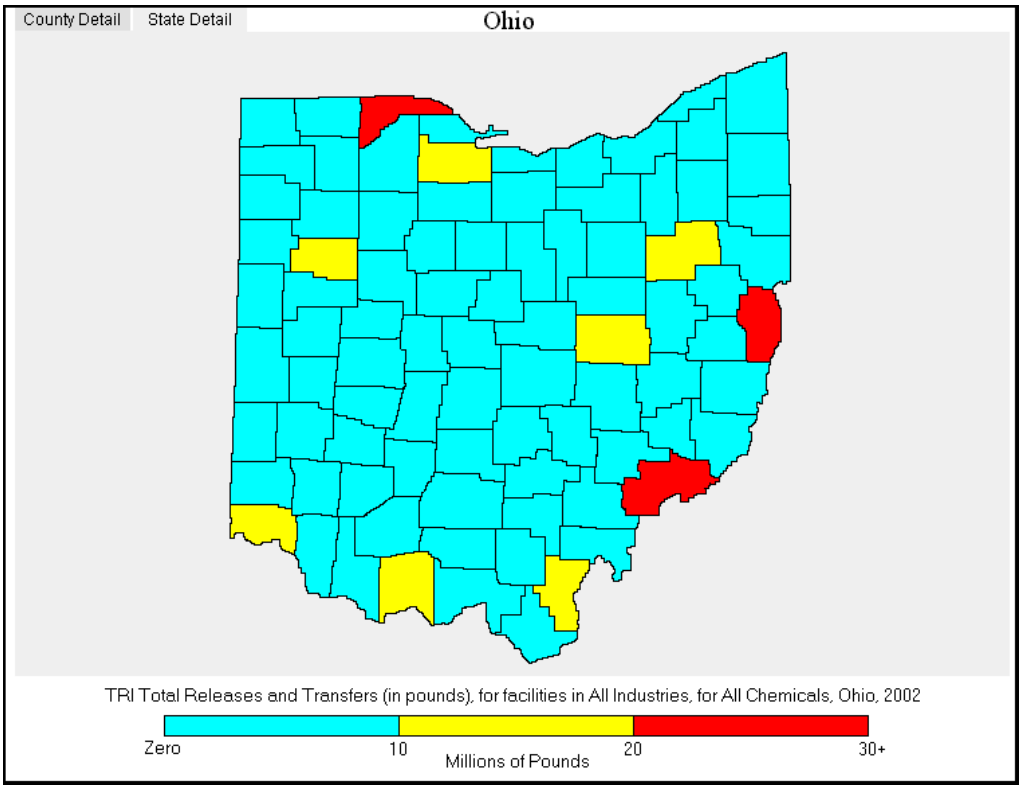
Toxic Release Inventory



2002
Annual Report

Ohio Environmental Protection Agency
Division of Air Pollution Control

April 2004

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 third 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.

For reporting year 2002, Ohio EPA received nearly 6,400 TRI reports from nearly 1,700 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 2001 and 2002 TRI data for all reporting facilities. About 600 reports for lead and lead compounds were submitted for both 2001 and 2002. These additional reports had a minimal effect on the actual total releases of lead and lead compounds between these years. Mercury or its compounds were reported by approximately the same number of reporters for 2001 and 2002 (both years slightly less than 100). A majority of the releases of mercury, about two-thirds, was reported by the coal/oil fired electric generating sector. Within the electric generating sector, most such releases were reported as stack air emissions with (sometimes significant) fractions also going to other landfills, surface impoundment or offsite disposal. Total releases of mercury and its compounds were down about 10% for 2002 compared to 2001.

Table 1: Comparison of 2001 and 2002 TRI Data

Environmental Medium	Amount Released in 2001 (lbs/yr)	Amount Released in 2002 (lbs/yr)	Percent Change
Releases to Air	121,862,269	135,570,447	11.25%
Releases to Water	8,353,652	7,730,992	-7.45%
Deepwell Injection	31,993,954	29,605,594	-7.47%
Releases to Land On-Site	35,618,484	37,710,199	5.87%
Discharges to POTW	18,683,292	17,719,262	-5.16%
Transfers Off-Site for Disposal and Treatment	83,018,755	63,632,967	-23.4%
Total Releases and Transfers	299,530,406	291,969,011	-2.52%
Energy Recovery On-Site	81,101,212	104,618,827	29.00%
Energy Recovery Off-Site	40,940,269	53,066,326	29.62%
Recycling On-Site	195,520,777	156,772,960	-19.8%
Recycling Off-Site	170,342,076	163,429,317	-4.06%
Treatment On-Site	254,849,766	271,333,967	6.47%
Number of Reporting Facilities	1,758	1,670	-5.01%

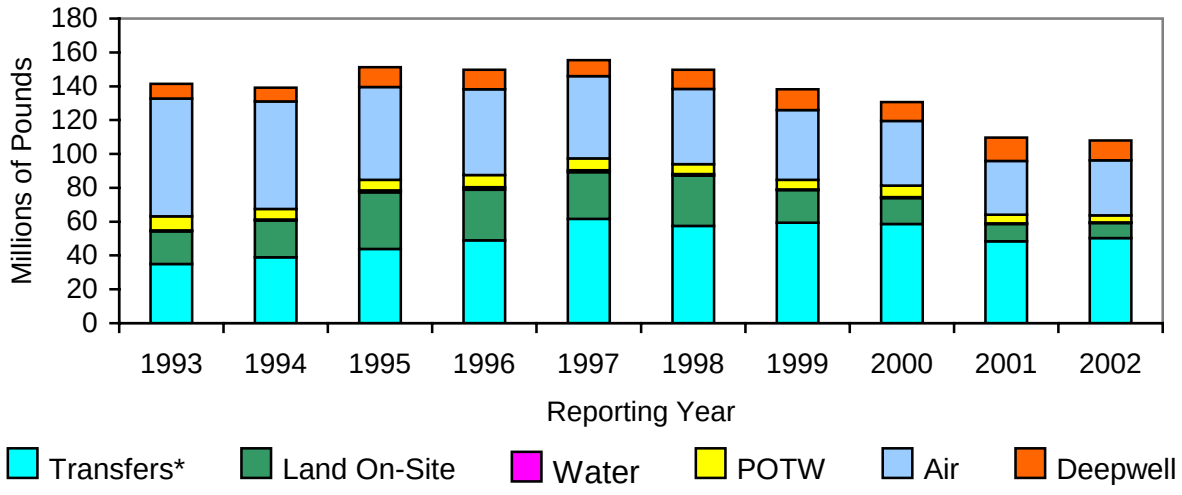
Executive Summary

Total releases and transfers decreased by about 2.5% between 2001 and 2002, with the number of reporting facilities also decreasing slightly. There is significant variation among the various releases and transfers among the nearly 1,700 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. Very small differences often determine what becomes 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 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 2001 and 2002 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
(Facilities/Chemicals Reportable Over The Entire Period)



* - Transfers off-site for disposal and treatment.

Executive Summary

Air Releases

Following a 16% decrease from 2000 to 2001, air emissions reported for 2002 increased over 11%. Again this year, nine of the top ten releases are from power generating facilities. Eight of the top ten increases were power generating facilities. The top five increasers averaged over 2.5 million pound increases, primarily hydrochloric and sulfuric acid. The largest increase, over five million pounds, was at FirstEnergy's W.H. Sammis facility in Jefferson County. AEP's Muskingum River and Conesville plants each increased releases by more than 2 million pounds. Releases from the power generating facilities are due primarily to the amount of power produced and the type of coal burned. Several power generating facilities reported reduced releases, with AEP's Gavin plant in Gallia County showing the biggest reduction of over 35%. This was due to the non-operation of a unit while selective catalytic reduction (SCR) equipment was installed. Similarly, OVEC's Kyger Creek station installed SCR equipment on all five generating units and switched their fuel supply.

Allen County's Flexible Foam Products was a significant air release decreaser. The company changed processes, switching from dichloromethane to carbon dioxide as a foaming agent in the production of polyurethane foam. This resulted in a reduction of over a million pounds of dichloromethane air releases in the last two years.

Water Releases

Toxic releases to Ohio waterways were down over 7%, from 8.3 to 7.7 million pounds. Nitrate compounds are the largest type of toxic chemical accounting for almost 7 million pounds or over 90% of these releases. Nitrate compounds are by-products of the treatment of nitric acid. The most significant increases and decreases are both attributable to the steel industry. Both Massillon Stainless (Stark County) and LTV Steel (Cuyahoga County) ceased operations resulting in a reduction of almost 800,000 pounds of nitrate compounds. Both the AK Steel Coshocton and Zanesville works reported increased water releases of approximately 220,000 pounds (combined), primarily nitrate compounds. AK Steel performs monthly monitoring of nitrate concentration in its discharge water and notes that a small increase in parts per million can result in a significant increase in pounds reported. The AK Steel Coshocton Works uses and discharges approximately 600 million gallons of water per year.

Deepwell Injection

Statewide deepwell injection decreased about 7%. This was primarily attributable to an approximate 14% decrease at BP Chemicals in Lima. Vickery Environmental Inc., a regulated disposal facility, reported just over 16 million pounds of deepwell injection, down slightly from 2001.

Land Releases On-Site

2002 releases to land on site were up over 5%. The increased disposal at Envirosafe Services of Ohio, a Resource Conservation and Recovery Act (RCRA) regulated disposal facility in Lucas County, accounted for the statewide increase. Envirosafe's 2002 TRI reportable releases were up over 20%, or 2.5 million pounds. A reported increase of 300,000 pounds of on-site disposal at Clow Water Systems in Coshocton was associated with lead removed in scrubber waters.

Several power generating and steel production facilities also reported increases and decreases of on-site disposal of listed toxic chemicals.

Land Releases On-Site (cont.)

DP&L's J.M Stuart (Adams County), AEP's Conesville (Coshocton County) and Cinergy's Zimmer (Clermont County) generating stations collectively reported on-site disposal increases of approximately 900,000 pounds. DP&L's Killen (Adams County) and AEP's Gavin (Gallia County) and Cardinal (Jefferson County) generating stations reported on- site disposal decreases of approximately 800,000 pounds.

The closed LTV Cleveland facility did not report for 2002, while ISG Cleveland appears as new reporter. ISG Cleveland operates some of the assets of the prior LTV facility. On-site releases of both the power generating and steel producing facilities consist primarily of zinc, manganese and their compounds. State-wide on-site releases of these two chemicals is almost 21 million pounds, over 50% of the total releases to land on-site.

POTW Releases

Releases to municipal or publicly owned treatment works (POTWs) were down approximately 5%. While discharges to POTWs in Hamilton County totaled over 7 million pounds, Shepherd Chemical, Cognis Corporation, Grace Davison and Cincinnati Specialties all reduced releases an average of 350,000 pounds. Methanol and nitrate compounds accounted for over 11% and 70% respectively of the chemicals discharged to the POTWs.

Off-Site Disposal and Treatment

Statewide transfers off-site for treatment and disposal were down about 19 million pounds, a decrease of over 20%. In 2002 nearly 64 million pounds was reported to have been transferred off-site for treatment or disposal, compared to about 83 million pounds for 2001.

Energy Recovery On-Site

2002 reported on-site energy recovery increased 29% from 2001 from over 80 million pounds to 105 million. Lafarge North America led the increase with almost 20 million pounds. The Lafarge North America facility (Paulding County) includes Systech Environmental, a Resource Conservation and Recovery Act (RCRA) permitted treatment facility. This facility is able to utilize waste derived blended fuels in energy recovery efforts to operate a cement kiln. MeadWestvaco's Chillicothe facility (MW Custom Papers LLC) reported a decrease of slightly more than one million pounds. This change was due to the facility's determination that the combustion of methanol was considered "treatment" rather than "energy recovery".

Energy Recovery Off-Site

The increase in chemicals reported in energy recovered off-site was approximately 30%. For 2002, Ohio facilities reported more than 53 million pounds of TRI reportable toxic chemicals energy-recovered off-site, a 13 million pound increase from last year. Commercial waste management facilities reported the largest transfers offsite for energy recovery. Two of the facilities among the top increasers are hazardous waste management facilities. The over 22 million pound increase of off-site energy recovery reported by Onyx Environmental Services (Montgomery County) led the changes. The Honeywell facility in Ironton reported over 1.9 million pounds of energy recovered toxic chemicals. In this instance, the energy recovered was attributable to the closing of the facility and the off-site transfer of reportable chemicals, largely tank bottoms, to energy recovery.

Energy Recovery Off-Site (cont.)

Some facilities also reported significant decreases in 2002. Kraftmaid Cabinetry (Geauga County), notes that their 0.5 million pound reduction in off-site energy recovery was a result of their efforts to reformulate products to minimize use of toxic chemicals. Similarly, Perstorp Polyols, Inc., notes that their nearly million pound reduction was due not only to lessened production, but to waste minimization process changes.

Recycling On-Site

Recycling on-site was down almost 20% for 2002 compared to 2001. Nine facilities reported reductions of over 1 million pounds in on-site recycling. Techneglas in Columbus reduced on-site recycling almost 10 million pounds. This was the second year for such significant reductions at this facility, largely attributed to the decreased production and related recycling of lead compounds associated with the production of picture tube parts for televisions and computer monitors. An 8-million pound reduction in on-site recycling at Chemical Solvents in Cleveland, a licensed hazardous waste treatment facility, was attributed to a down-turn in that business.

Recycling Off-Site

Off-site recycling was down approximately 4% from last year. While five facilities reported reductions of over 1 million pounds, Zanesville's Lear Corporation, was the most significant, with a reduction of over 10 million pounds. This change was due to Lear's Zanesville facility now specializing in plastic molding with the copper stamping operations (and resulting off-site copper recycling) being transferred to a non-Ohio Lear facility. A 4 million pound reduction at Republic Engineered Products, Inc. is the result of reduced recycling of bag-house dust during a bankruptcy-prompted shut down.

Treatment On-Site

Over 270 million pounds of toxic chemicals were reported treated on-site in 2002, up over 6% from 2001. Over 40% of such treatment was attributable to RCRA treatment facilities and power generating facilities. VonRoll / WTI, a RCRA treatment facility in East Liverpool, reported the most treatment, of over 40 million pounds of toxic chemicals. Ross Incineration, a RCRA treatment facility in Grafton, treated almost 18 million pounds. Collectively these facilities treated slightly over 20% of state-wide toxic chemicals. The single biggest on-site treatment reduction, over 17.5 million pounds, was at AEP's Gavin plant. This was due to the difference in hydrochloric acid neutralized in the flue gases related to coal use combined with the non-operation of a production unit and the related treatment of ammonia.

PBT Chemicals

Nearly 950 Form Rs for persistent bioaccumulative toxic (PBT) chemicals were submitted for 2002. The PBT chemical list consists of 16 individual chemicals and 4 chemical categories (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.

The 4 most reported (in terms of releases, disposal and treatment) in Ohio for 2002 were (in descending order) lead and compounds, pendimethalin, PACs, and mercury and compounds. These, along with dioxins, are discussed below.

PBT Chemicals (cont.)

About 600 reports were submitted for lead or lead compounds (approximately the same as 2001). The industrial sectors submitting the most lead or lead compounds Form Rs were SIC codes 34 (Fabricated Metal Products), 37 (Transportation Equipment) and 49 (Electric Services). Lead or lead compounds was reported from nearly every major SIC code classification required to report to TRI. The total releases of lead and lead compounds was approximately the same for 2001 and 2002.

Pendimethalin is a crystal-like solid that appears orange/yellow in color and has a fruity odor. It is a man-made chemical that is used primarily as a herbicide to destroy or prevent the growth of certain plants like weeds. It is also used on crops and residential lawns and ornamentals (plants that are grown for their beauty). 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 three facilities in 2002, two in SIC code 2875 (fertilizers, mixing only) and 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. However, other industrial processes are also sources, 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 2002.

Mercury or its compounds were reported by approximately the same number of reporters for 2001 and 2002 (just under 100). A majority of the releases, about two-thirds, were reported by the electric generating sector.

Dioxin and dioxin-like compounds were reported by just over 60 facilities in 2001 and 2002. About one-third of these reports were electric generating plants. This is the third year dioxin and dioxin-like compounds have been reportable under TRI. The amount reported increased from about half a kilogram (about one pound) in 2000 to nearly a kilogram (about 2 pounds) in 2002. For 2002, almost half of the dioxin reported was reported as injected underground to a Class I Well. 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 all can create small quantities of dioxins.

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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. Their 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 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 websites (see page 26 for website 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 annually inspects approximately 100 facilities. Typically, approximately 5% of the inspections result in enforcement actions against facilities which did not properly file TRI reports.

Who Must Report

A facility is required to report if it meets all three of the following requirements:

1. It has 10 or more full-time employees (or the equivalent of 20,000 man-hours per year).

2. It 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. It 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 is 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."

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 fifth time on July 1, 2003.

- For reporting year 2002, 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

The TRI Program continued to grow and change during the past year and it appears that the expansion of the program will continue into coming years. The following list summarizes significant changes that U.S. EPA has finalized in the past several years.

Federal Register/ Date	Title	Summary
64 FR 63060 October 10, 2002	Overburden Exemption: Denial of Petition	EPA denied an Administrative Procedure Act (APA) to allow both consolidated and unconsolidated ("loose") "overburden" (material which must be removed to access the mined resource) to be exempt from TRI reporting. Currently unconsolidated material (e.g., dirt) is exempt, consolidated material (e.g. rock) is not.
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.

Federal Register/ Date	Title	Summary
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 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.

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

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 municipality or other unit of local government. Some TRI facilities generate wastewater which is transferred through pipes or sewers to a POTW. Treatment or removal of a chemical from the wastewater depends upon the nature of the chemical, as well as the treatment methods present at the POTW. Chemicals that are easily utilized as nutrients by microorganisms, or have a low solubility in water, are likely to be removed to some extent. Chemicals that are volatile and have a low solubility in water may evaporate into the atmosphere. Not all TRI chemicals can be treated or removed by a POTW. Some chemicals,

such as metals, may be removed but are not destroyed, and may be disposed of in landfills or discharged into receiving waters.

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 waste waters 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 <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 1993 to 2002 are provided in Table 2A and 2B. Table 2A represents the TRI data as reported by facilities, 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)

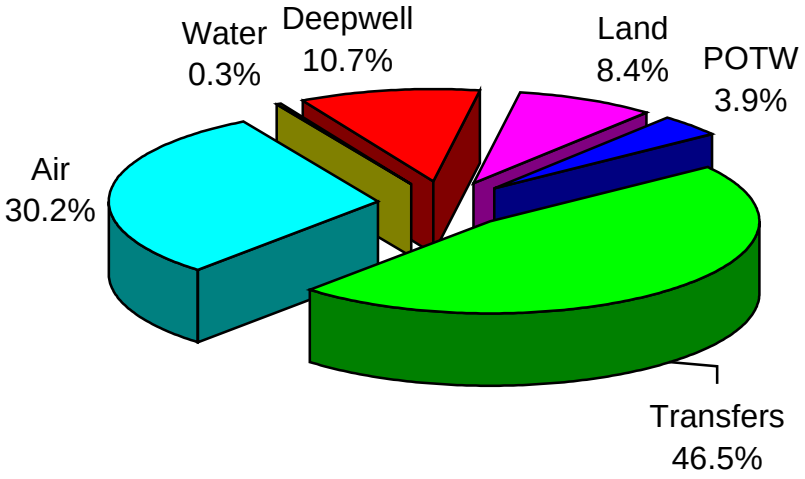
Environmental Medium	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	85.3	81.0	76.3	73.5	70.4	163	151	145	122	136
Water	4.76	1.20	7.58	7.90	7.79	8.04	8.74	9.37	8.35	7.73
Deepwell Injection	25.2	14.5	14.5	13.7	11.6	28.8	27.6	30.3	32.0	29.6
Land On-Site	19.4	21.7	33.6	30.0	27.8	94.2	70.5	46.8	35.6	37.7
POTW	16.3	8.51	18.7	18.8	19.2	19.3	19.8	23.3	18.7	17.7
Transfers Off-Site for Treatment and Disposal	60.2	47.0	45.8	51.1	63.5	77.9	76.9	77.1	83.0	63.6
Off-Site Energy Recovery	28.3	37.2	38.0	40.7	33.0	101	60.0	46.2	40.9	53.1
On-Site Energy Recovery	104	95.2	90.4	96.3	108	117	125	94.9	81.1	105
Off-Site Recycling	205	229	218	189	190	191	185	173	170	163
On-Site Recycling	581	264	349	322	216	289	234	224	196	157
On-Site Treatment	377	261	160	152	139	218	262	222	255	271
Number of Reporting Facilities	1,750	1,721	1,692	1,653	1,643	1,724	1,728	1,742	1,758	1,670
Number of Form Rs	6,178	5,780	5,221	4,996	4,754	5,434	5,332	5,612	5,720	5,557
Number of Form As	NA	NA	535	590	793	1,113	917	1,024	918	792
Number of Chemicals Reported	192	185	244	232	219	316	316	322	318	321

Summary of Data

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

Environmental Medium	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Air	69.6	63.4	54.8	50.6	48.7	44.4	41.1	38.2	31.7	32.6
Water	0.551	0.632	1.16	1.50	1.04	0.969	0.462	0.446	0.422	0.290
Deepwell Injection	8.64	8.21	11.8	11.6	9.42	11.4	12.3	11.2	13.8	11.6
Land On-Site	19.3	21.6	33.5	29.9	27.7	29.6	19.3	15.3	10.2	9.04
POTW	8.34	6.32	6.10	7.22	7.01	5.89	5.70	6.85	5.06	4.18
Transfers Off-Site for Treatment and Disposal	35.0	39.0	43.9	49.0	61.6	57.5	59.3	58.7	48.4	50.2
Total Releases & Transfers	141	139	151	150	155	150	138	131	109	108
Off-Site Energy Recovery	28.3	37.2	37.4	40.2	32.4	33.3	29.9	26.4	23.8	44.3
On-Site Energy Recovery	104	95.0	82.7	87.5	98.1	108	111	81.9	69.6	90.4
Off-Site Recycling	187	214	216	188	189	186	178	169	166	159
On-Site Recycling	240	209	333	298	196	245	185	168	146	121
On-Site Treatment	167	119	126	130	118	119	128	121	107	126

Figure 2: 2002 Toxic Releases and Transfers

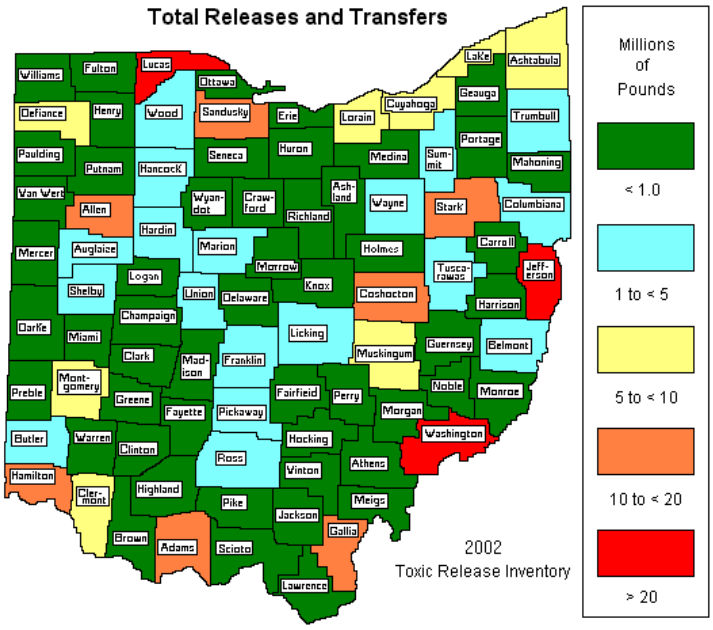


Summary of Data

Total Releases And Transfers For 2002

Top 10 Counties

	County	Pounds*
1.	Jefferson	32,049,045
2.	Lucas	21,960,209
3.	Washington	21,711,031
4.	Allen	17,737,653
5.	Sandusky	17,009,350
6.	Adams	16,771,791
7.	Hamilton	16,469,049
8.	Coshocton	14,199,955
9.	Stark	13,950,981
10.	Gallia	11,814,999



Top 10 Chemicals

	Chemical	Pounds *
1.	Hydrochloric acid (aerosols)	70,271,733
2.	Zinc and zinc compounds	31,176,813
3.	Nitrate compounds	19,906,962
4.	Manganese and manganese compounds	19,148,384
5.	Sulfuric acid (aerosols)	14,556,875
6.	Ammonia	12,598,887
7.	Hydrogen fluoride	12,449,271
8.	Nitric acid	12,044,875
9.	Methanol	8,853,232
10.	Barium and barium compounds	8,144,271

Top 10 Facilities

	Facility / County	Pounds
1.	Vickery Environmental Inc. / Sandusky	16,064,848
2.	Envirosafe Services of Ohio Inc. / Lucas	15,550,250
3.	FirstEnergy W.H. Sammis Plant / Jefferson	15,362,739
4.	Dayton Power & Light Co. J.M Stuart Station / Adams	13,792,270
5.	BP Chemicals Inc. / Allen	13,752,786
6.	American Electric Power Muskingum River Plant / Washington	9,737,887
7.	Cardinal Operating Co. Cardinal Plant / Jefferson	8,961,636
8.	American Electric Power Conesville Plant / Coshocton	8,625,230
9.	Ohio Valley Electric Corp. Kyger Creek Plant / Gallia	7,614,742
10.	Wheeling-Pittsburgh Steel Corp. Mingo / Jefferson	7,495,452

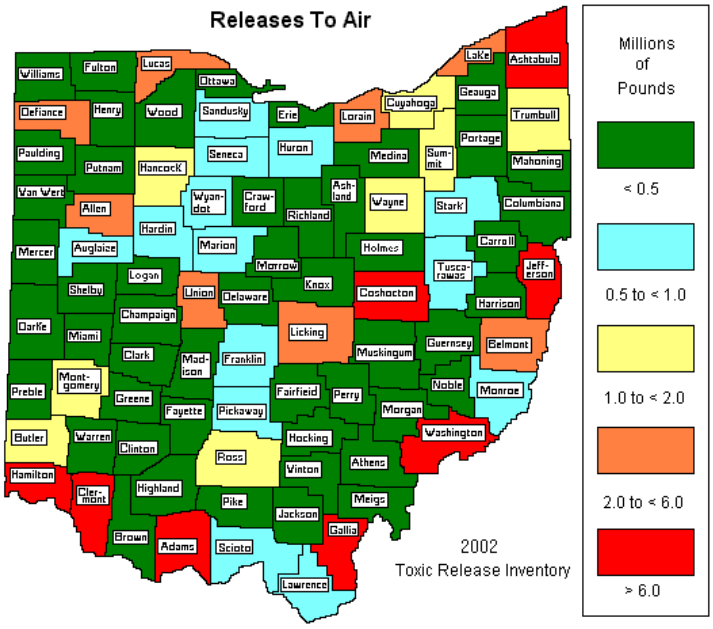
* All data included.

Summary of Data

Releases To Air For 2002*

Top 10 Counties

	County	Pounds
1.	Jefferson	20,749,512
2.	Adams	12,673,306
3.	Washington	11,737,581
4.	Gallia	8,479,819
5.	Hamilton	7,814,622
6.	Coshocton	7,705,474
7.	Clermont	6,615,508
8.	Ashtabula	6,056,873
9.	Lake	4,475,489
10.	Lucas	3,785,376



Top 10 Chemicals

	Chemical	Pounds
1.	Hydrochloric acid (aerosols)	69,851,233
2.	Sulfuric acid (aerosols)	14,547,900
3.	Ammonia	9,005,675
4.	Hydrogen fluoride	6,281,334
5.	Carbonyl sulfide	5,906,138
6.	Certain glycol ethers	4,646,333
7.	Methanol	3,582,191
8.	Xylene (mixed isomers)	2,892,906
9.	Toluene	1,850,680
10.	N-Hexane	1,570,182

Top 10 Facilities

	Facility / County	Pounds
1.	FirstEnergy W.H. Sammis Plant / Jefferson	13,140,596
2.	Dayton Power & Light Co. J.M Stuart Station / Adams	10,431,418
3.	American Electric Power Muskingum River Plant / Washington	8,633,824
4.	Cardinal Operating Co. Cardinal Plant / Jefferson	7,506,909
5.	American Electric Power Conesville Plant / Coshocton	7,165,125
6.	Ohio Valley Electric Corp. Kyger Creek Plant / Gallia	6,796,428
7.	Cinergy Corp. Miami Fort Generating Station / Hamilton	6,317,000
8.	Cinergy Corp. Beckjord Generating Station / Clermont	5,400,652
9.	Millennium Inorganic Chemicals / Astabula	4,547,942
10.	FirstEnergy Eastlake Plant /Lake	3,716,846

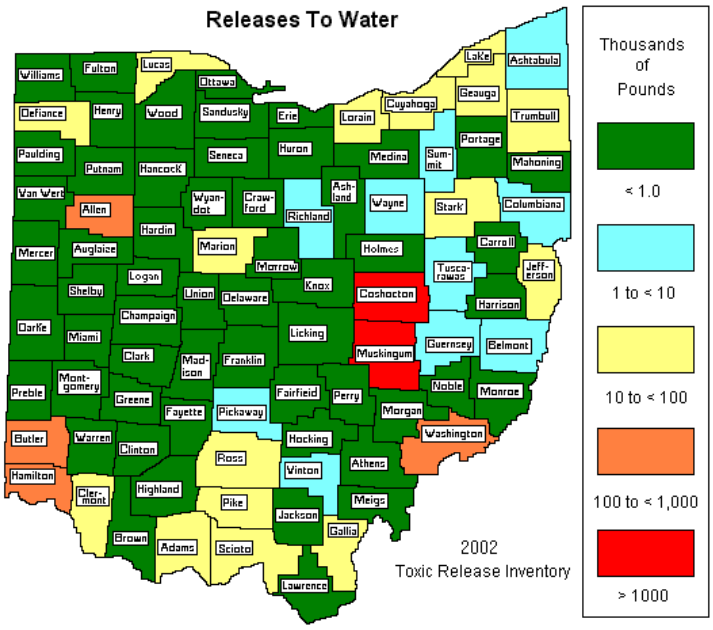
* All data included.

Summary of Data

Releases To Water For 2002*

Top 10 Counties

	County	Pounds
1.	Coshocton	3,907,338
2.	Muskingum	2,123,094
3.	Washington	718,254
4.	Butler	165,732
5.	Allen	162,496
6.	Hamilton	114,394
7.	Trumbull	65,934
8.	Scioto	60,139
9.	Geauga	52,030
10.	Defiance	49,835



Top 10 Chemicals

	Chemical	Pounds
1.	Nitrate compounds	6,998,078
2.	Ammonia	245,336
3.	Manganese and manganese compounds	183,591
4.	Formic acid	54,200
5.	Methanol	40,030
6.	Zinc and zinc compounds	37,324
7.	Barium and barium compounds	26,317
8.	Ethylene glycol	21,747
9.	Formaldehyde	20,457
10.	Sodium nitrite	19,900

Top 10 Facilities

	Facility / County	Pounds
1.	AK Steel Corp. Coshocton Works / Coshocton	3,905,117
2.	AK Steel Corp. Zanesville Works / Muskingum	2,123,094
3.	Kraton Polymers US LLC / Washington	431,232
4.	Eramet Marietta Inc / Washington	244,441
5.	AK Steel Corp. / Butler	160,970
6.	Premcor Refining Inc – Lima Refinery / Allen	81,244
7.	PCS Nitrogen of Ohio LP / Allen	81,216
8.	Sunoco Inc (R&M) Haverhill Plant / Scioto	60,139
9.	Middlefield Cheese / Geauga	52,000
10.	Solutia – Port Plastics / Hamilton	51,000

* All data included.

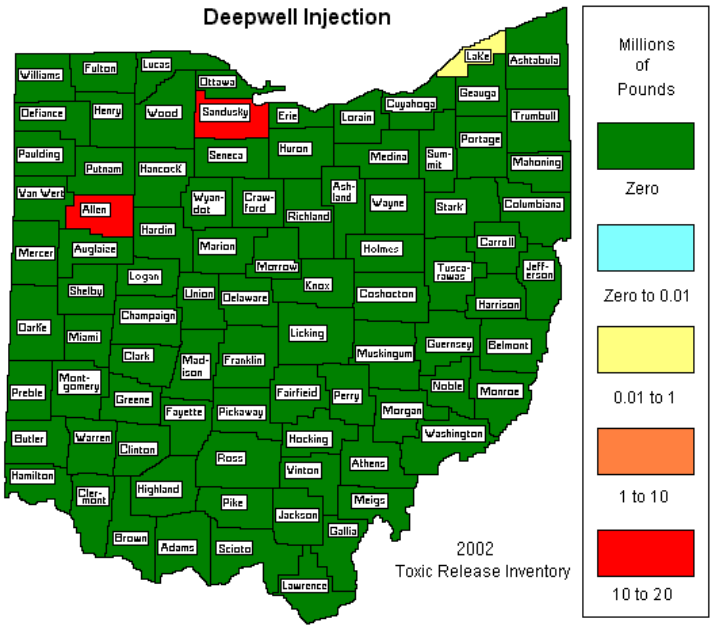
Summary of Data

Deepwell Injection For 2002*

Top 10 Counties

	County	Pounds
1.	Sandusky	16,020,398
2.	Allen	13,571,128
3.	Lake	14,068

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



Top 10 Chemicals

	Chemical	Pounds
1.	Acetonitrile	7,700,000
2.	Nitric acid	7,600,000
3.	Hydrogen fluoride	5,300,000
4.	Ammonia	2,124,000
5.	Chromium and chromium compounds	1,300,510
6.	Acrylamide	1,200,000
7.	Acrylonitrile	980,000
8.	Cyanides	620,000
9.	Pyridine	430,000
10.	Methanol	314,000

Top 10 Facilities

	Facility / County	Pounds
1.	Vickery Environmental Inc. / Sandusky	16,020,398
2.	BP Chemicals Inc. / Allen	13,571,128
3.	Arvesta Corp. / Lake	14,068

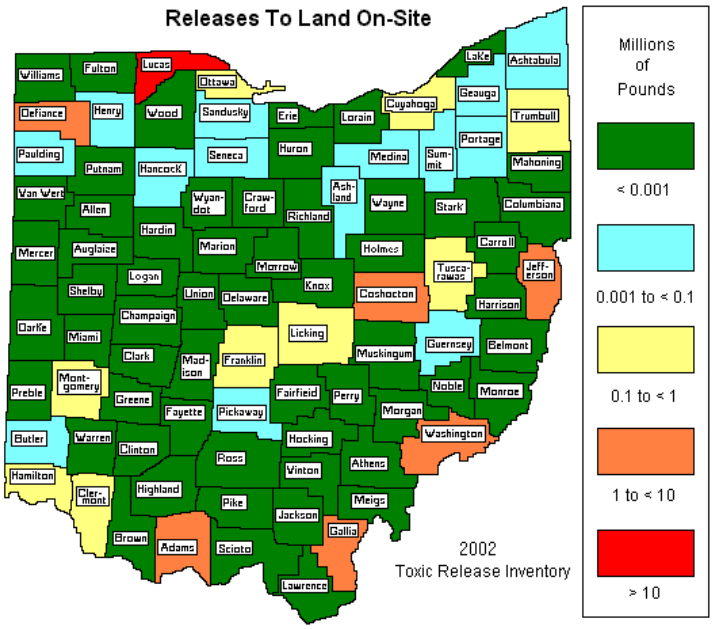
* All data included.

Summary of Data

Releases To Land On-Site For 2002*

Top 10 Counties

	County	Pounds
1.	Lucas	16,093,256
2.	Washington	5,087,680
3.	Adams	4,078,915
4.	Gallia	3,278,372
5.	Defiance	1,896,302
6.	Coshocton	1,794,485
7.	Jefferson	1,434,893
8.	Cuyahoga	806,044
9.	Clermont	688,195
10.	Franklin	630,851



Top 10 Chemicals

	Chemical	Pounds
1.	Zinc and zinc compounds	10,930,730
2.	Manganese and manganese compounds	10,068,964
3.	Barium and barium compounds	4,657,834
4.	Lead and lead compounds	3,467,728
5.	Chromium and chromium compounds	1,998,306
6.	Vanadium and vanadium compounds	1,862,632
7.	Copper and copper compounds	1,853,157
8.	Nickel and nickel compounds	1,094,818
9.	Arsenic and arsenic compounds	514,821
10.	Cobalt and cobalt compounds	307,313

Top 10 Facilities

	Facility / County	Pounds
1.	Envirosafe Services of Ohio Inc. / Lucas	15,544,045
2.	Eramet Marietta Inc. / Washington	3,994,340
3.	Dayton Power & Light Co. J.M Stuart Station / Adams	3,342,713
4.	American Electric Power Gavin Plant / Gallia	2,468,746
5.	GM Powertrain Defiance / Defiance	1,872,492
6.	American Electric Power Conesville Plant / Coshocton	1,458,410
7.	Cardinal Operating Co. Cardinal Plant / Jefferson	1,432,617
8.	American Electric Power Muskingum River Plant / Washington	1,093,340
9.	Ohio Valley Electric Corp. Kyger Creek Plant / Gallia	809,626
10.	ISG Cleveland Inc.	806,044

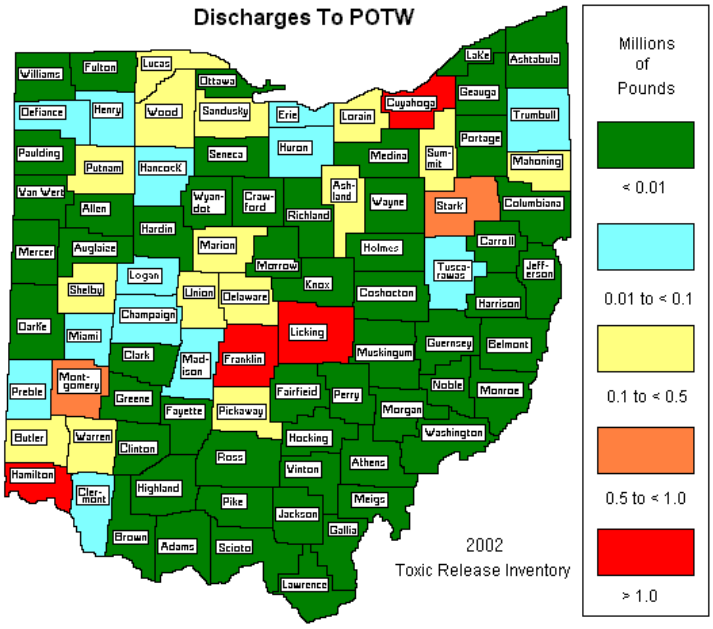
* All data included.

Summary of Data

Discharges To POTW For 2002*

Top 10 Counties

	County	Pounds
1.	Hamilton	7,287,764
2.	Cuyahoga	2,249,070
3.	Licking	1,096,182
4.	Franklin	1,047,259
5.	Montgomery	953,803
6.	Stark	853,149
7.	Ashland	481,465
8.	Summit	443,851
9.	Shelby	357,854
10.	Butler	337,177



Top 10 Chemicals

	Chemical	Pounds
1.	Nitrate compounds	12,523,212
2.	Methanol	2,004,668
3.	Certain glycol ethers	829,247
4.	Ammonia	669,838
5.	Sodium nitrite	316,433
6.	Ethylene glycol	298,544
7.	Allyl alcohol	210,326
8.	Phenol	146,303
9.	Formaldehyde	125,427
10.	Acetaldehyde	120,236

Top 10 Facilities

	Facility / County	Pounds
1.	Shepherd Chemical Co. / Hamilton	3,340,998
2.	Cognis Corp. / Hamilton	1,016,699
3.	Anomatic Corp. / Licking	996,558
4.	Grace Davison Cincinnati Plant / Hamilton	990,000
5.	GFS Chemicals Inc / Franklin	918,975
6.	Cincinnati Specialties LLC / Hamilton	553,271
7.	J&L Specialty Steel, Inc. / Stark	496,782
8.	Tremco Inc / Ashland	480,000
9.	Alcoa Cleveland Works / Cuyahoga	429,218
10.	Swagelok Manufacturing Co LLC / Cuyahoga	420,027

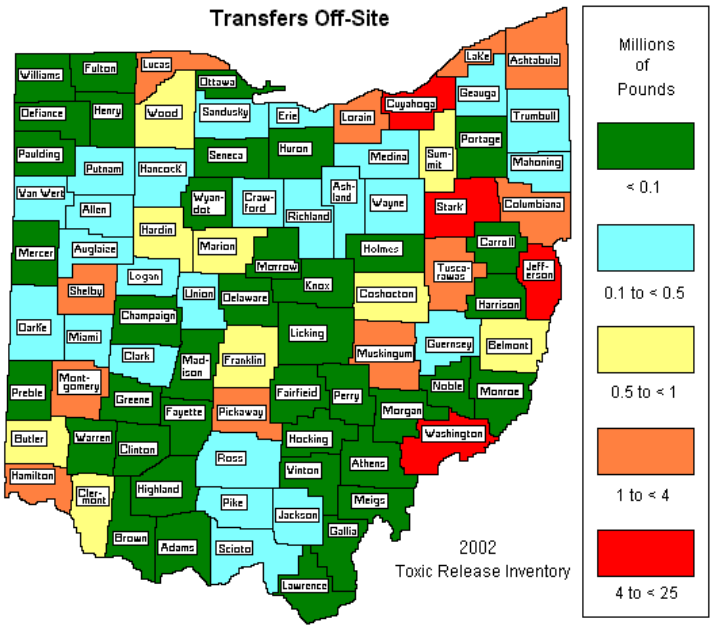
* All data included.

Summary of Data

Transfers Off-Site To Disposal or Treatment For 2002*

Top 10 Counties

	County	Pounds
1.	Stark	12,524,873
2.	Jefferson	9,848,549
3.	Cuyahoga	5,060,568
4.	Washington	4,167,508
5.	Ashtabula	3,446,317
6.	Muskingum	3,208,997
7.	Montgomery	2,679,801
8.	Lucas	1,827,586
9.	Lorain	1,642,045
10.	Pickaway	1,371,664



Top 10 Chemicals

	Chemical	Pounds
1.	Zinc and zinc compounds	19,638,496
2.	Manganese and manganese compounds	8,244,491
3.	Nitric acid	4,235,048
4.	Barium and barium compounds	3,290,175
5.	Lead and lead compounds	3,133,718
6.	Methanol	2,911,987
7.	Chromium and chromium compounds	2,440,843
8.	Nickel and nickel compounds	2,189,049
9.	Xylene (mixed isomers)	1,830,069
10.	Toluene	1,523,132

Top 10 Facilities

	Facility / County	Pounds
1.	Wheeling-Pittsburgh Steel Corp. Mingo / Jefferson	7,416,977
2.	Timken Co. Faircrest Steel / Stark	5,754,304
3.	Timken Co. Harrison Steel / Stark	3,281,664
4.	Eveready Battery Co. / Washington	3,191,057
5.	AK Steel Corp. – Zanesville Works / Muskingum	3,176,030
6.	Gabriel Performance Products LLC / Ashtabula	2,563,854
7.	FirstEnergy W.H. Sammis Plant / Jefferson	2,217,596
8.	Envirite of Ohio Inc. / Stark	1,971,711
9.	VonRoll America Inc / WTI / Columbiana	1,131,052
10.	Hukill Chemical Corp. / Cuyahoga	927,474

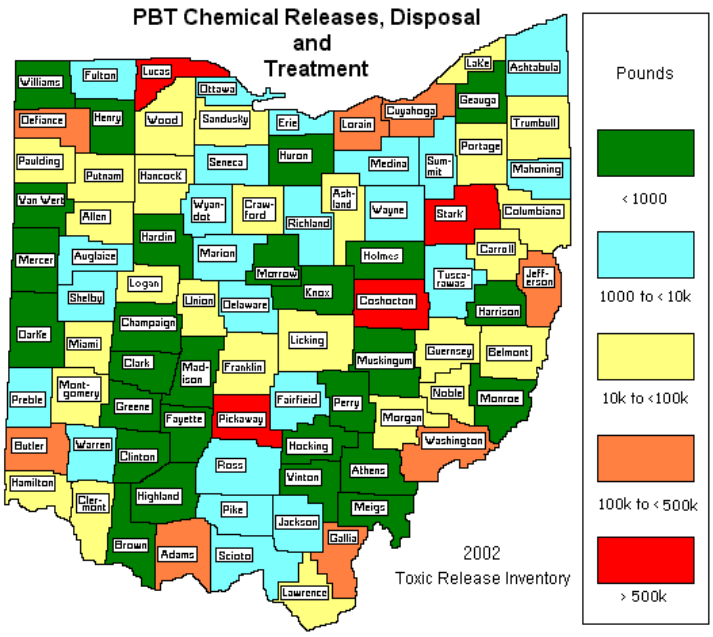
* All data included.

Summary of Data

PBT Chemical Releases, Disposal and Treatment For 2002*

Top 10 Counties

	County	Pounds
1.	Lucas	2,123,007
2.	Pickaway	798,356
3.	Stark	737,964
4.	Coshocton	732,762
5.	Defiance	407,691
6.	Cuyahoga	288,262
7.	Jefferson	206,516
8.	Adams	132,213
9.	Gallia	126,579
10.	Washington	118,274



PBT Chemical Release, Disposal and Treatment Summary†

PBT Chemical	Air	Water	Deepwell Injection	Land	POTW	Transfers Off-Site For Disposal / Treatment
Aldrin	0	0	0	0	0	1
Benzo(G,H,I)perylene	1,408	7	0	1	3	2,902
Chlordane	1	0	0	0	0	2
Dioxin & compounds	50 gr	0 gr	421 gr	142 gr	0 gr	330 gr
Heptachlor	1	0	0	0	0	1
Hexachlorobenzene	0	3	0	0	1	36
Isodrin	0	0	0	0	0	30
Lead & compounds	80,269	4,561	10,000	3,463,988	2,442	3,133,719
Mercury & compounds	10,845	17	55	3,833	3	3,878
Methoxyclor	1	0	0	0	0	2
Pendimethalin	6,123	0	0	0	1	70,337
Pentachlorobenzene	0	0	0	0	0	35
PCBs	0	0	0	45	1	2,125
PACs	5,979	8	0	528	45	28,289
Tetrabromobisphenol A	5	0	0	0	0	1,549
Toxaphene	0	0	0	0	0	18
Trifluralin	980	0	0	0	9	3,413

† 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 SIC codes 10, 12, 49, 51 and 73) which began reporting in 1998 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. 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 2002 were SIC code 49 - electric, gas and sanitary services and SIC code 28 – chemicals and allied products. The following figure represents the industrial categories and their reported releases and transfers under TRI. (SIC code 49 is broken out into electric and sanitary services in the figure.)

The new industrial sectors accounted for about half of the releases and transfers for treatment and disposal reported. SIC code 49 includes both electric services (coal and oil fired electric generating facilities) and sanitary services (hazardous waste treatment facilities subject to RCRA Subtitle C). The electric generating facilities accounted for releases and transfers for treatment and disposal of 102 million pounds, and the hazardous waste treatment facilities accounted for 36.3 million pounds of releases and transfers for treatment and disposal.

Figure 3: Releases & Transfers By SIC

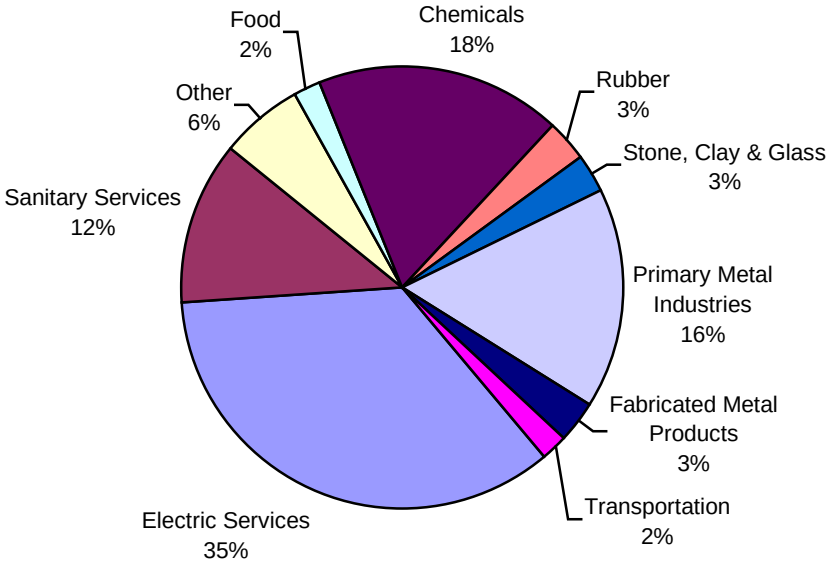


Table 3: Releases and Transfers by SIC Code

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	27	3,459	0	0	0
20	Food & Kindred Products	65	120	4,699,156	300,329	216,292	1,544,024
22	Textile Mill Products	12	34	699,798	275,222	165,333	2,211,922
23	Apparel	2	8	133,793	18,233	291,600	1,428,830
24	Lumber & Wood Products	20	63	325,759	237,859	1,273,167	3,176,676
25	Furniture & Fixtures	6	16	291,196	284,556	13,175	0
26	Paper & Allied Products	29	115	2,838,015	442,313	1,019,432	26,045,614
27	Printing & Publishing	16	23	137,990	21,454	82,640	835,838
28	Chemicals & Allied Products	258	1,289	29,961,177	23,046,679	53,647,839	137,972,258
29	Petroleum Refining	27	142	974,341	619,753	1,659,586	7,081,758
30	Rubber & Miscellaneous Plastics	202	487	5,357,335	2,131,543	4,259,495	4,516,465
32	Stone, Clay, Glass & Concrete	91	240	6,995,855	1,476,656	763,763	121,604,241
33	Primary Metal Industries	213	716	20,113,103	27,775,296	80,633,646	55,018,595
34	Fabricated Metal Products	289	780	3,666,291	5,383,994	23,843,576	12,974,497
35	Industrial Machinery	93	222	403,379	572,896	3,989,387	1,251,649
36	Electronic Equipment	78	189	891,370	2,613,673	13,839,309	6,599,631
37	Transportation Equipment	126	577	3,998,732	3,299,091	21,174,778	5,331,406
38	Instruments and Medical Goods	18	32	100,813	578,808	1,074,171	187,937
39	Miscellaneous Manufacturing	17	40	212,334	688,071	48,816	100,909
49	Electric, Gas & Sanitary Services	39	706	128,506,002	9,833,761	1,692,113	123,858,566
51	Wholesale Trade – Chemical and Petroleum Products	51	454	155,913	1,037,470	2,599,299	12,810,892
73	Business Services	8	60	84,313	714,425	4,172,200	8,174,045
-	Other	6	9	96,797	0	6,030	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, almost half 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

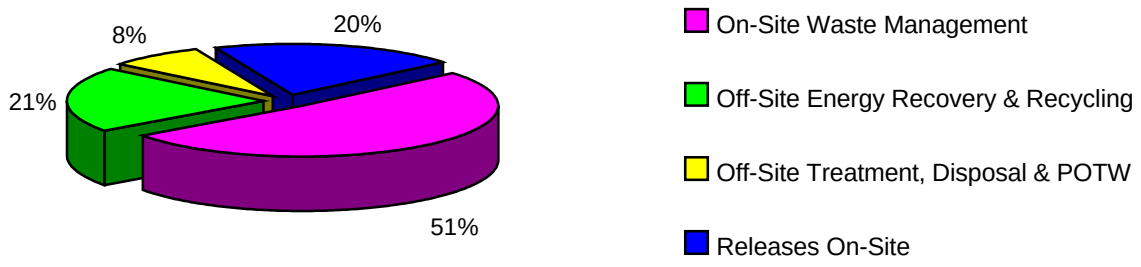
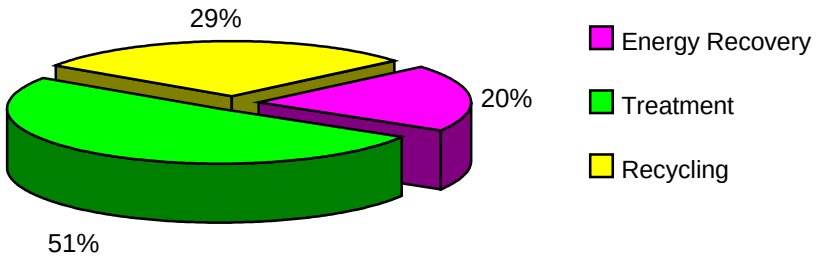


Figure 5: On-Site Waste Management



Summary of Data

Nearly 250 facilities implemented source reduction activities at their facility during 2002 for over a total of 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 2002, over 30% of the TRI reports indicated an increase in production when compared to the same chemical-facility data for 2001. Table 4 indicates the changes in production reported by facilities covered by TRI.

Table 4: Changes in Production From 2001 to 2002

Changes in Production (Production Ratio)	% of Reporting Industry
Production increased more than 30%	8.0
Production increased between 20% - 30%	4.5
Production increased between 10% - 20%	8.9
Production increased less than 10%	12.9
No Change in Production	10.2
Production decreased less 10%	13.9
Production decreased between 10% - 20%	5.8
Production decreased between 20% - 30%	2.8
Production decreased more than 30%	6.8
Not applicable, not reported , or zero	26.1

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 2002 national data was not available prior to the drafting of this report, the national ranking for 2002 was not yet available. The following tables are based on U.S. EPA's national TRI report and data from the July 25th, 2003 national data update.

Table 5: Ohio's National Rank

Environmental Medium	1999	2000	2001
Air	1	1	1
Water	12	10	9
Land On-Site	9	12	12
Deepwell Injection	5	5	3
Reporting Facilities	1,678	1,696	1,725

Table 6: Number of Reporting Facilities

Number of Reporting Facilities – RY 2001		
Rank	**State**	**Number of Facilities**
1	**Ohio**	**1,725**
2	California	1,612
3	Texas	1,556
4	Pennsylvania	1,436
5	Illinois	1,376

Table 7: Top States For Releases

Medium	Rank	State	Release (pounds)
Air	**1**	**Ohio**	121,340,654
	2	North Carolina	115,280,006
	3	Texas	102,741,071
	4	Georgia	92,020,445
	5	Pennsylvania	89,048,804
Water	1	Texas	26,008,065
	2	Indiana	20,134,007
	3	Pennsylvania	18,741,429
	4	Mississippi	12,964,677
	5	Louisiana	11,908,380
	9	**Ohio**	**8,339,254**
Land On-Site	1	Nevada	778,244,135
	2	Utah	745,779,296
	3	Arizona	601,488,465
	4	Alaska	498,234,331
	5	New Mexico	102,121,661
	12	**Ohio**	**35,839,518**
Deepwell Injection	1	Texas	77,695,012
	2	Louisiana	37,112,860
	3	**Ohio**	**31,993,954**
	4	Florida	23,797,105
	5	Alaska	20,554,878

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 TRI Public Data Release	U.S. EPA's RY 2002 TRI data is available. It covers information nationwide and provides a good perspective on how Ohio compares to other states. This report may be obtained by contacting U.S. EPA's hotline at 1-800-424-9346 or from the U.S. EPA website.	
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/
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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