Toxic Release Inventory

2004
Annual Report

Ohio Environmental Protection Agency
Division of Air Pollution Control
March 2006

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, with the exception of the delisting of methyl ethyl ketone (MEK), the result of a June 13, 2005 Circuit Court mandate.

For reporting year 2004, Ohio EPA received 5,400 TRI "Form R" reports from 1,608 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 2003 and 2004 TRI data for all reporting facilities.

Table 1: Comparison of 2003 and 2004 TRI Data

Comparison	2003 Amount*	2004 Amount	Change
Releases to Air	131,627,607	127,237,095	-3.34%
Releases to Water	7,871,840	7,911,640	0.51%
Deepwell Injection	29,222,773	22,549,771	-22.8%
Releases to Land On-Site	37,590,547	29,719,300	-20.9%
Discharges to POTW	17,303,821	18,549,266	7.20%
Off-Site Disposal / Treatment	63,652,152	74,093,912	16.4%
Total Releases and Transfers	**287,268,740**	**280,060,984**	**-2.51%**
Energy Recovery On-Site	76,018,057	84,152,450	10.7%
Energy Recovery Off-Site	39,520,973	35,416,271	-10.4%
Recycling On-Site	167,927,863	157,148,587	-6.42%
Recycling Off-Site	144,876,109	142,507,091	-1.64%
Treatment On-Site	410,708,009	379,298,161	-7.65%
Number of Chemicals Reported	319	301	-6%
Number of Facilities Reporting	1,652	1,608	-2.7%
Number of Form Rs	5,466	5,400	-1.22%
Number of Form As	724	714	-1.4%

* MEK was not included in 2003 totals.

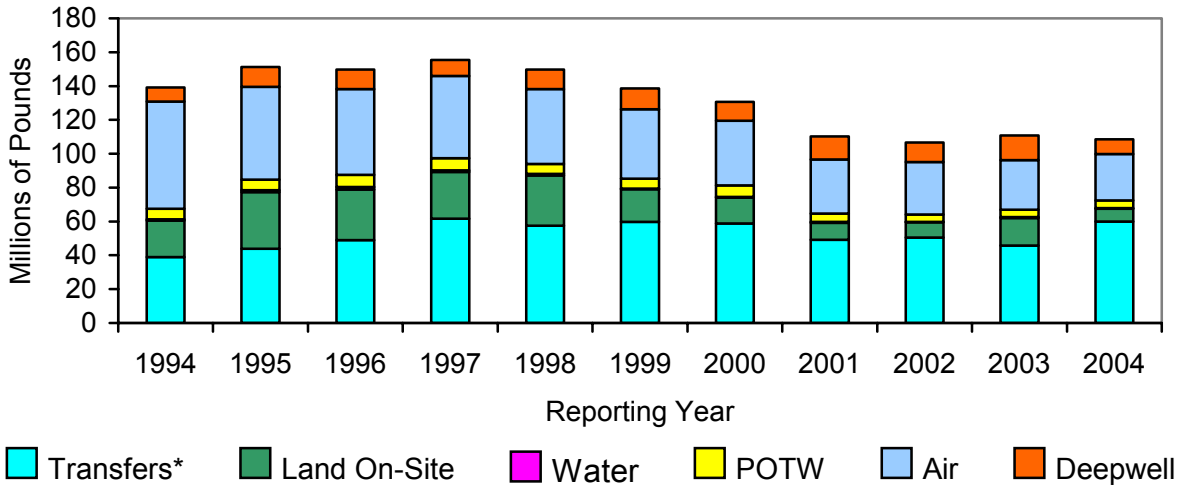
Total releases and transfers decreased by about 2.5% between 2003 and 2004, the number of reporting facilities also decreased slightly. There is significant variation among the various

releases and transfers among the reporting facilities. Individual increases or decreases are attributable to many factors including changes in production, accuracy and types of 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.

Here is a summary of the information collected under Ohio's TRI program. Changes are routinely processed as facilities perform "self-audits" or otherwise discover errors. At times 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 those facilities who reported significant changes in waste management or releases between 2003 and 2004 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 2004, 127.2 million pounds, were down approximately 3.3%, from last year. Power plants again reported some of the largest TRI releases, primarily hydrochloric and sulfuric acid aerosols, resulting from the combustion of coal. (These two chemicals constitute over 60% of all the reported air releases.) The largest ten power plant emitters collectively released over 70 million pounds. First Energy's Sammis Plant again led the state in air releases, although its reported air releases of 11.7 million pounds are 3 million pounds less than the 2003 reported air releases. This is due to reduced production and the burning of some Western coal with a lower sulfur content. AEP's Conesville Station 2004 air releases were almost 2 million pounds lower than the reported air releases in 2003 (from 7.7 to 5.9 million pounds, a result of lower production). Ohio Valley Electric's Kyger Creek Station was up approximately 25%, from 5.5 to 6.9 million pounds.

Water Releases

Overall releases to Ohio waterways were up slightly for this year. The 2004 increase of approximately 0.5% follows the prior reporting year reduction of 7%. (Note: Our 2003 report noted a larger reduction. However, subsequent to publishing that report, Brush Wellman, Inc. in Ottawa county submitted a significant revision, increasing the total 2003 water releases by approximately 1.2 million pounds.) As in previous years, AK Steel's Coshocton and Zanesville facilities led the state in releases. AK Steel's Coshocton facility's release of 3.2 million pounds is up less than 3% from last year. AK notes that while total water discharges were approximately the same for both years, the nitrate concentrations in the discharge increased slightly for 2004.

Releases from AK Steel Corp.'s operations as well as Brush Wellman (number one, two and three, respectively for both 2003 and 2004) are primarily nitrates. Nitrates are a coincidentally manufactured by-product of steel pickling treatment with nitric acid and beryllium processing. These nitrate compounds constitute approximately 90% of all water releases and are permitted and monitored under the terms of NPDES (National Pollution Discharge Elimination System permits, monitored by this Agency.) The top ten facilities release approximately 90% of all water releases Statewide.

Deepwell Injection

Three Ohio facilities reported deepwell injection: BP Chemicals in Lima (Allen Co.), Vickery Environmental Inc. in Vickery (Sandusky Co.) and Arvesta Corp. in Perry (Lake Co.). For 2004, all reported decreases in TRI-reported releases. In fact, this reduction of 22.8% was one of the bigger changes from 2003 to 2004. This year, Vickery Environmental Inc., a Resource Conservation and Recovery Act (RCRA) disposal facility, led the state, reporting the deepwell injection slightly in excess of 12 million pounds. This was down approximately 0.5 million pounds from their 2003 report. BP Chemicals (now "Innovene") reported releases of approximately 10.5 million pounds, a reduction in excess of six million pounds from their 2003 report. This was attributed to a minor change in desired production purity for acetonitrile, ultimately reducing injected acetonitrile waste by more than 6 million pounds. For 2004 the top three reported deepwell injected chemicals were nitric acid (6.4 million pounds), hydrogen flouride (3.6 million pounds) and acetonitrile (3.5 million pounds).

Land Releases On-Site

Releases to land on-site decreased by more than 20% from 2003. Envirosafe Services of Ohio, Inc., a RCRA-regulated, disposal facility, again led the State in releases at 7.2 million pounds, approximately the same as last year.

A reduction of over 8 million pounds was reported by five facilities. Most notable was the 5.5 million pounds reduction of manganese releases at Millennium Inorganic Chemicals 1&2 in Ashtabula. The concentration of the manganese in the materials processed fell below the 1.0% de minimis levels, so the releases of manganese were no longer reported. A 2.6 million pounds reduction by ISG Cleveland, Inc. was an actual reduction in on-site disposal, prompted by limited on-site disposal capacity.

Manganese and its compounds are still the most released on-site chemical, at almost 9 million pounds. This is down from over 15 million pounds in 2003. Barium, zinc, lead, chrome and their respective compounds are the second through fifth most on-site released chemicals, in the same order as the 2003 releases. The releases of these chemicals range from approximately 5.5 million pounds to 2 million pounds. There are two manufacturing facilities among the top ten facilities reporting releases to land on-site: Eramet Marietta, Inc. in Washington County with on-site releases of 4.2 million pounds, primarily manganese and chromium (3.7 and 0.7 million pounds, respectively) and WCI Steel, Inc. in Trumbull County. WCI's largest release is also manganese, at approximately 1.1 million pounds. Seven power generating facilities complete the top ten on-site land disposal facilities.

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POTW Releases

TRI reported releases to publicly owned treatment works (POTWs) were up approximately 7% for 2004. Nitrate compounds and methanol were once again the top two chemicals reported as being released to the POTWs. The additional, "top eight" chemicals were also the same as last year with minor variations in order and quantity. Hamilton County facilities remain among the largest dischargers to POTWs with 2003 releases to Cincinnati's Metropolitan Sewer District (MSD) in excess of 6 million pounds. Shepherd Chemical Co. reported the largest quantity of releases to a POTW, releasing over 3.3 million pounds of nitrates. Cognis Corp. and PMC Specialty Group Inc. combined to add over 1.9 million pounds, primarily methanol (1.5 million pounds). Cargill Sweetners Inc. of Dayton (Montgomery Co.) adds calcium nitrate as a wastewater pretreatment effort, reporting approximately 1.5 million pounds of nitrate compounds. This pretreatment, provides an alternate source of oxygen to the wastewater. These compounds are essentially consumed in the sewer lines, preventing or minimizing the generation of hydrogen sulfide.

Off-Site Disposal and Treatment

Statewide transfers off-site for disposal and treatment increased over 16%, approximately 10 million pounds. These increases are with zinc, manganese and chromium and their respective compounds. These transfers are primarily related to steel production. The top three facilities reporting increases in off-site disposal and treatment are steel mills. Timken Co.'s Faircrest Steel once again reported the greatest off-site transfers for disposal or treatment, in excess of 5.9 million pounds, up over 20% from 2003. The second facility, at almost 5.5 million pounds, reporting a significant increase from 2003 is ISG Cleveland, Inc. Limited on-site disposal capacity prompted the significant increase in off-site disposal. Wheeling-Pittsburgh Steel Corp. of Mingo Junction reported almost 5 million pounds of off-site transfers for disposal and treatment, up slightly over 1 million pounds from 2003.

Energy Recovery On-Site

Statewide energy recovery on-site increased by more than 8 million pounds or almost 10.7% from 2003. LaFarge North America (including Systech Environmental Corp.) again led the State, reporting 57 million pounds. This is an increase of over 5.7 million pounds from their 2003 reporting. (Systech Environmental Corp. is a wholly owned subsidiary of LaFarge North America. The related operations compliment each other. Systech Environmental Corp. brokers hazardous waste solvents and blends them into fuels. LaFarge North America operates cement kilns using these fuels for energy recovery. While both are permitted under RCRA, only Systech Environmental Corp. is permitted for storage. The entire facility operates under a Title V air permit.) Systech obtains this waste from a variety of generators, brokers and treatment facilities. Significant changes in customers, volume, and composition of waste are routine. Sunoco (R&M) Haverhill (Scioto Co.) reported almost 10 million pounds of on-site energy recovery, reporting the bisphenol-A, ethylbenze and phenol and other components of both heavy and light hydrocarbons used in waste fuel boilers.

Energy Recovery Off-Site

Overall, there was an approximate 10% or 4 million pound decrease in off-site energy recovery from 2003 to 2004. Onyx Environmental Services, LLC. a RCRA-regulated, Treatment, Storage and Disposal (TSD) facility again led this category. Onyx's on-site energy recovery was down approximately 10%, to just under 7 million pounds.

Recycling On-Site and Off-site

Total recycling of reportable chemicals, both on-site and off-site, was down between 2003 and 2004. Recycling on-site decreased by 6.4% and recycling off-site decreased by approximately 1.6%. More than two dozen facilities reported changes in excess of 1 million pounds, with more of the larger facilities reporting increases rather than decreases. One of the larger off-site recycling decreasers, J&L Specialty Steel (now owned and reported by Jewel Acquisition, LLC), noted that a change in excess of 15 million pounds was attributed to a difference in interpretation of whether a material is recycled or reused. That is, it was the 2004 reporting facility's opinion that materials were merely melted and reused. Such reuse is not reported in the TRI, Form R reporting. Thomson Multimedia Inc, in Circleville reported the largest decrease in on-site recycling, down from almost 20 million pounds to under 3 million pounds. This was attributed to the plant closure.

PBT Chemicals

Nearly 954 Form Rs for persistent bioaccumulative toxic (PBT) chemicals were submitted for 2004. 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). The 4 PBT's with the largest volume of reported releases, transfers and treatment in Ohio for 2004 were (in descending order) lead and its compounds, pendimethalin, mercury and its compounds, and PACs.

Mercury or its compounds were reported by 115 facilities in 2004, compared to approximately 107 facilities in 2003. Reporting facilities were in many SIC groups, including power plants, paper mills, steel works, refuse systems, glass manufacturing and electric light manufacturing.

Nearly 600 reports were submitted for lead or lead compounds which is about the same as for 2003. Lead or lead compounds were 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 shown 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 three facilities in 2004, two in SIC code 2875 (fertilizers, mixing only), and one in SIC code 3999 (manufacturing industries, not elsewhere classified).

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. A total of 149 Ohio facilities reported PACs and/or benzo(g,h,i)perylene in 2004.

Dioxin and dioxin-like compounds were reported by 58 facilities, which is one facility less than the number of reporters in 2003. 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 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 were 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").

Naphthalene Classification Change

The International Agency for Research on Cancer (IARC) has evaluated naphthalene and classified it as "possibly carcinogenic to humans (Group 2B)" (IARC Monographs Vol. 82, 2002). In addition, the National Toxicology Program (NTP) has recently evaluated naphthalene and classified it as "reasonably anticipated to be a human carcinogen" (Eleventh Report on Carcinogens; U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, 2004). Also, OSHA classified it as a carcinogen. Based on these classifications the de minimis level for naphthalene was lowered from 1.0% to 0.1% starting with the 2004 reporting year.

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. The only difference between this year's e-FDR and last year's relates to the presentation of latitude and longitude information. This year's e-FDR presents latitude and longitude information from both the TRI forms and EPA's Facility Registry System (FRS) to give the public an opportunity to review this information submitted by facilities. 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.

What's New This Year

Methyl Ethyl Ketone (MEK) To Be Removed From The Toxics Release Inventory (TRI) List: No Reports Are Required For The 2004 Reporting Year

In March of 1998, U.S. EPA denied a petition from the Ketones Panel of the Chemical Manufacturers Association (CMA) to remove MEK from the TRI list (63 FR 15195). The American Chemistry Council (ACC) (formerly CMA) challenged U.S. EPA 's decision in U.S. District Court for the District of Columbia. On March 26, 2004, the District Court upheld U.S. EPA's petition denial on the basis that U.S. EPA's denial of the petition was lawful and appropriate. ACC appealed the District Court's decision to the D.C. Circuit Court of Appeals. On May 10, 2005, the D.C. Circuit Court vacated the District Court's decision and remanded "so that it can direct U.S. EPA to delete MEK from the TRI." The Circuit Court issued its mandate on June 13, 2005.

U.S. EPA did not require facilities to report MEK for the 2004 reporting year because the court order removing MEK from the TRI was issued before July 1, 2005. The final rule states that TRI facilities are not required to report releases and other waste management information on MEK that occurred during the 2004 reporting year or for activities in the future.

There is no need for facilities to withdraw MEK reports that they have already filed for reporting year 2004. Ohio EPA did not include those reports in the 2004 Toxics Release Inventory.

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, knows 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.

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 581 individually listed chemicals and 30 chemical categories, including 3 delimited categories containing 58 chemicals, for a total of 666 separate chemicals (i.e., 581 + 27 + 58). 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 28 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. 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 all three of the following requirements:

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.

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 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:

Chemical	Qualifier
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).

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 seventh time on July 1, 2005.

- For reporting year 2004, 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 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 an 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

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.
70 FR 39931 / July 12, 2005	Toxic Release Inventory Reporting Forms Modification Rule	EPA will no longer require TRI facilities to report locational information (latitude and longitude data) and several facility identifiers (regulatory assigned identification codes for each facility). Instead, the data will be obtained from existing EPA databases and made available to TRI data users. The proposal also: • Includes several minor reporting changes related to waste management activities, • Simplifies the reporting of pollution prevention activities, and • Improves public access to information about source reduction and pollution control activities undertaken by some facilities.

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 Compliance Assistance and Pollution Prevention (OCAPP) 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. OCAPP provides several services to industrial facilities. OCAPP 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/ocapp. OCAPP 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.

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 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 know as benzenol, carbolic 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 further treatment of the chemical occurs through biodegradation by microorganisms or 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 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.

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 2004, approximately 280 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 2004, including the listings of top companies, chemicals and counties, reflects the TRI data reporting due July 1, 2004. 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 <u>not</u> 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

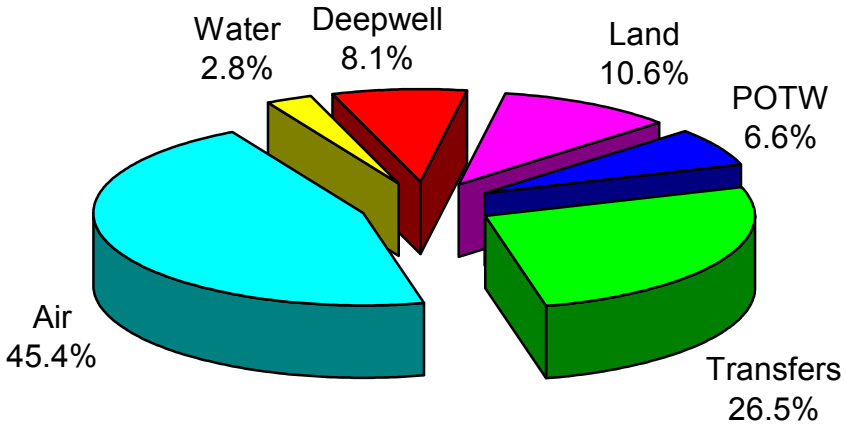
Statewide totals of on-site releases, off-site transfers, and on-site waste management for reporting years 1995 to 2004 are provided in Table 2A and 2B. Table 2A represents all data including the data for delisted, added, and modified chemicals and the expansion industrial sectors . Table 2B does not 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	1995	1996	1997	1998	1999*	2000	2001	2002	2003	2004
Releases to Air	76.4	73.5	70.4	162.5	150.9	145.5	121.9	134.0	133.1	127.2
Releases to Water	9.0	9.4	34.5	9.7	10.3	11.4	9.9	8.8	7.9	7.9
Deepwell Injection	14.5	13.7	11.6	28.8	27.6	30.3	32.0	29.6	29.3	22.6
Releases to Land On-Site	33.6	30.0	27.8	94.2	70.5	46.8	35.6	37.7	37.6	29.8
Discharges to POTW	18.7	18.8	19.2	19.3	19.8	23.1	18.7	17.4	17.3	18.6
Off-Site Disposal / Treatment	45.8	51.1	63.5	77.9	77.3	77.2	83.8	68.3	64.5	74.1
Total Releases & Transfers	**197.9**	**196.5**	**226.9**	**392.4**	**356.5**	**334.3**	**301.9**	**295.7**	**289.6**	**280.1**
Off-Site Energy Recovery	38.0	40.8	33.0	101.4	60.0	46.3	41.0	53.8	42.8	35.4
On-Site Energy Recovery	90.4	96.3	107.7	117.0	124.6	94.8	81.0	104.6	81.2	84.2
Off-Site Recycling	217.5	189.1	190.4	190.8	186.9	175.1	172.7	165.0	148.0	142.5
On-Site Recycling	348.7	322.3	215.9	288.5	233.8	223.0	205.4	166.9	171.3	157.2
On-Site Treatment	160.1	151.9	139.4	218.2	262.4	222.2	255.1	271.3	427.0	379.3
Reporting Facilities	1,693	1,654	1,644	1,728	1,734	1,749	1,783	1,712	1,661	1,608

* - First reporting year for 7 additional industrial sectors.

Figure 2A: 2004 Toxic Releases and Transfers

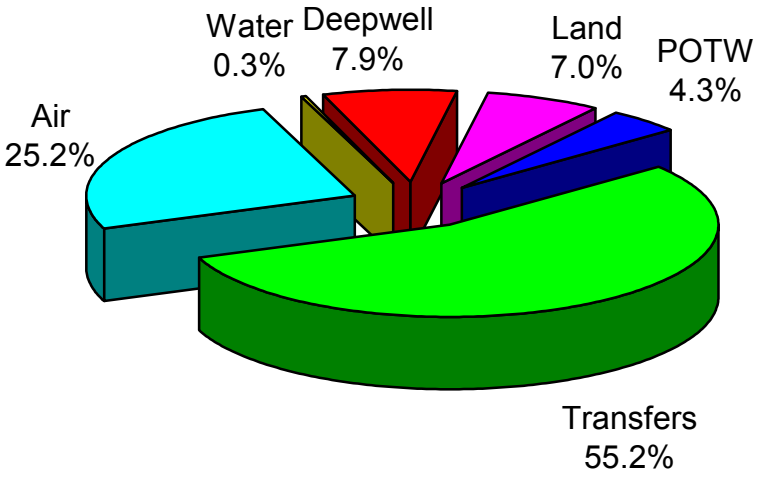


Summary of Data

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

Comparison	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Releases to Air	50.3	46.8	44.8	41.2	38.4	35.6	30.0	29.5	27.9	27.4
Releases to Water	1.2	1.5	1.0	1.0	0.5	0.5	0.4	0.3	0.6	0.3
Deepwell Injection	11.8	11.6	9.4	11.4	12.3	11.2	13.8	11.6	14.6	8.6
Releases to Land On-Site	33.5	29.9	27.7	29.6	19.3	15.3	10.2	9.0	16.3	7.6
Discharges to POTW	6.1	7.2	7.0	5.9	5.7	6.8	5.1	4.3	4.4	4.7
Off-Site Disposal / Treatment	43.0	48.5	61.3	57.1	59.2	58.4	48.9	50.1	45.3	59.9
Total Releases & Transfers	**145.8**	**145.5**	**151.2**	**146.2**	**135.4**	**127.7**	**108.3**	**104.8**	**109.0**	**108.5**
Off-Site Energy Recovery	33.9	37.2	29.0	30.7	27.2	24.5	22.2	43.3	20.3	21.9
On-Site Energy Recovery	78.3	83.3	92.0	100.2	100.3	77.0	65.1	84.4	71.9	81.5
Off-Site Recycling	213.8	185.2	185.8	183.2	176.3	167.9	165.7	157.7	140.5	137.7
On-Site Recycling	330.4	295.9	194.2	243.1	181.7	165.0	152.1	128.8	113.1	83.9
On-Site Treatment	117.7	120.5	108.4	108.2	117.8	110.8	99.9	117.1	147.6	149.3
Reporting Facilities	1,558	1,511	1,500	1,490	1,486	1,509	1,557	1,486	1,441	1,389

Figure 2B: 2004 Toxic Releases and Transfers

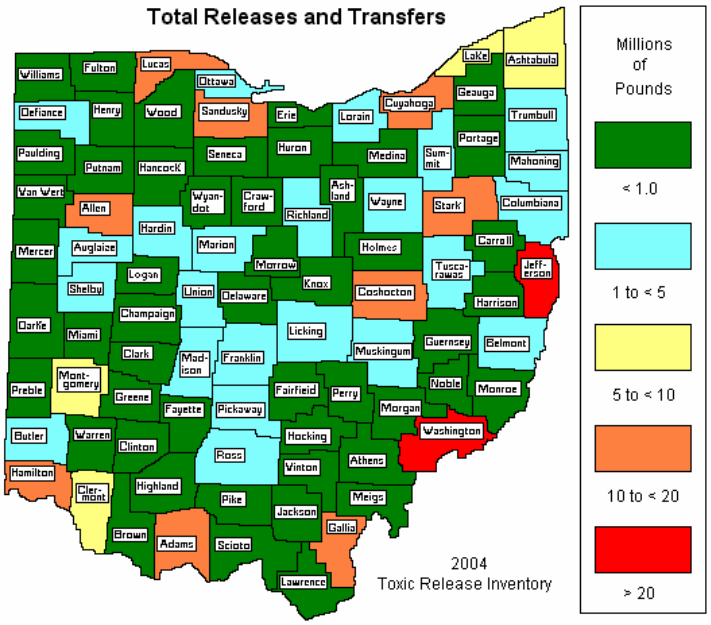


Summary of Data

Total Releases And Transfers For 2004*

Top 10 Counties

	County	Pounds
1.	Jefferson	30,899,780
2.	Washington	22,740,583
3.	Adams	17,251,543
4.	Hamilton	16,498,524
5.	Stark	15,829,815
6.	Allen	15,085,288
7.	Gallia	13,478,668
8.	Sandusky	13,067,015
9.	Cuyahoga	12,316,922
10.	Coshocton	12,301,113



Top 10 Chemicals

	Chemical	Pounds
1.	Hydrochloric acid (aerosols)	68,726,899
2.	Zinc and zinc compounds	30,035,199
3.	Manganese and manganese compounds	21,120,918
4.	Nitrate compounds	20,901,938
5.	Sulfuric acid (aerosols)	13,377,117
6.	Ammonia	13,002,577
7.	Nitric acid	10,448,726
8.	Hydrogen fluoride	10,052,663
9.	Chromium and chromium compounds	9,752,642
10.	Barium and barium compounds	8,814,091

Top 10 Facilities

	Facility / County	Pounds
1.	FirstEnergy W.H. Sammis Plant / Jefferson	13,746,956
2.	DP&L J.M.Stuart Station / Adams	13,551,335
3.	Vickery Environmental Inc. / Sandusky	12,062,239
4.	Cardinal Operating Co. Cardinal Plant / Jefferson	11,795,217
5.	BP Amoco Chemical Co. / Allen	10,769,803
6.	American Electric Power Muskingum River Plant / Washington	9,839,254
7.	Kyger Creek Station / Gallia	8,107,607
8.	Envirosafe Services of Ohio Inc. / Lucas	7,210,285
9.	American Electric Power Conesville Plant / Coshocton	7,109,877
10.	Cinergy Corp. Miami Fort Generating Station / Hamilton	6,371,958

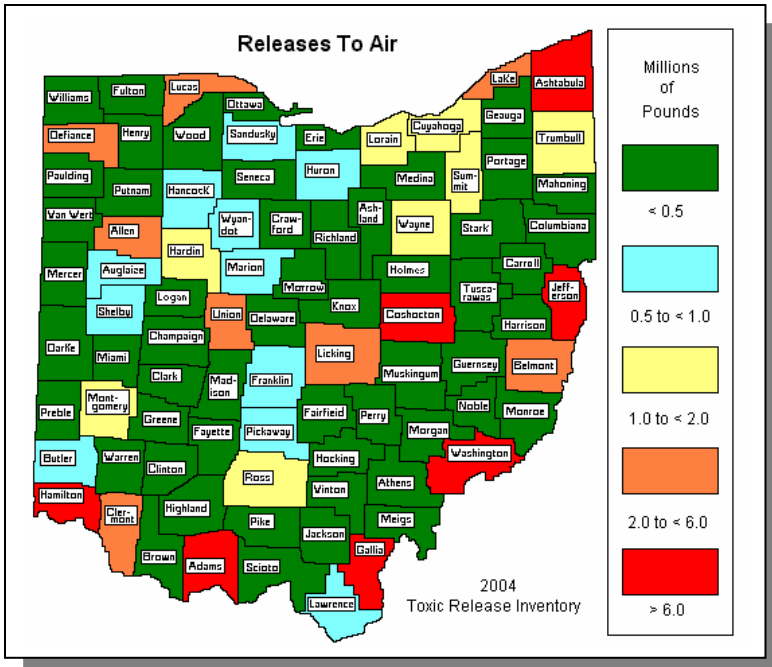
* All data included.

Summary of Data

Releases To Air For 2004*

Top 10 Counties

	County	Pounds
1.	Jefferson	21,858,382
2.	Adams	12,982,036
3.	Washington	12,572,112
4.	Gallia	9,486,692
5.	Hamilton	7,381,715
6.	Ashtabula	7,182,647
7.	Coshocton	6,299,481
8.	Clermont	5,830,163
9.	Lake	4,189,410
10.	Allen	3,706,235



Top 10 Chemicals

	Chemical	Pounds
1.	Hydrochloric acid (aerosols)	67,887,433
2.	Sulfuric acid (aerosols)	13,376,867
3.	Ammonia	9,779,870
4.	Carbonyl sulfide	6,880,910
5.	Hydrogen fluoride	5,609,101
6.	Methanol	3,148,367
7.	Certain glycol ethers	2,622,651
8.	Xylene (mixed isomers)	2,393,037
9.	Styrene	1,523,411
10.	1-chloro-1,1-difluoroethane	1,458,665

Top 10 Facilities

	Facility / County	Pounds
1.	FirstEnergy W.H. Sammis Plant / Jefferson	11,733,739
2.	DP&L J.M.Stuart Station / Adams	10,213,773
3.	Cardinal Operating Co. Cardinal Plant / Jefferson	10,052,922
4.	American Electric Power Muskingum River Plant / Washington	8,644,525
5.	Kyger Creek Station / Gallia	6,985,072
6.	Cinergy Corp. Miami Fort Generating Station / Hamilton	6,262,868
7.	American Electric Power Conesville Plant / Coshocton	5,880,814
8.	Cinergy Corp. Beckjord Generating Station / Clermont	4,874,757
9.	Millennium Inorganic Chemicals Plant 2 / Astabula	4,859,720
10.	FirstEnergy Eastlake Plant / Lake	3,346,056

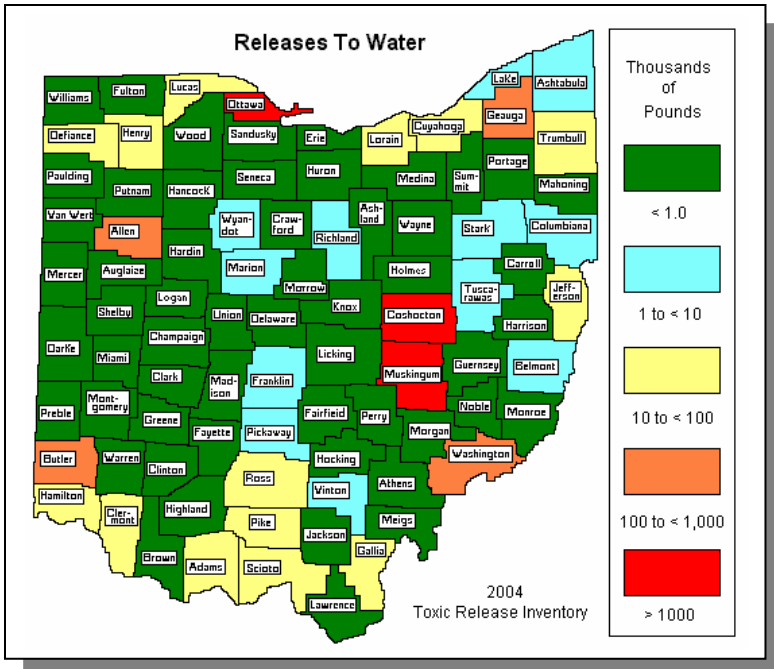
* All data included.

Summary of Data

Releases To Water For 2004*

Top 10 Counties

	County	Pounds
1.	Coshocton	3,281,029
2.	Muskingum	1,618,195
3.	Ottawa	1,099,095
4.	Washington	715,363
5.	Butler	234,406
6.	Allen	154,146
7.	Geauga	124,032
8.	Jefferson	93,138
9.	Scioto	72,060
10.	Ross	69,836



Top 10 Chemicals

	Chemical	Pounds
1.	Nitrate compounds	7,117,435
2.	Manganese and manganese compounds	221,910
3.	Ammonia	190,624
4.	Zinc and zinc compounds	69,705
5.	Formic acid	68,220
6.	Methanol	65,660
7.	Barium and barium compounds	43,135
8.	Copper and copper compounds	39,661
9.	Sodium nitrite	25000
10.	Chromium and chromium compounds	17,267

Top 10 Facilities

	Facility / County	Pounds
1.	AK Steel Corp. Coshocton Works / Coshocton	3,232,844
2.	AK Steel Corp. Zanesville Works / Muskingum	1,618,195
3.	Brush Wellman Inc. / Ottawa	1,099,086
4.	Kraton Polymers US LLC / Washington	440,953
5.	Eramet Marietta Inc / Washington	239,641
6.	AK Steel Corp. / Butler	144,453
7.	Middlefield Cheese / Geauga	124,000
8.	Premcor Refining Inc – Lima Refinery / Allen	91,933
9.	Miller Breweries East Inc. / Butler	85,190
10.	Sunoco Inc (R&M) Haverhill Plant / Scioto	72,060

* All data included.

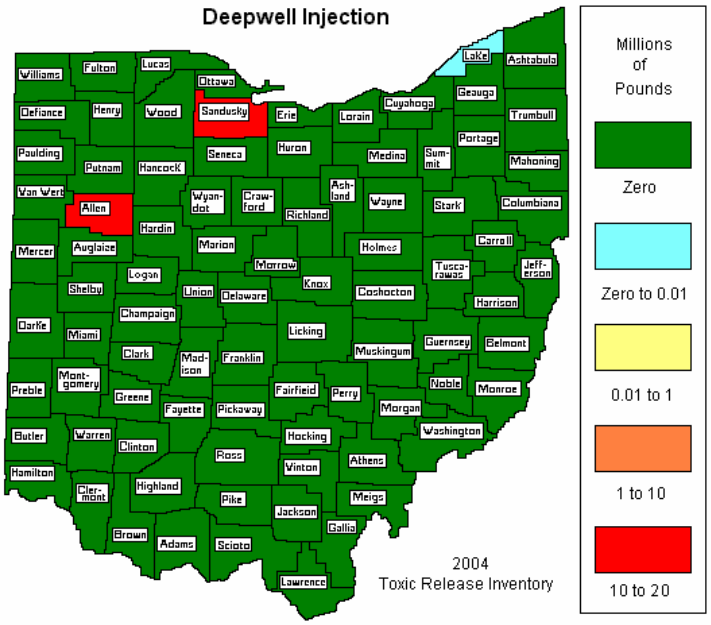
Summary of Data

Deepwell Injection For 2004*

Top 10 Counties

	County	Pounds
1.	Sandusky	12,006,030
2.	Allen	10,543,221
3.	Lake	519

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



Top 10 Chemicals

	Chemical	Pounds
1.	Nitric acid	6,457,637
2.	Hydrogen fluoride	3,616,895
3.	Acetonitrile	3,500,000
4.	Ammonia	1,735,616
5.	Acrylamide	1,500,000
6.	Methanol	1,210,712
7.	Acrylonitrile	1,000,000
8.	Chromium and chromium compounds	915,690
9.	Acrylic acid	430,000
10.	Cyanides	310,000

Top 10 Facilities

	Facility / County	Pounds
1.	Vickery Environmental Inc. / Sandusky	12,006,030
2.	BP Amoco Chemical Co. / Allen	10,543,221
3.	Arvesta Corp. / Lake	519

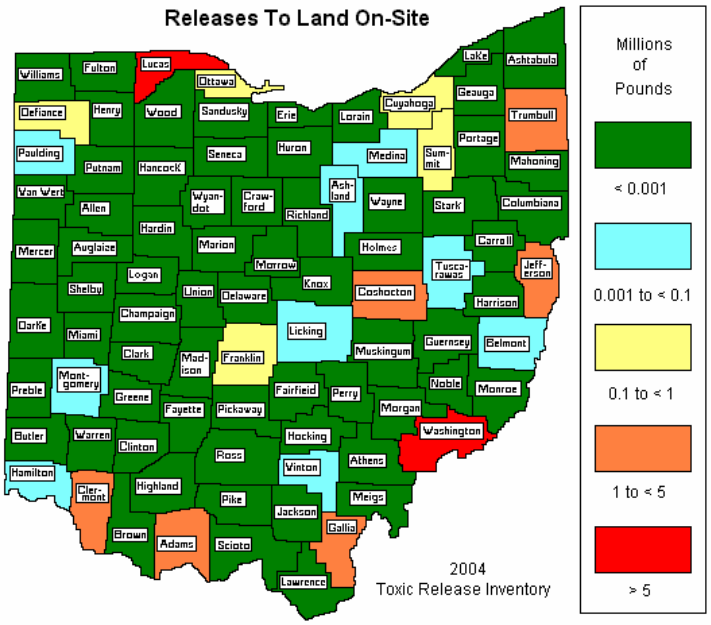
* All data included.

Summary of Data

Releases To Land On-Site For 2004*

Top 10 Counties

	County	Pounds
1.	Lucas	8,033,075
2.	Washington	5,404,008
3.	Adams	4,251,335
4.	Gallia	3,951,380
5.	Jefferson	1,728,482
6.	Clermont	1,316,537
7.	Trumbull	1,287,662
8.	Coshocton	1,244,671
9.	Defiance	910,453
10.	Franklin	533,794



Top 10 Chemicals

	Chemical	Pounds
1.	Manganese and manganese compounds	8,984,356
2.	Barium and barium compounds	5,531,058
3.	Zinc and zinc compounds	3,734,987
4.	Lead and lead compounds	3,004,135
5.	Chromium and chromium compounds	2,032,510
6.	Vanadium and vanadium compounds	2,019,148
7.	Copper and copper compounds	1,694,988
8.	Nickel and nickel compounds	1,058,565
9.	Arsenic and arsenic compounds	870,186
10.	Cobalt and cobalt compounds	342,518

Top 10 Facilities

	Facility / County	Pounds
1.	Envirosafe Services of Ohio Inc. / Lucas	7,208,024
2.	Eramet Marietta Inc. / Washington	4,223,730
3.	Dayton Power & Light Co. J.M Stuart Station / Adams	3,321,110
4.	American Electric Power Gavin Plant / Gallia	2,842,342
5.	Cardinal Operating Co. Cardinal Plant / Jefferson	1,728,482
6.	WCI Steel Inc. / Trumbull	1,278,100
7.	American Electric Power Conesville Plant / Coshocton	1,212,987
8.	AEP Muskingum River Plant / Washington	1,180,278
9.	Kyger Creek Station / Gallia	1,109,038
10.	Cinergy Zimmer Generating Station / Clermont	1,084,729

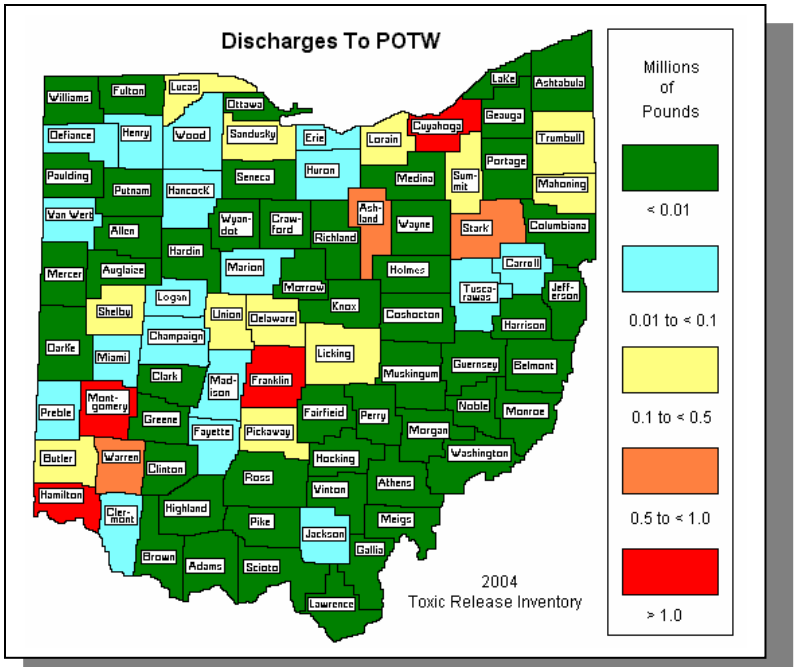
* All data included.

Summary of Data

Discharges To POTW For 2004*

Top 10 Counties

	County	Pounds
1.	Hamilton	7,404,088
2.	Montgomery	2,179,834
3.	Cuyahoga	2,147,146
4.	Franklin	1,000,526
5.	Stark	903,425
6.	Warren	617,545
7.	Ashland	525,309
8.	Summit	496,443
9.	Licking	465,062
10.	Butler	391,388



Top 10 Chemicals

	Chemical	Pounds
1.	Nitrate compounds	12,807,516
2.	Methanol	2,309,852
3.	Ammonia	747,337
4.	Certain glycol ethers	627,755
5.	Ethylene glycol	447,555
6.	Sodium nitrite	268,612
7.	Allyl alcohol	216,331
8.	Acetaldehyde	210,167
9.	Chlorine	181,220
10.	Formaldehyde	148,856

Top 10 Facilities

	Facility / County	Pounds
1.	Shepherd Chemical Co. / Hamilton	3,372,423
2.	Cargill Inc. Sweeteners North America / Montgomery	1,580,140
3.	Cognis Corp. / Hamilton	1,121,697
4.	Grace Davison Cincinnati Plant / Hamilton	1,001,911
5.	PMC Specialties Group Inc. / Hamilton	861,882
6.	GFS Chemicals Inc / Franklin	698,715
7.	Alcoa Cleveland Works / Cuyahoga	570,099
8.	Tremco Inc. / Ashland	520,000
9.	Envirite of Ohio Inc. / Stark	504,271
10.	Research Organics Inc.	494,476

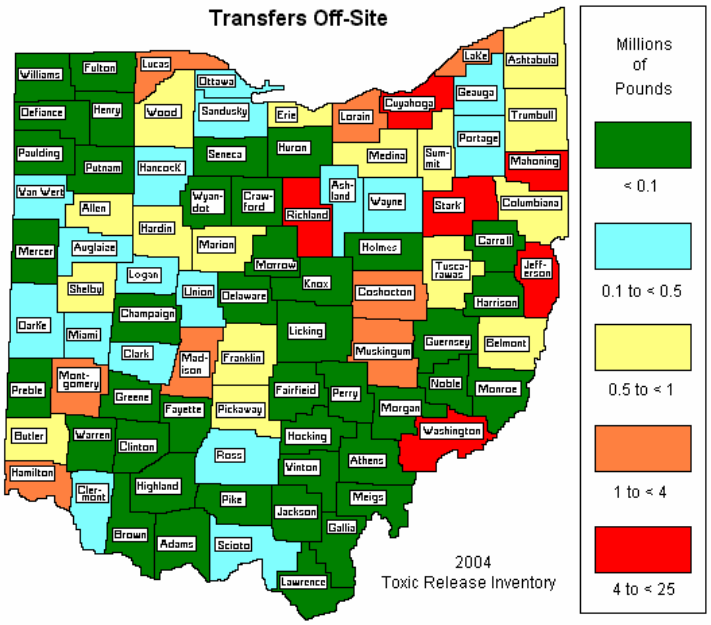
* All data included.

Summary of Data

Transfers Off-Site To Disposal or Treatment For 2004*

Top 10 Counties

	County	Pounds
1.	Stark	14,454,520
2.	Cuyahoga	8,624,981
3.	Jefferson	7,219,776
4.	Richland	4,295,832
5.	Mahoning	4,293,349
6.	Washington	4,049,091
7.	Montgomery	2,618,801
8.	Muskingum	2,577,042
9.	Lucas	1,993,264
10.	Lorain	1,852,478



Top 10 Chemicals

	Chemical	Pounds
1.	Zinc and zinc compounds	25,704,662
2.	Manganese and manganese compounds	11,031,822
3.	Chromium and chromium compounds	6,727,585
4.	Nitric acid	3,748,666
5.	Lead and lead compounds	3,343,415
6.	Barium and barium compounds	3,140,288
7.	Methanol	1,773,000
8.	Aluminum (fume or dust)	1,748,098
9.	Nickel and nickel compounds	1,580,699
10.	Xylene (mixed isomers)	1,492,885

Top 10 Facilities

	Facility / County	Pounds
1.	Timken Co. Faircrest Steel / Stark	5,957,060
2.	ISG Cleveland Inc. / Cuyahoga	5,457,881
3.	Wheeling-Pittsburgh Steel Corp. Mingo / Jefferson	4,893,968
4.	Envirite of Ohio Inc. / Stark	4,262,685
5.	V&M Star / Mahoning	4,254,293
6.	AK Steel Corp. – Mansfield Works / Richland	4,199,000
7.	Energizer Battery Mfg. Inc. / Washington	3,305,132
8.	Timken Co. Harrison Steel / Stark	3,287,701
9.	AK Steel Corp. – Zanesville Works / Muskingum	2,570,283
10.	FirstEnergy W.H. Sammis Plant / Jefferson	1,975,122

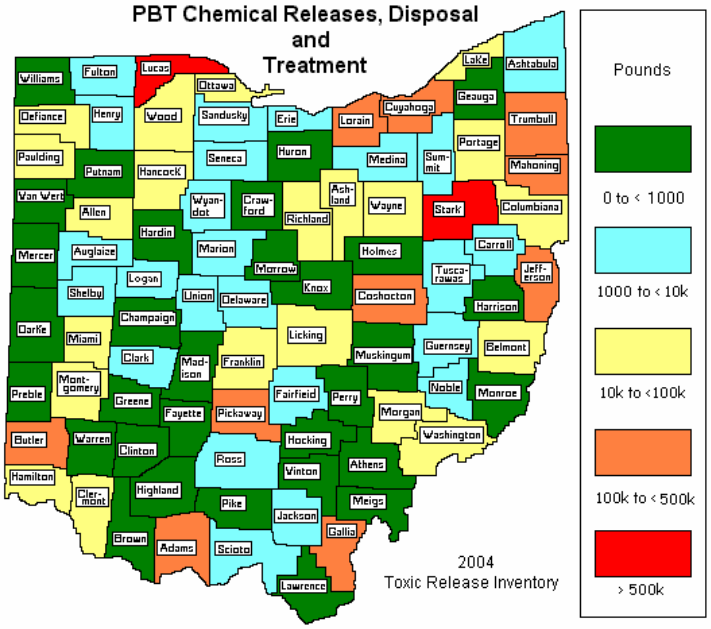
* All data included.

Summary of Data

PBT Chemical Releases, Disposal and Treatment For 2004*

Top 10 Counties

	County	Pounds
1.	Lucas	2,268,145
2.	Stark	912,814
3.	Cuyahoga	418,777
4.	Coshocton	409,394
5.	Mahoning	368,921
6.	Pickaway	321,777
7.	Jefferson	207,275
8.	Trumbull	159,042
9.	Gallia	145,575
10.	Lorain	137,945



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	0
Benzo(G,H,I)perylene	1,359	0	0	1	5	751
Chlordane	1	0	0	0	0	5
Dioxin & compounds	39.7 gr	0.42 gr	0	186.6 gr	0	265.6 gr
Heptachlor	1	0	0	0	0	176
Hexachlorobenzene	0	0	19	0	23	234
Isodrin	0	0	0	0	0	0
Lead & compounds	81,882	4,334	5,943	3,004,135	1,351	3,343,415
Mercury & compounds	8,782	14	2	3,701	11	12,368
Methoxyclor	1	0	0	0	0	593
Pendimethalin	1,508	0	0	0	0	30,158
Pentachlorobenzene	126	0	0	0	0	217
PCBs	0	0	0	0	0	1
PACs	6,665	1	191	48	321	9,418
Tetrabromobisphenol A	5	0	0	0	0	1
Toxaphene	1	0	10	0	0	0
Trifluralin	282	0	0	0	9	2,484

† 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. Only manufacturing facilities in SIC codes 20 through 39 were required to report under TRI. 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 2004 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 industrial sectors most recently added accounted for almost 45% 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 100 million pounds, and the RCRA Subtitle C refuse system facilities accounted for almost 26 million pounds of releases and transfers for treatment and disposal.

Figure 3: Releases & Transfers By SIC

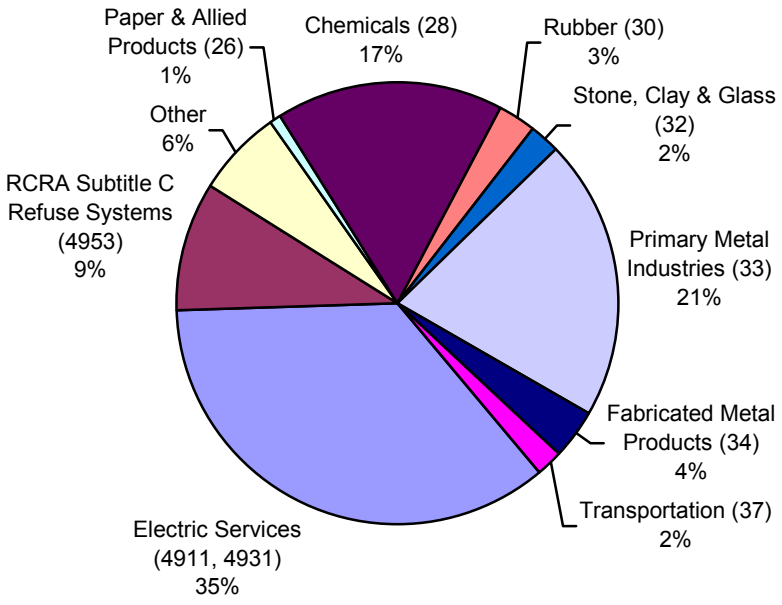


Table 3: Releases and Transfers by SIC Code

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	3	26	163,504	0	0	0
20	Food & Kindred Products	50	106	2,007,327	2,001,865	63,901	1,745,450
22	Textile Mill Products	10	33	143,397	367,478	10,468	209,019
23	Apparel	4	13	115,747	18,706	38,819	65,152
24	Lumber & Wood Products	17	49	332,931	265,175	1,258,189	3,211,066
25	Furniture & Fixtures	4	11	170,377	289,954	11,788	0
26	Paper & Allied Products	29	99	2,399,241	421,595	878,322	25,440,441
27	Printing & Publishing	13	15	64,624	35,252	63,770	329,997
28	Chemicals & Allied Products	251	1,253	26,037,728	20,353,199	29,378,186	240,668,538
29	Petroleum Refining	26	165	1,098,753	600,355	1,714,597	7,933,053
30	Rubber & Miscellaneous Plastics	194	450	5,018,012	2,484,815	3,039,922	6,778,208
32	Stone, Clay, Glass & Concrete	88	238	8,823,597	1,319,082	455,752	76,655,353
33	Primary Metal Industries	209	766	19,164,102	38,898,980	55,599,527	40,778,829
34	Fabricated Metal Products	271	715	3,289,354	6,474,094	29,971,919	20,003,425
35	Industrial Machinery	85	221	291,312	484,978	4,511,103	1,335,349
36	Electronic Equipment	80	175	821,628	2,763,980	12,049,508	5,643,330
37	Transportation Equipment	119	525	3,375,039	2,314,286	21,574,101	3,424,804
38	Instruments and Medical Goods	21	33	78,918	396,236	967,342	231,917
39	Miscellaneous Manufacturing	16	35	117,544	653,190	28,476	122,196
4911 4931	Electric Services (oil and gas fired)	27	335	95,878,720	4,572,977	601,693	10,561,343
4953	RCRA Refuse Systems	13	327	19,284,589	7,054,236	9,664,280	58,550,222
51	Wholesale Trade – Chemical and Petroleum Products	50	440	137,034	187,453	2,103,873	16,126,574
73	Business Services	8	63	77,813	685,297	3,928,358	6,784,930
-	Other	19	23	2,526,516	0	9,464	0

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)

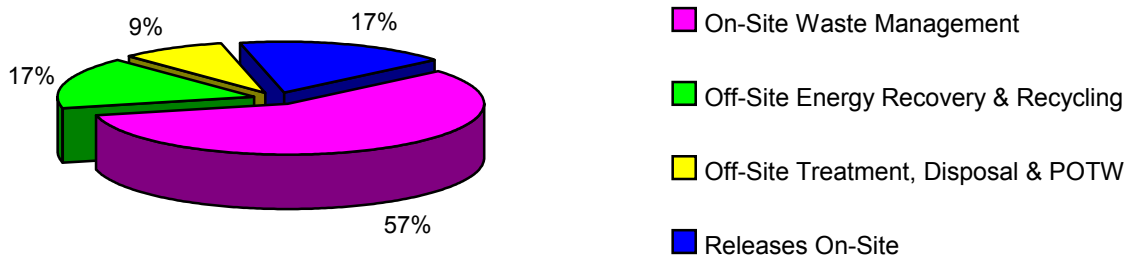
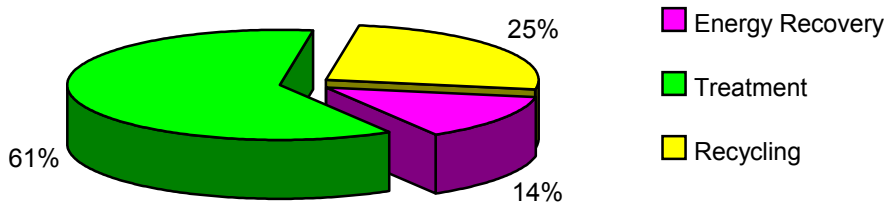


Figure 5: On-Site Waste Management
(All industries and chemicals)



Summary of Data

Nearly 214 facilities implemented source reduction activities at their facility during 2004 for over 503 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 2004, nearly 50% of the TRI reports indicated an increase in production when compared to the data for 2003. Table 4 indicates the changes in production reported by facilities covered by TRI.

Table 4: Changes in Production From 2003 to 2004

Change in Production (Production Ratio)	Number of Form Rs	Percent Reporting
Increase by ≥ 30%	733	13.4%
Increase by ≥ 20%, less than 30%	404	7.7%
Increase by ≥ 10%, less than 20%	748	13.6%
Less than 10% increase	871	15.9%
No Change	415	7.6%
Less than 10% decrease	914	16.7%
Decrease by ≥ 10%, less than 20%	446	8.1%
Decrease by ≥ 20%, less than 30%	207	3.8%
Decrease by ≥ 30%	401	7.3%
Not applicable, not reported or zero	346	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 2004 national data was not available prior to the drafting of this report, the national ranking for 2004 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:	2001	2002	2003
Air Releases	1	1	1
Water Releases	9	10	10
Land On-Site Releases	12	10	10
Deepwell Injection	5	3	3
Reporting Facilities	1,725	1678	1,647

Table 6: Number of Reporting Facilities

Number of Reporting Facilities – RY 2003		
Rank	**State**	**Number of Facilities**
1	**Ohio**	**1,647**
2	California	1,520
3	Texas	1,490
4	Pennsylvania	1,340
5	Illinois	1,242

Table 7: Top States For Releases

Medium	Rank	State	Release (pounds)
Air	**1**	**Ohio**	**133,062,593**
	2	North Carolina	100,295,451
	3	Georgia	99,287,620
	4	Texas	91,665,780
	5	Pennsylvania	90,985,304
Water	1	Indiana	23,296,297
	2	Texas	61,670,263
	3	Nebraska	18,177,388
	4	Louisiana	11,303,522
	5	Pennsylvania	9,684,378
	13	**Ohio**	**6,716,124**
Land On-Site	1	Alaska	515,442,770
	2	Nevada	406,365,728
	3	Utah	112,441,828
	4	Missouri	64,083,152
	5	Idaho	52,067,448
	8	**Ohio**	**37,335,620**
Deepwell Injection	1	Texas	85,675,991
	2	Louisiana	35,904,030
	3	**Ohio**	**29,289,527**
	4	Alaska	21,374,380
	5	Florida	21,030,071

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 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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	Mark Besel	mark.besel@epa.state.oh.us

*It is with sadness that we report the loss of our cohort, Greg Nogrady. Greg passed away unexpectedly this past September, less than a month before his 47th birthday. Greg had been with the TRI Unit five years. In that relatively short time he had become the prime coordinator of this annual report. He had also been a "go-to-guy" with many computer issues, including State/federal coordination with TRI and State Emergency Response Commission (SERC, or "312" or "Tier Two" reporting). His expertise, enthusiasm and energy, will be missed.

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