electronically through the Internet at <http://www.epa.state.oh.us/opp>. OPP provides free assistance with completing pollution prevention plans and provides assistance in identifying and implementing pollution prevention credit projects to mitigate portions of environmental enforcement penalties in conjunction with other Ohio EPA Divisions and the Ohio Attorney General's Office. OPP also provides recognition for pollution prevention.

Division of Surface Water: Ohio EPA's Division of Surface Water (DSW) regulates industries which discharge toxic chemicals to Publicly Owned Treatment Works or POTWs through its pretreatment program. These industries are regulated by the community if the community has a state-approved pretreatment program, otherwise, Ohio EPA directly regulates these industries. In either case, significant industrial facilities are issued permits which contain discharge limitations as well as requirements for monitoring the waste streams. Noncomplying facilities face enforcement action by either the community or Ohio EPA.

DSW regulates direct surface water point discharges in Ohio primarily through the issuance of National Pollutant Discharge Elimination System (NPDES) permits. Of the approximately 400 pollutants regulated by NPDES permits, 126 have been designated as priority pollutants under the Clean Water Act. Approximately 80 of these are TRI chemicals.

Division of Drinking and Ground Water: Ohio EPA's Division of Drinking and Ground Water (DDAGW) regulates facilities which use underground injection in Ohio. All deep injection wells are permitted and routinely monitored by Ohio EPA. These permits include stringent requirements for monitoring pressures, volumes injected, and mechanical integrity of the wells.

Division of Hazardous Waste Management: Ohio EPA's Division of Hazardous Waste Management (DHWM) regulates generators of hazardous waste and facilities which treat, store, or dispose of such waste. Ohio EPA assigns an identification number to hazardous waste handlers regulated under RCRA. Facilities using a surface impoundment to dispose of TRI chemicals may also fall under the regulations of the Clean Water Act and be regulated by the Division of Surface Water. Not all TRI chemicals are considered hazardous under RCRA. Some discharges to land may be

Understanding and Using TRI Information

considered solid waste, which is not regulated as hazardous. Large quantity generators and facilities that have a permit to treat, store, or dispose of RCRA-regulated waste must submit an Annual Hazardous Waste Report to DHWM.

Division of Air Pollution Control: Ohio EPA's Division of Air Pollution Control (DAPC) regulates new sources of toxic air emissions through the air permitting program. Each potential new source of air toxics undergoes a technical evaluation through which each toxic chemical's potential threat to human health and the environment is reviewed.

Six TRI chemicals are currently regulated under U.S. EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP). They are benzene, asbestos, inorganic arsenic, vinyl chloride, beryllium and mercury. U.S. EPA creates NESHAP emission standards for air pollutants that may pose a serious health hazard on a national level, but are not covered by the National Ambient Air Quality Standards. The National Ambient Air Standards are levels of air quality established by U.S. EPA to protect the public and the environment. These levels have been adopted for ozone, lead, nitrogen dioxide, sulfur dioxide, particulate matter, and carbon monoxide.

The Clean Air Act Amendments of 1990 requires U.S. EPA to regulate 189 additional air toxic chemicals, 173 of which are on the TRI list. U.S. EPA regulates sources of air toxics by issuing maximum achievable control technology (MACT) standards for source categories of these air toxics. U.S. EPA was mandated to issue MACT standards for 40 source categories by November 1992, with all categories covered in 10 years. Ohio EPA has been delegated authority to administer this program in Ohio.

Section 112(r) of the Clean Air Act Amendments of 1990 created a risk management planning (RMP) program. The purpose of these regulations is to prevent accidental releases of regulated substances and to reduce the severity of those releases that do occur. A facility is subject to the regulation if they have any listed regulated substance above a given threshold in a single on-site process. Approximately 500 facilities in Ohio have filed risk management plans since 1999. These plans are updated every five years or as-needed when changes occur at the facility.

TRI Terminology

Chemical Abstracts Service Registry Number (CAS No.) - A numerical identification given to each unique chemical which aids in the identification of a chemical with multiple synonyms (e.g., phenol, CAS No. 108-95-2, is also known as benzenol, carboic acid, hydroxybenzene, izal, monohydroxybenzene, monophenol etc.). TRI chemical categories (e.g., zinc compounds) do not have a CAS No. and are assigned category codes by U.S. EPA (e.g., N982 for zinc compounds).

Discharge to Publicly Owned Treatment Works (POTWs) - A POTW is a wastewater treatment facility owned by a public authority such as a municipality or county. Some TRI facilities generate wastewater and discharge it through pipes or sewers to a POTW. At the POTW treatment of the chemical occurs through biodegradation by microorganisms and removal from the wastewater occurs if the chemical enters the sludge generated during the biodegradation process. Next, the treated wastewater is released to waters of the state. The sludge generated from the process may be incinerated, land-applied, or landfilled. Generally, chemicals that are easily utilized as nutrients by microorganisms, have a low solubility in water, or are volatile are

Understanding and Using TRI Information

treatable by the POTW. Not all TRI chemicals can be treated or removed by a POTW. So POTWs limit the industrial contribution of those pollutants.

Environmental Fate - The disposition, over time, of a chemical in the environment. The bioaccumulation of a chemical in fish or the decomposition of a chemical when exposed to sunlight are examples of environmental fate.

Manufacture - The production, preparation, compounding or importing of a TRI chemical, including the coincidental production of the chemical as an intermediate, by-product or impurity.

Otherwise Use - Any activity involving a TRI chemical that does not fall under the definition of manufacture or process. A chemical that is not intentionally incorporated into a product, like solvents that are used for parts cleaning, falls under the otherwise use category.

PACs – Polycyclic aromatic compounds. There are 21 chemicals that comprise the PAC category. Benzo(g,h,i)perylene, another PAC, is individually listed in the EPCRA list of chemicals. The PAC category is designated as “N590” in the chemical list. Most PACs are constituents of fossil fuels (coal and oil), but also come from other sources such as hot mix asphalt plants and asphalt roofing, iron foundries, coke ovens, primary aluminum producers, pulp mills, cement kilns and carbon black manufacturing. If a facility burns approximately 5000 gallons of No. 6 fuel oil in a year, it would meet the reporting threshold for PACs for that year.

PBTs – In October, 1999, U.S. EPA promulgated the final rule on persistent bioaccumulative toxic chemicals, or PBTs. The PBT chemicals contain several insecticide/pesticides along with the PACs discussed above, lead and mercury and their compounds and dioxin and dioxin-like compounds. For chemicals designated as PBTs, the reporting threshold has been significantly reduced (e.g., from 25,000 pounds to 100 pounds). Other requirements on PBT chemicals help assure accurate reporting of these chemicals (i.e., the de minimis exemption was eliminated, Form R, rather than the simplified Form A must be used, range reporting was eliminated and data can be entered in fractions of a pound).

Process - Preparation of a TRI chemical, after its manufacture, for distribution in commerce. Processing includes intentionally incorporating a chemical into a product or the reaction of a chemical to form another chemical or product.

Quantity Recycled Off-Site - The quantity of toxic chemical that was shipped for recycling, not the amount of chemical recovered at the off-site location.

Quantity Recycled On-Site - The quantity of toxic chemical recovered at the facility that generated it and made available for further uses.

Quantity Treated On-Site - The quantity of toxic chemical destroyed or converted to a chemical that is not reportable under TRI in on-site waste treatment operations.

Quantity Used for Energy Recovery - This is the quantity of toxic chemical that was combusted (on-site or off-site) in some form of energy recovery device, such as a furnace or a boiler. The toxic chemical should have a heating value high enough to sustain combustion. The use of a chemical as a fuel constitutes energy recovery.

Recycle - The process of capturing a useful product from a waste stream. Solvent recovery, metals recovery and acid regeneration are examples of recycling.

Understanding and Using TRI Information

Releases to Air - Releases to air are reported as stack or fugitive emissions. Stack emissions are releases to air that occur through stacks, vents or other confined air streams. Fugitive emissions are releases that are not through a confined air stream. Fugitive emissions include evaporative losses from surface impoundments, spills, and releases from building ventilation systems.

Releases to Land - Releases to land occur within the boundaries of the reporting facility. Releases to land include disposal of toxic chemicals in landfills, land treatment/application farming (in which a waste containing a listed chemical is applied to or incorporated in soil), surface impoundments (uncovered holding areas used to evaporate and/or settle waste materials), and other land disposal methods (such as waste piles).

Releases to Water - Releases to water include discharges to streams, rivers, lakes, and other bodies of water. Releases due to stormwater runoff are also reportable under TRI.

Standard Industrial Classification (SIC) Code - A four-digit code established by the Federal Office of Management and Budget used to describe the type of activities at a facility. The first two digits indicate the major industrial grouping, the last two digits describe a facility activity within in the industrial grouping. For example, a facility with SIC 2813 is grouped within “chemicals and allied products” (28) producing industrial gases. Facilities that engage in a variety of activities may possess multiple SIC codes.

Transfers Off-Site for Treatment and Disposal - Waste transferred off-site for disposal is generally either released to land at an off-site facility or injected underground. Toxic chemicals transferred off-site for treatment may be treated through a variety of methods including neutralization, incineration, and physical separation. These methods result in varying degrees of destruction of the chemical.

Underground or Deepwell Injection - Underground injection is the contained release of a fluid into a subsurface well for the purpose of waste disposal. Class I wells are used to inject liquid hazardous wastes or dispose of industrial and municipal wastewater beneath the lowermost underground source of drinking water.

Summary of Data

In 2002, nearly 300 million pounds of toxic chemicals were reported as having been released to the environment and transferred off-site for treatment or disposal. The data presented for 2002, including the listings of top companies, chemicals and counties, reflects the TRI data reporting due July 1, 2003. The TRI Unit continually reviews this data and works with reporting facilities to assure data quality. Additional and revised data provided subsequent to July 1st has been incorporated into this report to the extent possible considering publication deadlines. Changes to the list of reportable chemicals create difficulties in presenting historical TRI data in an accurate and understandable form. This report presents the data in the following manner:

- Releases for chemicals which were “redefined” were modified in this report to reflect the change if it did not require a case by case evaluation. Non-aerosol forms of hydrochloric acid are no longer reportable. Therefore, only air releases of hydrochloric acid were included in the TRI data presented in this report. Ammonia was “redefined” for calendar year 1994; only 10% of aqueous ammonia is now reportable. Because this change requires a case-by-case evaluation, past years’ data was not modified. Ammonium nitrate was delisted for calendar year 1995. However, the ammonia portion is still reportable and the nitrate portion is reportable as nitrate compounds. Due to the change in the reporting requirement for ammonia in 1994, only ten percent of the ammonia portion of ammonium nitrate was reportable for calendar year 1995. Only ten percent of the ammonia portion of ammonium nitrate was included in the data presented in this report.
- To accurately represent trends in the toxic releases, the chemicals which were added, “redefined” or delisted, and the expansion industries were not included in the calculation of trends for the executive summary and the figures representing trends within this report. Table 2A represents the TRI data as it was reported each year. Table 2B represents the TRI data used to calculate trends. All Phase 1 expansion chemicals, delisted chemicals or “redefined” chemicals, and the expansion industries were excluded from the data in Table 2B, so that the historical trends analysis would reflect true changes in the reported releases and not reflect changes in the reporting requirements.
- Throughout this report, TRI data are referred to as “total releases and transfers.” Total releases and transfers refer to on-site releases to air, water, land; deepwell injection; discharges to POTWs; and off-site transfers for treatment and disposal only. The Pollution Prevention Act of 1990 added the reporting of transfers off-site for recycling and energy recovery. For the purpose of this report, transfers for recycling and energy recovery are grouped separately from transfers for treatment and disposal.
- The addition of hazardous waste treatment facilities, and other non-manufacturing industrial sectors has resulted in the potential to double count releases. Manufacturing facilities report transfers off-site to these non-manufacturing facilities, and, in turn, the non-manufacturing facilities report their releases to the air, water, land and transfers off-site. To calculate total releases and transfers within the state, transfers off-site by manufacturing facilities to facilities which reported the same chemical were not included in the data presented as transfers off-site or total releases and transfers. To calculate county totals, transfers off-site by manufacturing facilities to facilities located in the same county which reported the same chemical were not included in the data presented as transfers off-site or total releases and transfers.

Summary of Data

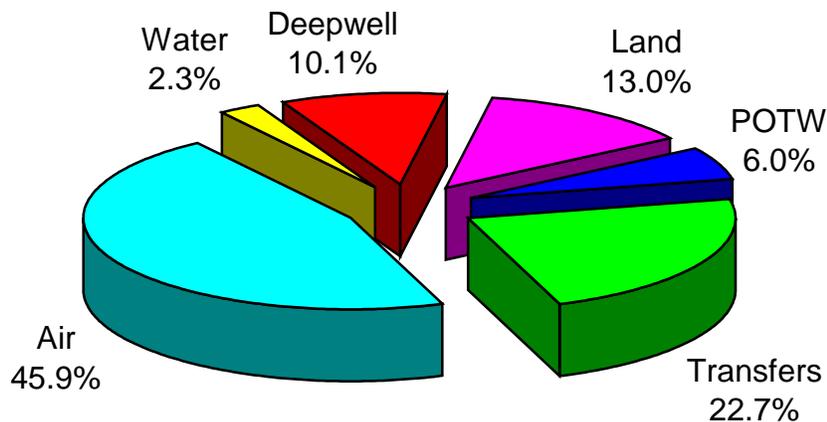
Statewide totals of on-site releases, off-site transfers, and on-site waste management for reporting years 1994 to 2003 are provided in Table 2A and 2B. Table 2A represents all data including the data for delisted, added, and modified chemicals and the expansion industrial sectors. Table 2B does not include data for: (1) chemicals that have been delisted, added or modified; and (2) new industrial sectors which were added to TRI in order to allow for historical trend analysis.

Table 2A: 10-Year-Trend: All Facilities and Chemicals (millions of pounds)

Comparison	1994	1995	1996	1997	1998*	1999	2000	2001	2002	2003
Releases to Air	81.0	76.4	73.5	70.4	162.5	150.9	145.5	121.9	134.0	132.9
Releases to Water	1.2	7.6	7.9	7.8	8.0	8.7	9.4	8.4	7.7	6.7
Deepwell Injection	14.5	14.5	13.7	11.6	28.8	27.6	30.3	32.0	29.6	29.3
Releases to Land On-Site	21.7	33.6	30.0	27.8	94.2	70.5	46.8	35.6	37.7	37.6
Discharges to POTW	8.5	18.7	18.8	19.2	19.3	19.8	23.1	18.7	17.2	17.4
Off-Site Disposal / Treatment	47.0	45.8	51.1	63.5	77.9	77.3	77.2	83.8	68.3	65.6
Total Releases & Transfers	173.9	196.5	195.0	200.2	390.8	354.8	332.3	300.4	294.4	289.4
Off-Site Energy Recovery	37.2	38.0	40.7	33.0	101.4	60.0	46.3	41.0	53.8	42.8
On-Site Energy Recovery	95.2	90.4	96.3	107.7	117.0	124.6	94.9	81.1	104.6	75.4
Off-Site Recycling	228.9	217.5	189.1	190.4	190.8	186.9	175.1	172.7	164.9	147.9
On-Site Recycling	263.7	348.7	322.3	215.9	288.5	233.7	223.0	195.5	156.8	167.7
On-Site Treatment	261.4	160.1	151.9	139.4	218.2	262.4	221.9	254.9	271.3	429.7
Reporting Facilities	1,720	1,692	1,653	1,643	1,725	1,731	1,747	1,774	1,701	1,647

* - First reporting year for 7 additional industrial sectors.

Figure 2A: 2003 Toxic Releases and Transfers

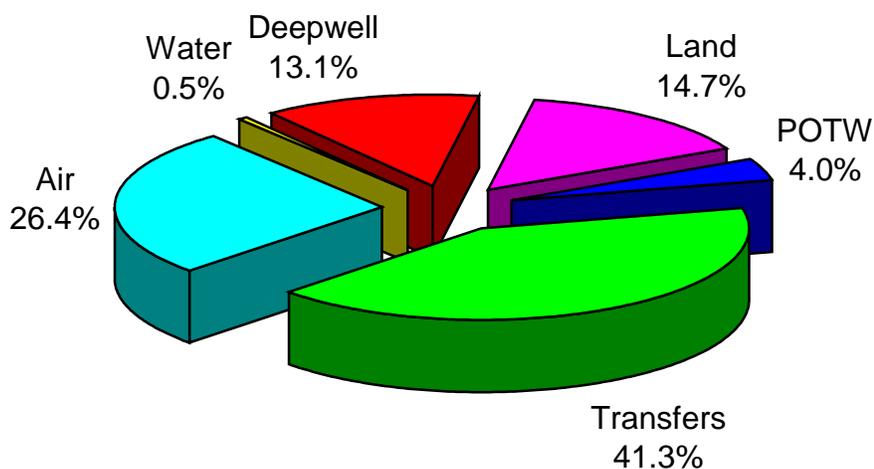


Summary of Data

Table 2B: 10 Year-Trend: Original Facilities and Chemicals (millions of pounds)

Comparison	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Releases to Air	63.4	54.8	50.6	48.7	44.4	41.1	38.2	31.8	31.0	29.2
Releases to Water	0.6	1.2	1.5	1.0	1.0	0.5	0.4	0.4	0.3	0.6
Deepwell Injection	8.2	11.8	11.6	9.4	11.4	12.3	11.2	13.8	11.6	14.5
Releases to Land On-Site	21.6	33.5	29.9	27.7	29.6	19.3	15.3	10.2	9.0	16.3
Discharges to POTW	6.3	6.1	7.2	7.0	5.9	5.7	6.8	5.1	4.3	4.4
Off-Site Disposal / Treatment	39.0	43.9	49.0	61.6	57.5	59.7	58.7	49.1	50.4	45.7
Total Releases & Transfers	139.1	151.3	149.8	155.4	149.7	138.6	130.7	110.3	106.6	110.7
Off-Site Energy Recovery	37.2	37.4	40.2	32.4	33.3	29.9	26.5	23.8	45.0	21.7
On-Site Energy Recovery	95.0	82.7	87.5	98.1	107.5	110.6	81.9	69.6	90.4	71.3
Off-Site Recycling	213.6	215.8	187.7	188.8	186.4	179.7	171.2	168.7	160.8	143.5
On-Site Recycling	209.3	332.7	297.8	196.0	245.0	184.7	167.4	145.8	121.4	111.0
On-Site Treatment	119.0	125.9	130.0	117.8	118.6	128.1	120.6	106.9	125.6	164.0
Reporting Facilities	1,605	1,575	1,533	1,520	1,508	1,500	1,524	1,564	1,492	1,441

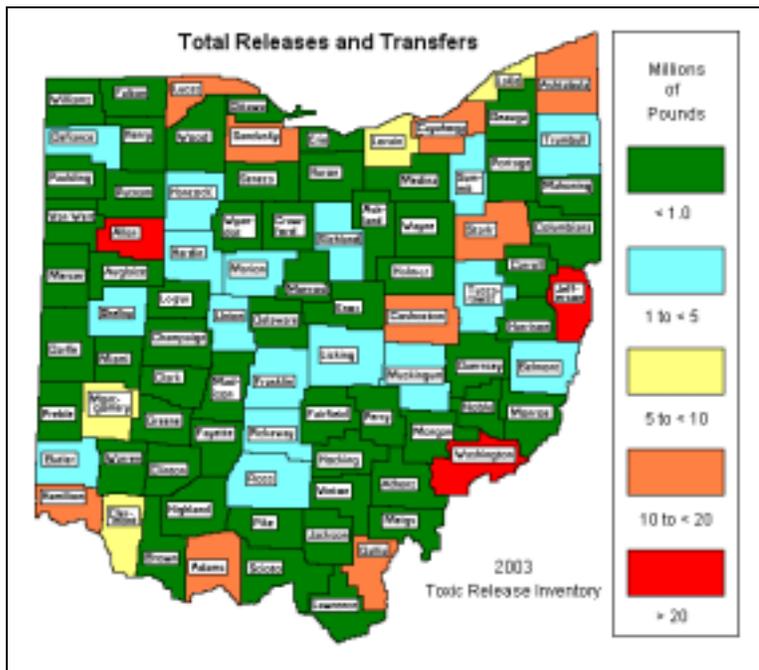
Figure 2B: 2003 Toxic Releases and Transfers



Summary of Data

Total Releases And Transfers For 2003

Top 10 Counties		
County	Pounds*	
1. Jefferson	32,895,275	
2. Washington	22,196,233	
3. Allen	21,592,952	
4. Adams	17,650,828	
5. Hamilton	17,559,781	
6. Stark	16,288,320	
7. Coshocton	14,223,539	
8. Sandusky	13,684,155	
9. Ashtabula	13,007,578	
10. Lucas	12,166,481	



Top 10 Chemicals		
Chemical	Pounds *	
1. Hydrochloric acid (aerosols)	71,549,485	
2. Manganese and manganese compounds	25,095,933	
3. Zinc and zinc compounds	24,508,159	
4. Nitrate compounds	19,617,695	
5. Sulfuric acid (aerosols)	13,634,310	
6. Ammonia	12,721,777	
7. Hydrogen fluoride	10,485,693	
8. Nitric acid	9,989,837	
9. Acetonitrile	9,809,701	
10. Barium and barium compounds	9,070,588	

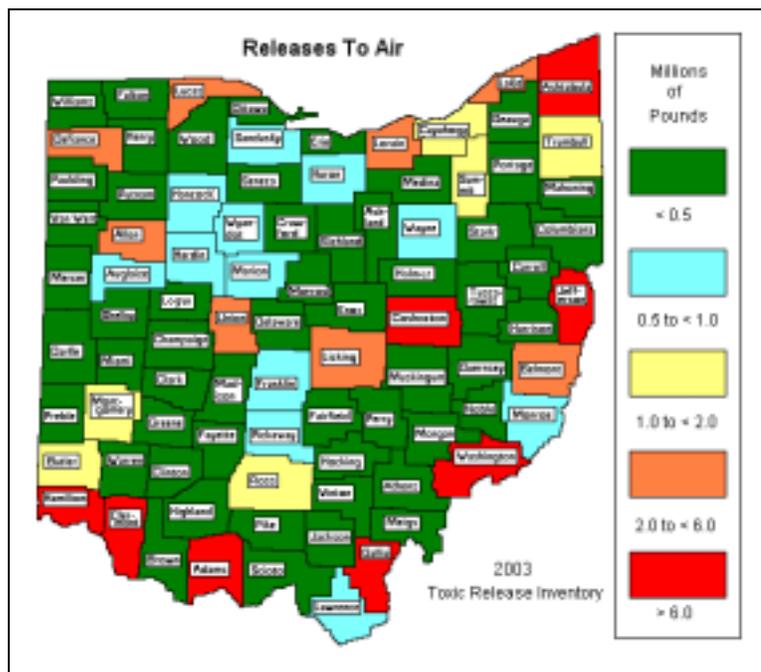
Top 10 Facilities		
Facility / County	Pounds	
1. FirstEnergy W.H. Sammis Plant / Jefferson	17,534,442	
2. BP Chemicals Inc. / Allen	16,933,666	
3. Dayton Power & Light Co. J.M Stuart Station / Adams	14,030,572	
4. Vickery Environmental Inc. / Sandusky	12,592,772	
5. Cardinal Operating Co. Cardinal Plant / Jefferson	11,193,392	
6. American Electric Power Muskingum River Plant / Washington	9,384,914	
7. American Electric Power Conesville Plant / Coshocton	9,249,843	
8. Millennium Inorganic Chemicals Plant 2 / Ashtabula	7,595,363	
9. Envirosafe Services of Ohio Inc. / Lucas	7,248,716	
10. Cinergy Corp. Miami Fort Generating Station / Hamilton	6,424,666	

* All data included.

Summary of Data

Releases To Air For 2003*

Top 10 Counties		
County	Pounds	
1. Jefferson	24,419,478	
2. Adams	13,340,736	
3. Washington	12,104,106	
4. Coshocton	8,242,955	
5. Hamilton	7,661,075	
6. Gallia	7,517,209	
7. Clermont	6,295,395	
8. Ashtabula	6,230,464	
9. Lake	4,202,681	
10. Allen	4,062,001	



Top 10 Chemicals		
Chemical	Pounds	
1. Hydrochloric acid (aerosols)	71,531,277	
2. Sulfuric acid (aerosols)	13,634,310	
3. Ammonia	9,212,573	
4. Hydrogen fluoride	6,205,343	
5. Carbonyl sulfide	5,935,776	
6. Methanol	3,42,1477	
7. Certain glycol ethers	2,740,186	
8. Xylene (mixed isomers)	2,622,689	
9. Styrene	1,592,797	
10. Toluene	1,562,984	

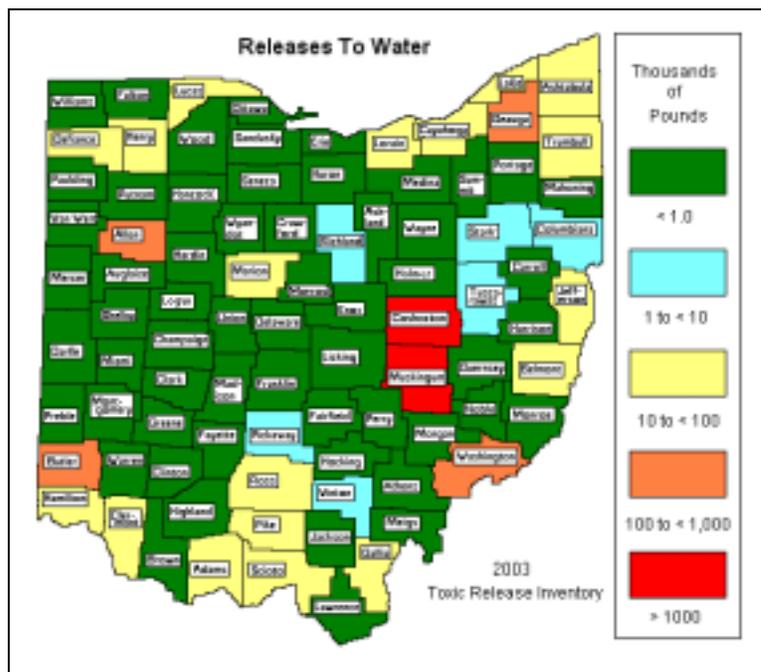
Top 10 Facilities		
Facility / County	Pounds	
1. FirstEnergy W.H. Sammis Plant / Jefferson	14,924,621	
2. Dayton Power & Light Co. J.M Stuart Station / Adams	10,634,489	
3. Cardinal Operating Co. Cardinal Plant / Jefferson	9,440,126	
4. American Electric Power Muskingum River Plant / Washington	8,603,510	
5. American Electric Power Conesville Plant / Coshocton	7,737,276	
6. Cinergy Corp. Miami Fort Generating Station / Hamilton	6,240,967	
7. Ohio Valley Electric Corp. Kyger Creek Plant / Gallia	5,526,682	
8. Cinergy Corp. Beckjord Generating Station / Clermont	5,028,017	
9. Millennium Inorganic Chemicals Plant 2 / Astabula	4,557,321	
10. FirstEnergy Eastlake Plant / Lake	3,381,686	

* All data included.

Summary of Data

Releases To Water For 2003*

Top 10 Counties		
County	Pounds	
1. Coshocton	3,197,155	
2. Muskingum	1,319,880	
3. Washington	921,594	
4. Geauga	195,034	
5. Allen	188,462	
6. Butler	174,686	
7. Trumbull	69,395	
8. Scioto	61,607	
9. Ashtabula	59,960	
10. Jefferson	59,123	



Top 10 Chemicals		
Chemical	Pounds	
1. Nitrate compounds	5,655,163	
2. Manganese and manganese compounds	450,045	
3. Ammonia	227,827	
4. Methanol	68,521	
5. Formic acid	55,200	
6. Zinc and zinc compounds	44,641	
7. Sodium nitrite	31,500	
8. Copper and copper compounds	27,531	
9. Barium and barium compounds	23,595	
10. Chromium and chromium compounds	17,116	

Top 10 Facilities		
Facility / County	Pounds	
1. AK Steel Corp. Coshocton Works / Coshocton	3,144,782	
2. AK Steel Corp. Zanesville Works / Muskingum	1,319,880	
3. Kraton Polymers US LLC / Washington	446,460	
4. Eramet Marietta Inc / Washington	435,405	
5. Middlefield Cheese / Geauga	195,000	
6. AK Steel Corp. / Butler	119,386	
7. Premcor Refining Inc – Lima Refinery / Allen	95,458	
8. PCS Nitrogen of Ohio LP / Allen	92,971	
9. Sunoco Inc (R&M) Haverhill Plant / Scioto	61,607	
10. MW Custom Papers LLC / Ross	53,462	

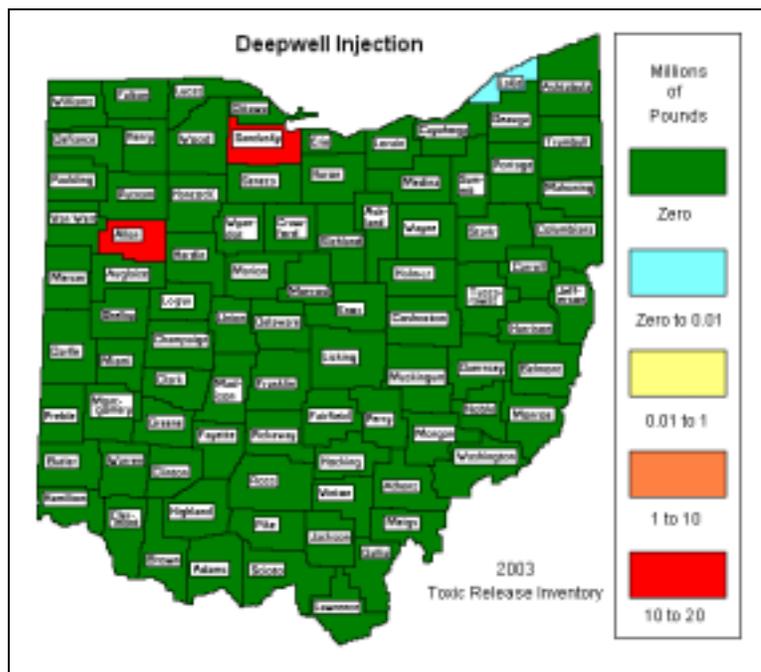
* All data included.

Summary of Data

Deepwell Injection For 2003*

Top 10 Counties	
County	Pounds
1. Allen	16,740,235
2. Sandusky	12,543,230
3. Lake	6,062

Note: Only 3 facilities reported on-site deepwell injection.



Top 10 Chemicals	
Chemical	Pounds
1. Acetonitrile	9,800,000
2. Nitric acid	6,461,411
3. Hydrogen fluoride	3,619,009
4. Ammonia	1,991,449
5. Acrylamide	1,300,000
6. Chromium and chromium compounds	1,147,990
7. Methanol	1,110,718
8. Acrylonitrile	880,000
9. Cyanides	450,000
10. Acrylic acid	430,000

Top 10 Facilities	
Facility / County	Pounds
1. BP Chemicals Inc. / Allen	16,740,235
2. Vickery Environmental Inc. / Sandusky	12,543,230
3. Arvesta Corp. / Lake	6,062

* All data included.

Summary of Data

Releases To Land On-Site For 2003*

Top 10 Counties		
	County	Pounds
1.	Lucas	7,914,609
2.	Ashtabula	5,640,941
3.	Washington	5,087,935
4.	Adams	4,289,638
5.	Gallia	3,384,893
6.	Cuyahoga	2,684,933
7.	Jefferson	1,738,012
8.	Defiance	1,579,517
9.	Coshocton	1,537,351
10.	Clermont	1,147,546



Top 10 Chemicals

Chemical	Pounds
1. Manganese and manganese compounds	15,505,712
2. Barium and barium compounds	5,133,187
3. Zinc and zinc compounds	5,009,778
4. Lead and lead compounds	3,109,323
5. Chromium and chromium compounds	2,494,898
6. Vanadium and vanadium compounds	2,047,438
7. Copper and copper compounds	1,694,124
8. Nickel and nickel compounds	1,054,787
9. Arsenic and arsenic compounds	553,784
10. Cobalt and cobalt compounds	329,509

Top 10 Facilities

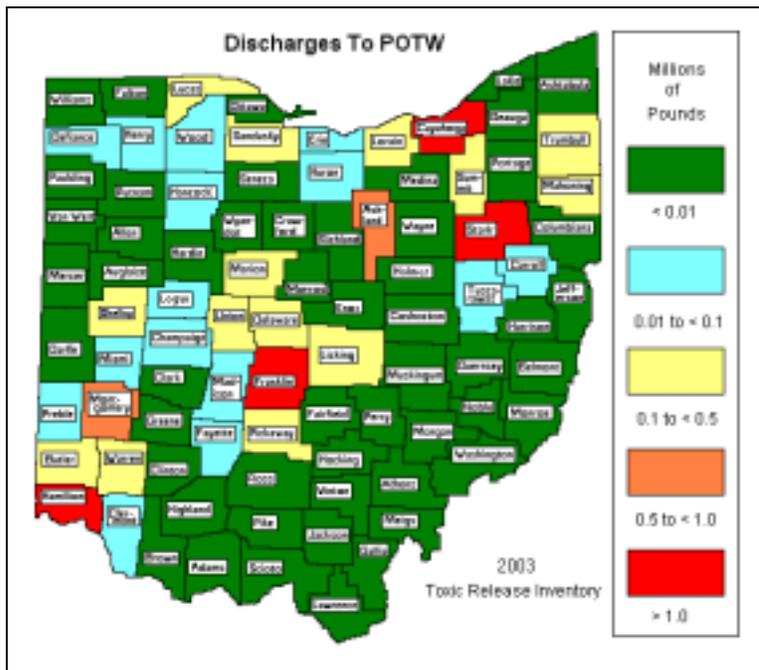
Facility / County	Pounds
1. Envirosafe Services of Ohio Inc. / Lucas	7,244,000
2. Eramet Marietta Inc. / Washington	4,318,717
3. Dayton Power & Light Co. J.M Stuart Station / Adams	3,377,348
4. Millennium Inorganic Chemicals Plant 2 / Ashtabula	3,000,042
5. ISG Cleveland Inc. / Cuyahoga	2,672,188
6. American Electric Power Gavin Plant / Gallia	2,631,477
7. Millennium Inorganic Chemicals Plant 1 / Ashtabula	2,600,100
8. Cardinal Operating Co. Cardinal Plant / Jefferson	1,738,012
9. GM Powertrain Defiance / Defiance	1,550,076
10. American Electric Power Conesville Plant / Coshocton	1,485,182

* All data included.

Summary of Data

Discharges To POTW For 2003*

Top 10 Counties		
County	Pounds	
1. Hamilton	7,870,776	
2. Cuyahoga	2,064,256	
3. Stark	1,055,463	
4. Franklin	1,050,042	
5. Montgomery	933,306	
6. Ashland	561,320	
7. Summit	478,122	
8. Licking	406,816	
9. Warren	351,455	
10. Butler	323,375	



Top 10 Chemicals		
Chemical	Pounds	
1. Nitrate compounds	11,752,883	
2. Methanol	2,011,224	
3. Ammonia	898,679	
4. Certain glycol ethers	762,719	
5. Ethylene glycol	415,901	
6. Sodium nitrite	266,806	
7. Acetaldehyde	249,823	
8. Allyl alcohol	224,464	
9. Chlorine	144,028	
10. Formaldehyde	124,721	

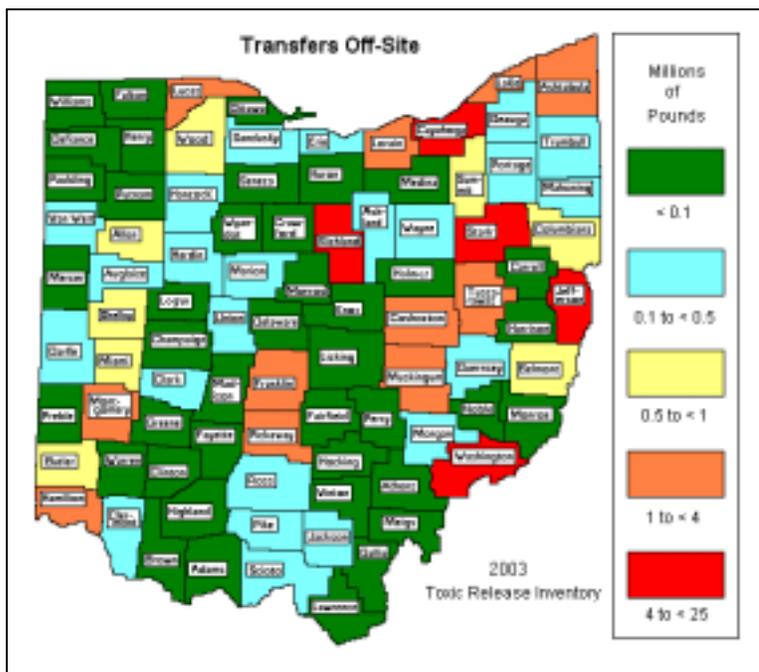
Top 10 Facilities		
Facility / County	Pounds	
1. Shepherd Chemical Co. / Hamilton	3,050,283	
2. Grace Davison Cincinnati Plant / Hamilton	1,442,000	
3. PMC Specialties Group Inc. / Hamilton	927,399	
4. Cognis Corp. / Hamilton	907,442	
5. GFS Chemicals Inc / Franklin	855,855	
6. Tremco Inc. / Ashland	560,000	
7. Alcoa Cleveland Works / Cuyahoga	507,351	
8. J&L Specialty Steel, Inc. / Stark	497,180	
9. Envirote of Ohio Inc. / Stark	490,516	
10. Advanced Energy Technology Inc. / Cuyahoga	414,200	

* All data included.

Summary of Data

Transfers Off-Site To Disposal or Treatment For 2003*

Top 10 Counties		
County	Pounds	
1. Stark	14,791,023	
2. Jefferson	6,678,661	
3. Cuyahoga	5,050,011	
4. Washington	4,082,590	
5. Richland	4,021,564	
6. Montgomery	3,364,034	
7. Lorain	2,441,530	
8. Muskingum	2,090,882	
9. Franklin	2,079,491	
10. Lucas	1,987,372	



Top 10 Chemicals		
Chemical	Pounds	
1. Zinc and zinc compounds	18,963,478	
2. Manganese and manganese compounds	8,246,578	
3. Chromium and chromium compounds	4,098,938	
4. Barium and barium compounds	3,793,871	
5. Nitric acid	3,331,587	
6. Lead and lead compounds	3,253,753	
7. Nickel and nickel compounds	2,274,034	
8. Xylene (mixed isomers)	2,026,950	
9. Copper and copper compounds	1,954,308	
10. Nitrate compounds	1,931,254	

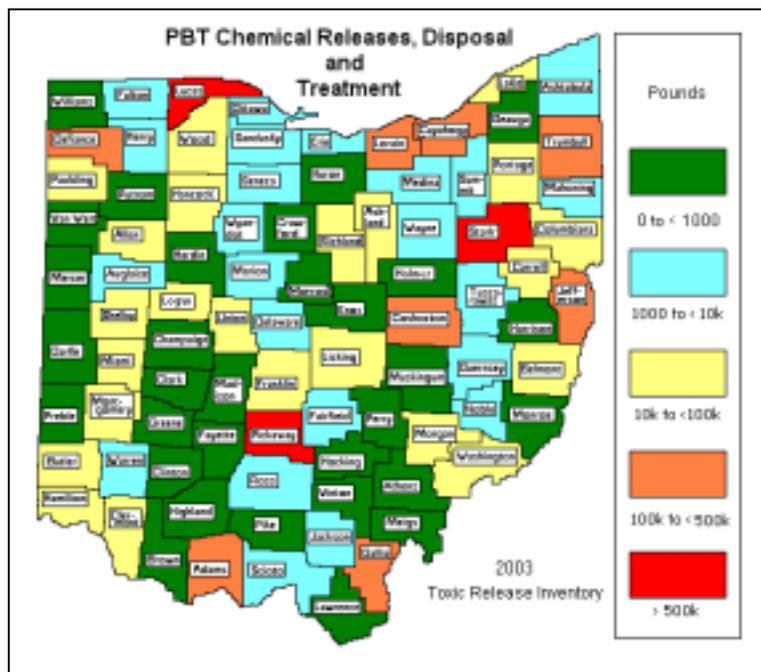
Top 10 Facilities		
Facility / County	Pounds	
1. Envirote of Ohio Inc. / Stark	5,816,049	
2. Timken Co. Faircrest Steel / Stark	4,962,428	
3. AK Steel Corp. – Mansfield Works / Richland	3,954,857	
4. Wheeling-Pittsburgh Steel Corp. Mingo / Jefferson	3,814,585	
5. Eveready Battery Co. / Washington	3,256,766	
6. Timken Co. Harrison Steel / Stark	2,973,997	
7. FirstEnergy W.H. Sammis Plant / Jefferson	2,607,547	
8. AK Steel Corp. – Zanesville Works / Muskingum	2,056,968	
9. Onyx Environmental Services Inc. / Montgomery	1,812,450	
10. GFS Chemicals Inc. / Franklin	1,423,671	

* All data included.

Summary of Data

PBT Chemical Releases, Disposal and Treatment For 2002*

Top 10 Counties		
County	Pounds	
1. Lucas	2,113,905	
2. Stark	904,036	
3. Pickaway	771,911	
4. Coshocton	382,055	
5. Cuyahoga	351,515	
6. Defiance	315,003	
7. Jefferson	219,434	
8. Trumbull	143,529	
9. Adams	138,414	
10. Lorain	130,686	



PBT Chemical Release, Disposal and Treatment Summary†

PBT Chemical	Air	Water	Deepwell Injection	Land	POTW	Off-Site Disposal / Treatment
Aldrin	0	0	0	0	0	1
Benzo(G,H,I)perylene	2,047	0	0	10	3	858
Chlordane	2	0	0	0	0	2
Dioxin & compounds	46 gr	0	0	148 gr	0	216 gr
Heptachlor	2	0	0	0	0	1
Hexachlorobenzene	0	3	0	0	28	66
Isodrin	0	0	0	0	0	31
Lead & compounds	86,127	6,959	0	3,109,324	1,979	3,257,303
Mercury & compounds	10,469	24	55	3,708	3	7,906
Methoxychlor	1	0	0	0	0	2
Pendimethalin	5	0	0	0	0	29,722
Pentachlorobenzene	0	0	0	0	0	36
PCBs	0	0	0	0	1	50
PACs	12,219	1	0	234	321	12,145
Tetrabromobisphenol A	5	0	0	0	0	1
Toxaphene	1	0	0	0	0	18
Trifluralin	453	0	0	0	9	3,023

† Quantities rounded to whole numbers, units are pounds unless specified otherwise.

* All data included.

Summary of Data

Releases By Industry

Figure 3 and Table 3 presents the TRI releases and transfers by industrial group or Standard Industrial Classification (SIC) codes. Facilities report their SIC code on the Form R or A. Manufacturing facilities in SIC codes 20 through 39 were required to report under TRI through 2002. Seven industrial groups within major SIC codes 10, 12, 49, 51 and 73) began reporting in 1998. These are metal mining (10), coal mining (12), coal and oil-fired electricity generating facilities (4911 and 4931), RCRA Subtitle C refuse system facilities (4953), chemicals and allied products (wholesale) (5169), petroleum bulk stations (wholesale) (5171), and solvent recovery services (7389). In addition, federal facilities are required to report to TRI under a presidential executive order. Federal facilities may fall in a variety of SIC codes, both within and outside of the TRI reportable SIC codes. Federal facilities which fall outside of the TRI SIC codes are grouped within "other" in Table 3.

In analyzing releases by manufacturing industry, trends remain fairly constant. The industry groups with the largest quantities of TRI releases and transfers for treatment and disposal in 2003 were those reporting facilities in major SIC code 49 (Electric, Gas, and Sanitary Services) and major SIC code 28 (Chemicals and Allied Products). The reporters in major SIC code 49 are limited to coal or oil fired electric generating plants distributing electric power in commerce (4911 and 4931) and to RCRA Subtitle C refuse systems (4953). The following figure represents the industrial categories and their reported releases and transfers under TRI. (major SIC code 49 is broken out into electric generating and refuse systems in the figure.)

The new industrial sectors accounted for almost half of the releases and transfers for treatment and disposal reported. The electric generating facilities accounted for releases and transfers for treatment and disposal of over 105 million pounds, and the RCRA Subtitle C refuse system facilities accounted for almost 30 million pounds of releases and transfers for treatment and disposal.

Figure 3: Releases & Transfers By SIC

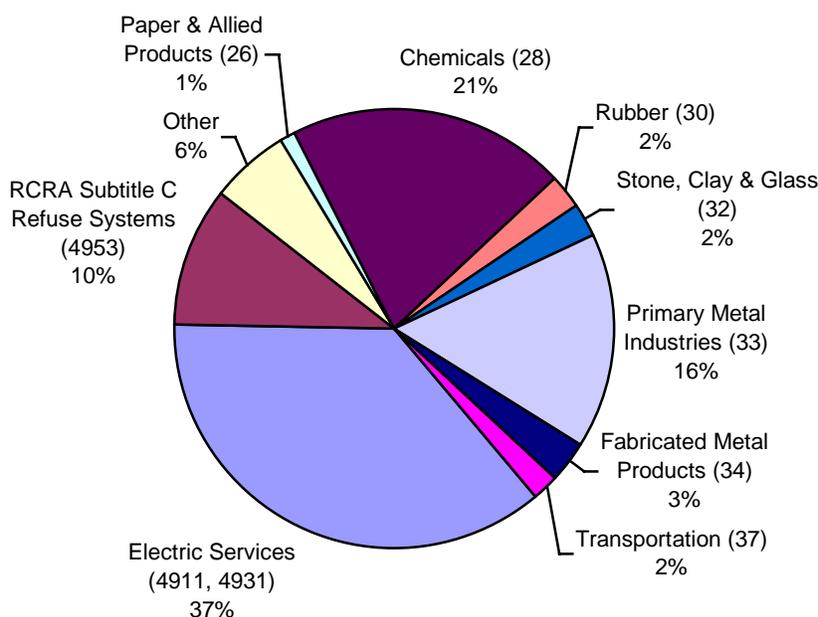


Table 3: Releases and Transfers by SIC Code

SIC Code	Industry Group	Number of Reporting Facilities	Number of Reports	On-Site Releases (Air, Water, Land On-Site and Deepwell Injection)	Discharges to POTW & Transfers Off-Site for Treatment / Disposal	Transfers Off-Site for Energy Recovery & Recycling	On-Site Recycling, Treatment, and Energy Recovery
12	Coal Mining	4	29	59,257	0	0	0
20	Food & Kindred Products	52	109	2,320,600	566,228	50,159	1,583,115
22	Textile Mill Products	11	38	704,556	302,094	167,131	1,484,649
23	Apparel	4	12	254,055	21,645	296,461	1,479,300
24	Lumber & Wood Products	19	61	278,550	559,675	826,899	3,177,579
25	Furniture & Fixtures	6	12	168,179	318,020	15,170	0
26	Paper & Allied Products	29	109	2,586,928	473,624	920,722	24,074,512
27	Printing & Publishing	15	22	91,845	16,748	109,830	574,722
28	Chemicals & Allied Products	256	1,286	37,550,321	22,149,485	31,615,045	281,737,338
29	Petroleum Refining	29	170	828,356	592,074	1,754,908	11,868,656
30	Rubber & Miscellaneous Plastics	204	460	4,555,500	2,265,017	3,242,251	6,705,109
32	Stone, Clay, Glass & Concrete	94	240	5,569,648	1,639,779	588,371	94,545,227
33	Primary Metal Industries	215	742	20,678,726	25,644,704	63,102,711	46,728,429
34	Fabricated Metal Products	279	761	3,453,515	4,687,688	29,179,211	19,696,599
35	Industrial Machinery	88	220	377,500	376,712	4,479,485	1,503,739
36	Electronic Equipment	76	164	913,383	2,140,277	10,652,977	5,244,758
37	Transportation Equipment	122	555	3,431,065	2,540,514	19,194,089	5,695,282
38	Instruments and Medical Goods	19	35	154,450	462,101	911,540	213,947
39	Miscellaneous Manufacturing	14	37	148,667	659,724	69,847	185,699
4911 4931	Electric Services (oil and gas fired)	27	340	100,059,387	5,575,682	745,911	77,877,634
4953	RCRA Refuse Systems	11	371	19,823,052	9,498,565	15,197,537	67,010,221
51	Wholesale Trade – Chemical and Petroleum Products	49	432	149,094	999,168	2,705,770	11,154,535
73	Business Services	8	65	92,302	1,453,105	4,866,429	10,178,622
-	Other	17	23	2,186,728	0	6,072	0

Summary of Data

Management of TRI Chemicals In Waste

The Pollution Prevention Act (PPA) of 1990 required facilities to report information about the quantities of TRI chemicals in waste, managed both on-site and off-site. The PPA established a hierarchy of waste management options in which source reduction is the preferred approach to managing waste. Source reduction is defined as a means of preventing waste from being generated. In situations where source reduction cannot be implemented, the preferred management techniques in order of preference are recycling, energy recovery, and treatment.

The TRI data can be used to analyze trends in total quantities of TRI chemicals in waste to determine if facilities are reducing the amount of waste generated. As reported under TRI, waste falls under one of four categories based upon its final disposition. The first category is releases on-site, which includes releases to air, water, deepwell injection, and land on-site. The second category is discharges to POTWs and transfers off-site for treatment and disposal. The third category is transfers off-site for recycling and energy recovery, and includes waste recycled or used as fuel. The fourth category is waste management on-site, which includes on-site treatment, recycling, and energy recovery. The following figures provide the relative percentages of the total amount of waste generated in these four categories. As illustrated by the pie chart, much of the waste generated never leaves the facility, but is managed on-site through treatment, recycling, or energy recovery. The on-site waste management data, when combined with the amounts released on-site and transferred off-site, is important in understanding the overall annual amount of waste which is generated by a facility.

Figure 4: Management Of Total Waste
(All industries and chemicals)

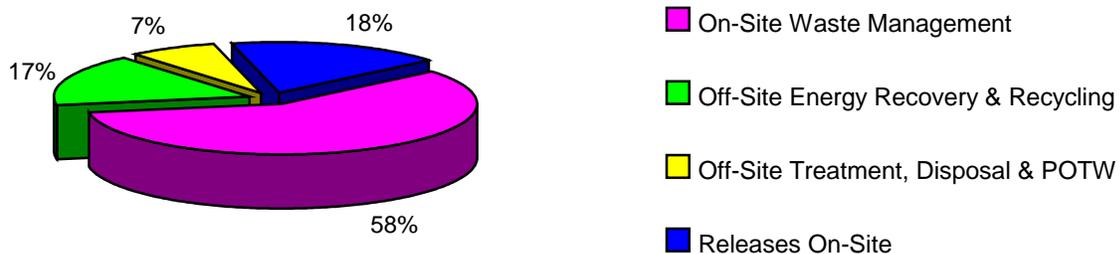
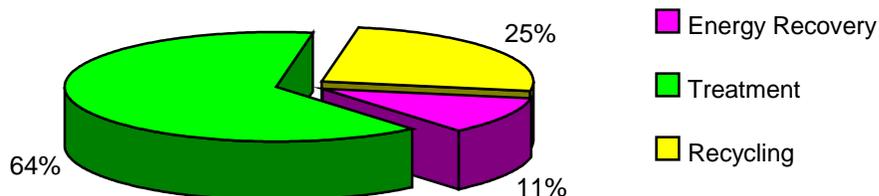


Figure 5: On-Site Waste Management
(All industries and chemicals)



Summary of Data

Nearly 250 facilities implemented source reduction activities at their facility during 2003 for over 600 chemicals. Source reduction means any activity which: (1) reduces the amount of any chemical entering any waste stream or released into the environment prior to recycling, treatment, or disposal; and (2) reduces the hazard to public health and the environment associated with the release(s) of such substances. Source reduction includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. This continued level of source reduction by the reporting facilities demonstrates their commitment to continue to reduce toxic releases beyond environmental regulations.

Facilities also report their production ratios or an activity index for the current reporting year as compared to the prior reporting year. This ratio is to demonstrate the relative (to the prior year) use of a particular toxic chemical. The production ratio (or index) must be based on some variable of production or activity which reflects the toxic chemical usage. A ratio of 1.1 would indicate a 10% increase in production related to the reported chemical. In 2003, nearly 40% of the TRI reports indicated an increase in production when compared to the data for 2002. Table 4 indicates the changes in production reported by facilities covered by TRI.

Table 4: Changes in Production From 2002 to 2003

Change in Production (Production Ratio)	Number of Form Rs	Percent Reporting
More than 30% increase	465	8.4
Between 20% and 30% increase	222	4.0
Between 10% and 20% increase	411	7.4
Less than 10% increase	1059	19.1
No Change	749	13.5
Less than 10% decrease	962	17.3
Between 10% and 20% decrease	662	11.9
Between 20% and 30% decrease	276	5.0
More than 30% decrease	402	7.2
Not applicable, not reported or zero	350	6.3

National Perspective

Ohio, a leader in technology and industry, continues to represent a significant portion of the national TRI reporting industries and releases. Table 5 shows Ohio's national ranking for each type of release. Because the complete 2003 national data was not available prior to the drafting of this report, the national ranking for 2003 was not yet available. The following tables are based on U.S. EPA's national TRI report and data from the August 2, 2004 national data update.

Table 5: Ohio's National Rank

National Rank In:	2000	2001	2002
Air Releases	1	1	1
Water Releases	7	9	10
Land On-Site Releases	12	12	10
Deepwell Injection	5	3	3
Reporting Facilities	1,696	1,725	1,678

Table 6: Number of Reporting Facilities

Number of Reporting Facilities – RY 2002		
Rank	State	Number of Facilities
1	Ohio	1,678
2	California	1,539
3	Texas	1,482
4	Pennsylvania	1,409
5	Illinois	1,288

Table 7: Top States For Releases

Medium	Rank	State	Release (pounds)
Air	1	Ohio	133,894,791
	2	Georgia	103,329,198
	3	Tennessee	96,798,567
	4	North Carolina	96,628,270
	5	Texas	90,353,897
Water	1	Texas	30,462,984
	2	Indiana	27,886,616
	3	Nebraska	13,110,285
	4	Louisiana	11,492,246
	5	Georgia	10,313,265
	10	Ohio	7,844,847
Land On-Site	1	Alaska	527,754,889
	2	Nevada	493,953,321
	3	Arizona	322,351,577
	4	Utah	154,436,349
	5	Missouri	71,374,938
	10	Ohio	37,730,088
Deepwell Injection	1	Texas	88,249,841
	2	Louisiana	32,310,812
	3	Ohio	29,605,174
	4	Florida	25,637,187
	5	Alaska	17,763,362

Additional Information

Ohio EPA's Division of Air Pollution Control (DAPC) has the primary responsibility in Ohio for collecting, processing, and distributing information submitted under TRI. Additional information not contained in this report is available to the public through the TRI Program located in DAPC.

Ohio TRI Report Access	The reports submitted by facilities are available for review at Ohio EPA's office located at 122 South Front Street in Columbus from 8:00 a.m. to 5:00 p.m. Photocopies are also available.	
Information Requests	TRI staff can take requests by phone to provide information on individual facilities. TRI information can be supplied by fax or by mail as either a hard copy or electronically. Data searches and summaries can also be performed. Call the TRI staff at (614) 644-2270 during business hours.	
U.S. EPA Electronic Facility Data Release (e-FDR) and Public Data Release (PDR)	U.S. EPA's RY 2003 TRI PDR covers information nationwide and provides a good perspective on how Ohio compares to other states. The e-FDR will be available until the PDR is made and gives access to data, on a form-by-form basis, until the PDR is made. Information pertaining to the e-FDR or PDR can be obtained from U.S. EPA via their hotline at 1-800-424-9346 or from the U.S. EPA Web site.	
Web Resources	Ohio EPA TRI	www.epa.state.oh.us/dapc/tri/tri.html
	U.S. EPA TRI	www.epa.gov/tri/
	U.S. EPA TRI Explorer	www.epa.gov/triexplorer
	Toxnet	www.toxnet.nlm.nih.gov
	Envirofacts	www.epa.gov/enviro/index_java.html
	RTK Network	www.rtk.net
	Ohio County Profiles	www.odod.state.oh.us/osr/profiles/
Ohio TRI Program Contacts	Cindy Dewulf	cindy.dewulf@epa.state.oh.us
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TRI Related Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
BACT	Best Available Control Technology
BIF	Boiler and Industrial Furnace
CAA	Clean Air Act
CEM	Continuous Emissions Monitoring
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
EHS	Extremely Hazardous Substance
EIS	Environmental Impact Statement
EIS	Emissions Inventory System
EPA	Environmental Protection Agency
EPCRA	Emergency Planning & Community Right-to-Know Act
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FIFRA	Federal Insecticide, Fungicide & Rodenticide Act
FINDS	Facility Index System
FOIA	Freedom of Information Act
FR	Federal Register
HAP	Hazardous Air Pollutant
HCFC	Hydrochlorofluorocarbon
HMR	Hazardous Materials Regulations
HON	Hazardous Organic NESHAP
HSWA	Hazardous & Solid Waste Amendments - 1984 Amendments to RCRA
LEPC	Local Emergency Planning Committee
MACT	Maximum Achievable Control Technology
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standard
NACEPT	National Advisory Committee on Environmental Policy and Technology
NESHAP	National Emission Standard for Hazardous Air Pollutant
NOx	Abbreviation for oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
PACs	Polycyclic Aromatic Compounds
PAH	Polynuclear Aromatic Hydrocarbon

TRI Related Acronyms

PBT	Persistent Bioaccumulative Toxic chemicals
PCB	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PIC	Product of Incomplete Combustion
PM	Particulate Matter
POTW	Publicly Owned Treatment Works
PPA	Pollution Prevention Act of 1990
ppb	Parts per billion
ppm	Parts per million
RCRA	Resource Conservation & Recovery Act
RQ	Reportable Quantity
SARA	Superfund Amendments & Reauthorization Act
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAP	Toxic Air Pollutant
THC	Total Hydrocarbons
TITLE III	(SARA) Emergency Planning and Community Right-to-Know Act
TLV	Threshold Limit Value
TPH	Total Petroleum Hydrocarbons
TPQ	Threshold Planning Quantity
TRI	Toxic Release Inventory
TSCA	Toxic Substance Control Act
TSDF	Treatment, Storage and Disposal Facility
TSP	Total Suspended Particulates
TWA	Time Weighted Average
UIC	Underground Injection Control
USC	United States Code
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquid
WQM	Water Quality Management