



2012 Toxic Release Inventory Annual Report



Division of Air Pollution Control
April 2014

What is the Toxic Release Inventory?

The Toxic Release Inventory (TRI) program was authorized in 1986 by the Federal Emergency Planning and Community Right-to-Know Act (EPCRA), Section 313. The intent of the program is to provide to the public the “right-to-know” information about hazardous chemicals being used, manufactured, processed and/or released into the environment. This Act requires U.S. EPA and the states to collect data annually on releases and transfers of certain toxic chemicals from industrial facilities and make it available to the public.

In 1988, the Ohio General Assembly passed Substitute Senate Bill 367. This bill provides for state implementation of the federal EPCRA. Ohio EPA is charged with the administration of Chapter 3751 of the Revised Code. The law gave Ohio EPA authority to administer, inspect, enforce and establish a filing fee schedule in Ohio. Ohio EPA has designated Division of Air Pollution Control to coordinate the TRI program in Ohio.

The TRI reporting elements were expanded when Congress passed the Pollution Prevention Act of 1990, which required facilities to report additional data on waste management and source reduction to U.S. EPA. The TRI program was amended to provide communities with information about toxic chemical releases and waste management activities. The information also supports decision making by industry, government, non-governmental organizations and the public.

The annual TRI report provides citizens with vital information about their communities. The TRI program collects information on certain toxic chemical releases to the air, water and land, as well as information on waste management and pollution prevention activities by facilities across the state. TRI data are submitted annually to Ohio EPA by facilities in industry sectors such as manufacturing, metal mining, electric utilities and commercial hazardous waste facilities.

U.S. EPA has published a final rule requiring facilities to report all non-trade secret Toxics Release Inventory (TRI) data to U.S. EPA using the TRI-MEweb online reporting application. This rule also requires facilities to electronically submit any revisions or withdrawals of previously-submitted TRI reporting forms. Facilities may revise or withdraw TRI forms going back to reporting year 1991, but not for years prior to this.

The rule applies to all facilities required to report to the TRI Program, and becomes effective January 21, 2014. Once the rule becomes effective, facilities submitting non-trade-secret TRI reporting forms for the 2013 TRI reporting year (forms due on July 1, 2014) or prior reporting years must report electronically. The few facilities that submit trade secret TRI information will continue to submit their trade secret reporting forms and substantiation forms in hard copy, as well as any revisions or withdrawals of previously-submitted trade secret information.

U.S. EPA took direct final action on updates to the list of North American Industry Classification System (NAICS) codes subject to reporting under the Toxics Release Inventory (TRI) to reflect the Office of Management and Budget (OMB) 2012 NAICS revision. Facilities would be required to use 2012 NAICS codes when reporting to TRI beginning with TRI reporting forms that are due on July 1, 2014, covering releases and other waste management quantities for the 2013 calendar year. This rule was effective on October 16, 2013.

U.S. EPA has reinstated the TRI reporting requirements for hydrogen sulfide as part of its ongoing effort to provide the public with helpful information on chemicals they may encounter. This action became effective for the 2012 TRI reports which were due from facilities, July 1, 2013.

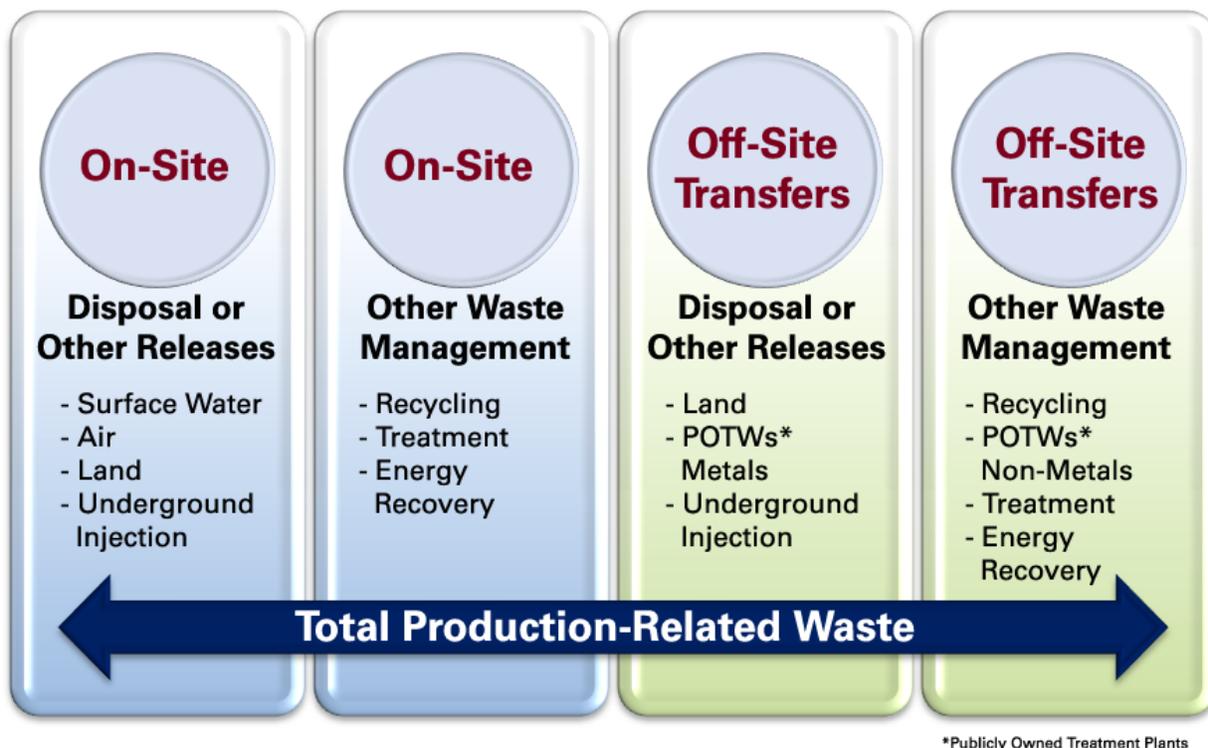
On June 20, 2013, U.S. EPA announced that it is proposing to add a nonylphenol category to the TRI list of reportable chemicals. The Agency's proposal is part of an ongoing effort to examine the scope of TRI chemical coverage and provide communities with more complete information on toxic chemical releases. Nonylphenol is highly toxic to aquatic organisms and has been found in natural waters. Because of nonylphenol's toxicity, chemical properties and widespread use to make other chemicals, concerns have been raised over the potential risks to aquatic organisms from exposure to nonylphenol.

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On November 7, 2013, U.S. EPA published a final rule adding o-nitrotoluene to the TRI list of reportable chemicals. This rule is part of the Agency's ongoing efforts to examine the scope of TRI chemical coverage and provide communities with more complete information on toxic chemical releases to the environment. The final rule is effective for the 2014 TRI reporting year with the first reports due July 1, 2015.

New Green Chemistry Source Reduction codes that describe green chemistry practices have been added to the list of selections available for completing Section 8.10 of Form R.

Figure 1: Information Collected Under TRI



What are the limitations of TRI data?

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

- TRI does not cover all industries that release toxic chemicals.
- For reporting year 2012, TRI covers over 650 toxic chemicals and chemical categories.
- Releases are reported as total annual releases. This alone is not sufficient to assess health or environmental impact of toxic chemicals released.
- The majority of releases are based on estimates. Facilities are required to report releases based on monitoring data, if such data is available. When monitoring data is not available, estimates are used. Estimates result in significant variability among reporting facilities.
- The TRI report contains information regarding the release and/or waste management of chemicals, not public exposure to chemicals. Screening risk assessments must be completed before health and environmental assessments can be made. **TRI data summaries must be interpreted with care.**

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What do the 2012 TRI data show?

For reporting year 2012, Ohio facilities reported 156 million pounds of TRI regulated chemicals or compounds that were released, disposed, or managed. That number dropped to 150.4 million pounds after subtracting releases that were transferred off-site to other Ohio facilities that, in turn, reported the same chemical under TRI. Ohio EPA received 4,796 TRI reports from 1,341 facilities. While one-third of these facilities reported a single chemical, the average number of chemicals reported was three. Table 1 compares reporting years 2011 and 2012 TRI data for all reporting facilities. Total releases and transfers decreased by 17.6 percent between 2011 and 2012 (based on un-adjusted total releases), with the number of reporting facilities decreasing by 54 facilities.

Table 1: Comparison of 2011 and 2012 TRI Data

Comparison	2011 Amount	2012 Amount	Change
Releases to Air	58,777,711	44,108,283	-24.40%
Releases to Water	8,777,497	7,582,964	-13.60%
Deepwell Injection	18,142,782	14,737,033	-18.80%
Releases to Land On-Site	26,638,987	22,451,168	-15.70%
Discharges to POTW	20,130,383	22,517,795	11.86%
Off-Site Disposal/Treatment	57,435,644	44,737,501	-22.10%
Total Releases and Transfers*	150,415,709	152,355,296	1.30%
Energy Recovery On-Site	73,748,850	111,204,198	50.79%
Energy Recovery Off-Site	28,293,224	32,802,173	15.94%
Recycling On-Site	90,563,059	104,934,642	15.87%
Recycling Off-Site	153,403,303	174,140,153	13.52%
Treatment On-Site	370,083,764	384,550,547	3.91%
Number of Chemicals Reported	302	296	-1.98%
Number of Reporting Facilities	1,395	1,341	-3.87%
Number of Form R's	4,807	4,724	-3.87%
Number of Form A's	574	559	-2.61%
* Does not include releases that were transferred off-site to facilities that reported the same chemical under TRI.			

Persistent Bioaccumulative Toxic (PBT) chemicals accounted for 2.4 million pounds or 1.5 percent of reported releases and transfers. Of that total, lead and lead compounds accounted for 98 percent, or 2.34 million pounds, of PBTs. Total disposal or other releases for mercury and mercury compounds were 14,128 pounds and, for dioxin and dioxin-like compounds, total disposal and other releases were 521 grams.

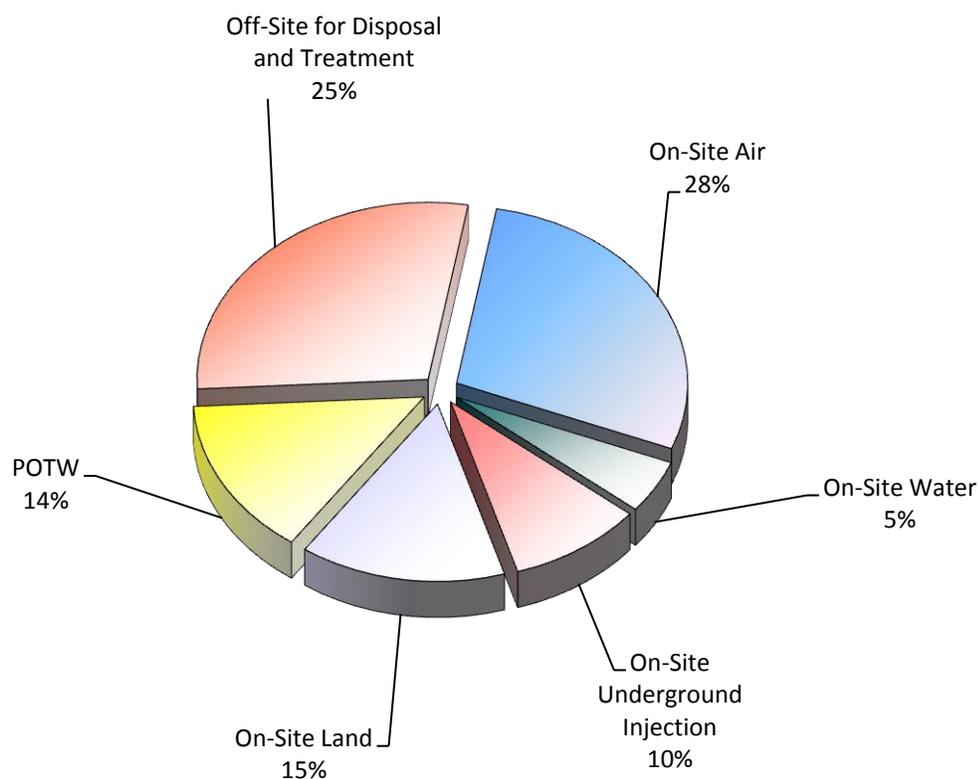
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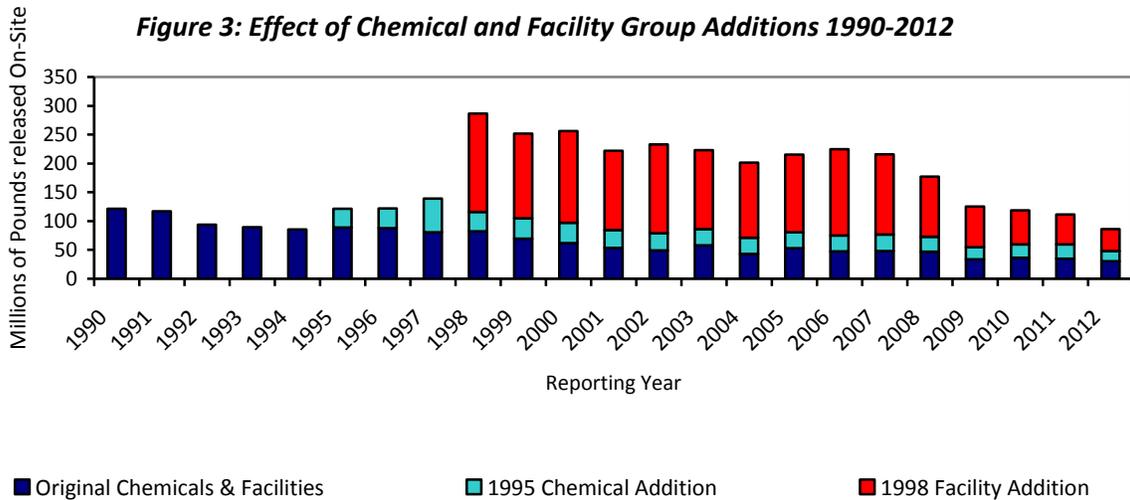
Increases and decreases are attributable to many factors including changes in production, types of measurement used, and efforts to minimize releases and develop uses or find markets for what might otherwise have been a waste. For many Resource Conservation and Recovery Act (RCRA) facilities, subject to TRI reporting in 1998, minor waste stream and market changes greatly affected TRI reporting.

Why does TRI data change over time?

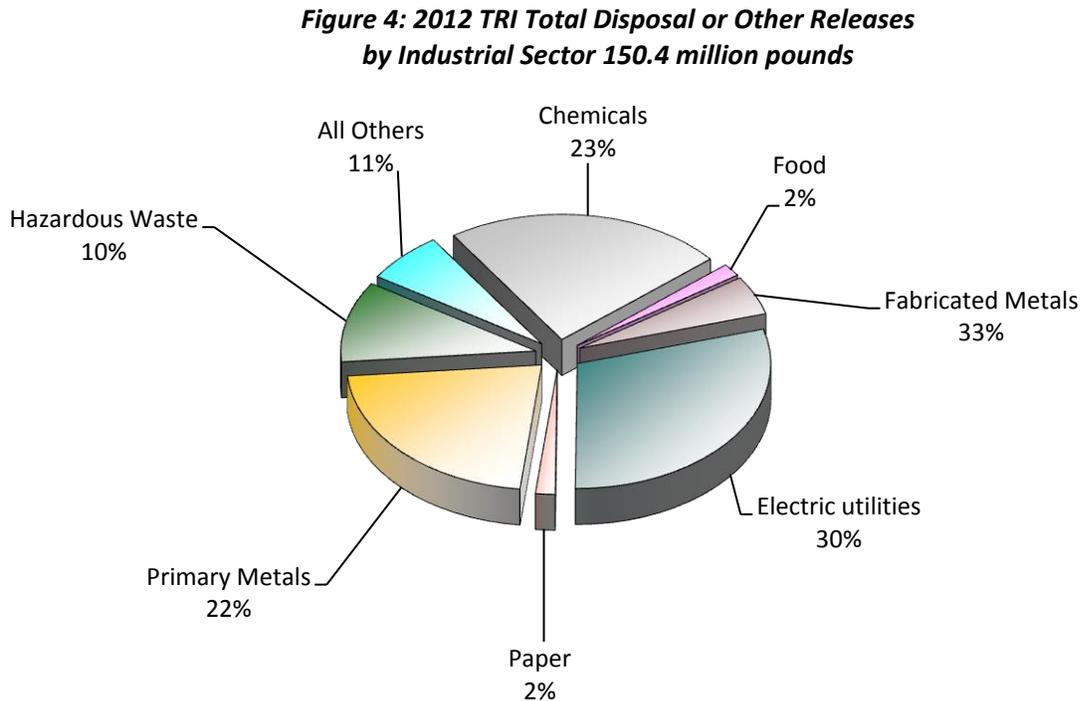
In 2012 reports, approximately 152.4 million pounds of toxic chemicals were released to the environment or transferred off-site for treatment or disposal. The data presented for 2012 reflects the TRI data reports due July 1, 2012. Ohio EPA's TRI Unit continually reviews this data and works with reporting facilities to assure data quality. Additional and revised data provided subsequent to July 1, 2012 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 consistent format.

Figure 2: TRI On-Site and Off-Site Releases and Transfers





Note: Figure 3 Includes releases to air, water, deepwell injection and land on-site for all 1998 reportable chemicals.



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Ohio EPA contacted facilities reporting significant increases or decreases in waste management or releases from 2011 to 2012 to determine what caused the change. The following information was developed through summary data and facility responses:

<p>Air Releases</p>	<p>Air releases were down 24.4 percent or 14.3 million pounds for 2012, with facilities reporting 44.1 million pounds. As in previous years, power-generating facilities in Ohio reported the largest TRI air releases, representing eight of the top 10 facilities. Power-generating facility releases primarily contain hydrochloric and sulfuric acid aerosols resulting from coal combustion. These two chemicals make up 53 percent of all reported air releases.</p> <p>American Electric Power (Washington County) reported a decrease of 3.6 million pounds attributed to a decrease in production.</p> <p>W.H. Sammis Plant (Jefferson County) reduced releases by more than 3.2 million pounds. The decrease is due to the addition of flue gas desulfurization equipment and a reduction in production.</p> <p>PCS Nitrogen of Ohio (Allen County) reported a decrease of 1.7 million pounds. That decrease is attributed to a decrease in production at the facility.</p>
<p>Water Releases</p>	<p>Water releases decreased by 13.6 percent or 1.2 million pounds from the 2011 report. Nitrate releases accounted for roughly 91 percent of all reported releases to Ohio waterways in 2012. Nitrate compounds are manufactured through the treatment of nitric acid and are routinely permitted and monitored under the terms of National Pollutant Discharge Elimination System (NPDES) permits.</p> <p>Kraton Polymers U.S. (Washington County) reported an increase of 0.25 million pounds released to water. The increase was caused by the rise in nitrates discharged from the Biological Wastewater Treatment System. The increased nitrate loading was caused by an increased concentration of ammonia in the process wastewater influent as a result of facility process changes integrating use of inherently safer technologies. Specifically, the facility change involved the use of aqueous ammonia and discontinued use of gaseous ammonia for product neutralization.</p> <p>AK Steel (Coshocton County) reported a decrease of 0.6 million pounds compared to 2011. The difference was due to a decrease in nitrate discharges attributable to decreased production as well as changes in product mix.</p> <p>Materion Brush, Inc. (Ottawa County) reported a decrease of 0.67 million pounds of water discharges. This reduction is primarily due to a reduction in the quantity of nitric acid used during reporting year 2012, which resulted in a reduction in nitrate discharges.</p>
<p>Deepwell Injection</p>	<p>Only two facilities reported TRI deepwell injection for 2012, showing a decrease of 18.8 percent when compared to 2011 data.</p> <p>INEOS USA, LLC in Lima (Allen County) reported 7.4 million pounds, a 1.5 million pound decrease from 2011. INEOS USA, LLC notes the decrease is due to decreased production levels.</p> <p>Vickery Environmental Services (Sandusky County), a RCRA-regulated disposal facility in Vickery, reported a decrease of 1.9 million pounds. The decrease in injection and subsequently total releases relates to the decreases in waste receipts for disposal by deepwell injection. Waste minimization efforts undertaken by the facility have also contributed to the reduction.</p>

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<p>Land On-Site</p>	<p>Land releases on-site were down in 2012, decreasing by 15.7 percent to slightly over 24.4 million pounds.</p> <p>Cristal USA, Inc. (Ashtabula County) reported a decrease of more than 0.9 million pounds. The decrease of on-site treatment of manganese (landfill) is due to a slight decrease in the manganese content of raw materials as well as a decrease in raw materials processed from 2011 to 2012.</p> <p>Arcelormittal Cleveland (Cuyahoga County) reported an increase of 0.77 million pounds treated on-site. The facility has two steel producing facilities on-site. The facility was making steel in the east steel producing facility up until 2011. In 2012 steel production began in the west facility. The facility increased production by approximately 20 percent from 2011 to 2012 with the start-up of the west steel producing facility in May of 2012.</p>
<p>Total Releases and Transfers</p>	<p>There was a 17.6 percent decrease in total releases and transfers in 2012. Ohio facilities reported 156.1 million pounds in 2012 compared to 189.5 million pounds in 2011.</p> <p>American Electric Power (Washington County) reported a decrease of 4.2 million pounds. That decrease is attributed to a decrease in production at the facility.</p> <p>W.H. Sammis Plant (Jefferson County) reduced total releases by 3.4 million pounds. The decrease is due to the addition of flue gas desulfurization equipment and a reduction in production.</p> <p>PPG Industries Ohio (Pickaway County) reported an increase of 2.4 million pounds. During 2011, the bulk of PPG's waste streams were managed on-site in the energy recovery unit. During reporting year 2012, the bulk of PPG's waste streams were treated off-site.</p>
<p>POTW Releases</p>	<p>Publicly Owned Treatment Works (POTWs) in Ohio reported TRI total releases were up by 11.9 percent for 2012, from 20 million in 2011 to slightly more than 22.5 million pounds in 2012. Nitrate compounds represent the largest POTW releases, accounting for 77 percent of total statewide releases.</p> <p>Research Organics Inc. (Cuyahoga County) reported an increase of more than 1.9 million pounds released to POTWs in 2012. The increases in the volume of methanol discharged to the POTW, in 2012, were the result of significant changes to the operation of the Scrubber systems to improve methanol removal efficiency. The increased scrubber efficiency from approximately 6% to 60%, combined with waste water samples analyzed for methanol in 2012, led to a significant increase in the volume of methanol sent to the POTW.</p> <p>Shepherd Chemical Company (Hamilton County) reported a decrease of more than 130 thousand pounds. The decrease was due to product mix variations from year to year, which affects the quantity of nitrates generated.</p> <p>Diamond Innovations Inc. (Franklin County) decreased its discharges by more than 175 thousand pounds from 2011. The large actual reduction in total release was the result of a temporary transfer of a portion of facility production to another facility to balance capacity across their facilities. The production shift resulted in the decreased discharges that were reported.</p>
<p>Energy Recovery On-Site</p>	<p>Energy recovery on-site increased by more than 50 percent statewide, up by more than 37 million pounds in 2012.</p>

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	<p>INEOS USA, LLC in Lima (Allen County) reported a 5.3 million pound decrease. That decrease is attributed to a decrease in production at the facility, and a process improvement that lowered the amount of waste propylene fed to energy recovery.</p> <p>Marathon Petroleum Co. (Stark County) reported a 24.3 million pound increase in on-site energy recovery. Energy recovery was included for the first time in the facility's TRI reports. When they reviewed the hydrogen sulfide contents in the refinery fuel gas to determine energy recovery, they realized that there also other chemicals in the refinery fuel gas like ethylene and propylene, so they included the contribution from those as well. The amounts recovered were calculated for ethylene, hydrogen sulfide and propylene, which are chemicals known to be present in refinery fuel gas combusted in heaters.</p> <p>Lafarge NA (Paulding County) reported a 14.4 million pound increase. The increase is due to an increase in facility production.</p>
<p>Energy Recovery Off-Site</p>	<p>Statewide, energy recovery off-site increased by 15.9 percent (14.3 million pounds) for 2012. Most energy recovery activity was reported by chemical manufacturers and RCRA regulated TSD facilities.</p> <p>Veolia ES Technical Solutions (Montgomery County) reported an increase of 4.9 million pounds. The facility had a fire in May of 2009 and was idle until May 2012. The facility started to fuel blend materials onsite again in May 2012, the significant increase is due to a start-up of operations. The tank farm and distillation operations operated for about roughly six months of 2012. The facility anticipates a significant increase in volumes reported in 2013, which will reflect a full year of tank farm and distillation equipment use.</p> <p>Clean Harbors Recycling Services of Ohio (Licking County) reported an increase of 2.6 million pounds. The increase was due to an increase in business demands which resulted in more fuel usage and more waste sent off-site for energy recovery.</p> <p>Hukill Environmental Services (Cuyahoga County) reported a decrease of more than 3.5 million pounds. This decrease in the amount of off-site shipments for energy recovery is due to changes in customer base and the types of waste customers send to the facility. In addition, the amount sent off site for energy recovery decreases is also related to an increase in the amount of recycled on site.</p>
<p>Recycling On-Site</p>	<p>On-site recycling increased by almost 14.3 million pounds to 104.9 million pounds in 2012.</p> <p>BASF Corp (Hamilton County) reported an increase of 19.5 million pounds. The increase was due to a change in the interpretation of the process for managing methanol in a continuous process. Formerly the methanol was not considered to be recycled, but was thought to be continuously available for usage. A reevaluation of the process is now interpreted as a recycle activity where the methanol is recycled repeatedly. This caused the significant increase in the reported methanol on-site recycling activity.</p> <p>Clean Harbors Recycling (Licking County) reported a decrease of 1.8 million pounds. The decrease was the result of more waste shipped off-site for energy recovery rather than process on-site.</p>

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Recycling Off-site	<p>Off-site recycling was up 13.5 percent from 153 million pounds in 2011 to 174 million pounds in 2012.</p> <p>Whirlpool Corp. Marion Division (Marion County) reported an increase of more than 9.3 million pounds. The explanation for this change is due to interpretation of reporting constituents that are contained in processed metals that do not meet the article exemption. Whirlpool determined for reporting year 2012 that releases occur in stamping, machining, and other various processes. Therefore, it was determined that it was necessary to report those constituents.</p> <p>Toxco Inc. (Fairfield County), a battery recycling facility, showed a decrease of more than 5.8 million pounds in off-site recycling. Production numbers as well as subsequent releases from the site decreased from 2011 to 2012 primarily due to decreased lead batteries received by the facility.</p> <p>North Star Bluescope Steel (Fulton County) reported a decrease of more than 3.5 million pounds in off-site recycling. The vast majority of this reporting category is comprised of metals contained in dust collected by the facility's electric arc furnace baghouses. The collected material is sent off site for metals recovery. At the beginning of 2012, NSBSS engineers identified a way to segregate larger particles from the furnace exhaust stream before they reached the baghouse. Because the larger particles contain a significant portion of iron, they can be redirected back into the furnace and re-melted as part of the steel making process. Consequently, the amount of material diverted back to the furnace reduced the dust reaching the baghouses and subsequently reported as being recycled off site. Further, the remelted particles required no additional internal processing and were of a similar composition to the scrap metal used as the primary feedstock for steel making. As such the remelted material was not reported as recycled on site.</p>
Treatment On-Site	<p>Treatment on-site increased by 3.9 percent or about 14.4 million pounds. It remains the primary waste management activity reported by facilities. Traditional manufacturing, power generation, and RCRA treatment, storage and disposal facilities (TSDs) all reported on-site waste treatment.</p> <p>Chemtrade Refinery Solutions (Lucas County) reported an increase of 22.9 million pounds. The increase is explained by the addition of hydrogen sulfide to the reporting requirements. The site is a sulfuric acid regeneration facility, which recycles spent acid and consumes hydrogen sulfide as a raw material. In reporting year 2011, the facility consumed about 3 million pounds of TRI chemicals compared to about 26 million pounds of TRI chemicals (including 24 million pounds of hydrogen sulfide) in reporting year 2012.</p> <p>Heritage-WTI Inc (Columbiana County) reported a decrease of 6.6 million pounds. The facility is a commercial hazardous waste incinerator that also operates as a Transfer, Storage and Disposal Facility (TSDF). The chemicals reported by the facility through the TRI program are the result of waste materials managed from offsite sources. The receipt of these materials fluctuates from year to year based on market conditions and generator needs. As a result, the quantity of chemicals processed can vary from year to year resulting in significant increases or decreases reported.</p>

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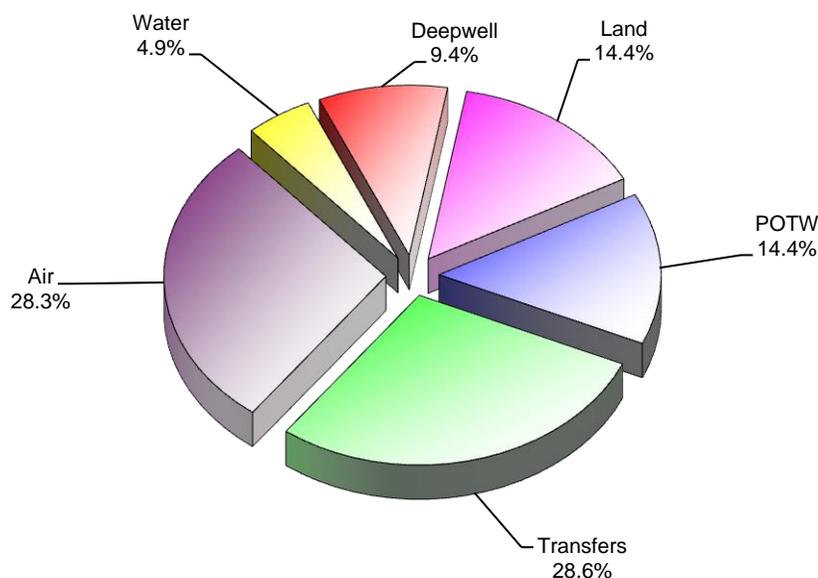
Statewide totals of on-site releases, off-site transfers, and on-site waste management for reporting years 2003 to 2012 are provided in Tables 2 and 3. Table 2 represents all data including the data for delisted, added and modified chemicals and the expansion industrial sectors. Table 3 does not include 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 2: 10-Year-Trend: All Facilities and Chemicals (millions of pounds)

Comparison	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Releases to Air	132.2	128.2	126.4	120.3	114.9	90.4	74.6	65.0	58.4	44.1
Releases to Water	8.0	8.0	6.9	8.3	9.3	8.5	6.2	9.2	8.8	7.6
Deepwell Injection	29.3	22.6	24.5	22.5	22.3	22.9	13.9	19.4	18.1	14.7
Releases to Land On-Site	67.6	49.7	62.5	79.5	74.1	59.2	35.1	28.0	26.6	22.5
Discharges to POTW	17.3	18.6	19.8	16.6	17.8	17.4	16.5	18.2	20.1	22.5
Off-Site Disposal/ Treatment	65.6	71.3	82.5	97.5	80.3	63.3	42.9	47.7	57.4	44.7
Total Releases and Transfers*	281.9	279.8	258.6	276.9	290.5	276.3	224.1	158.5	150.4	152.4
Energy Recovery On-Site	81.2	84.3	82.1	97.5	73.9	69.4	42.3	56.7	73.8	111.2
Energy Recovery Off-Site	42.8	37.6	36.0	35.0	31.7	31.3	25.9	25.7	28.3	32.8
Recycling On-Site	171.7	157.8	132.4	98.1	108.9	84.9	67.5	75.9	90.6	104.9
Recycling Off-Site	150.9	148.4	160.2	162.5	165.2	158.5	107.6	143.3	153.4	174.1
Treatment On-Site	427.3	385.4	338.7	351.3	381.6	403.6	428.2	368.9	370.1	384.6
Number of Reporting Facilities	1,693	1,647	1,636	1,602	1,529	1,476	1,378	1,375	1,395	1,341

* Does not include releases that were transferred off-site to facilities that reported the same chemical under TRI.

Figure 5: 2012 Toxic Releases and Transfers



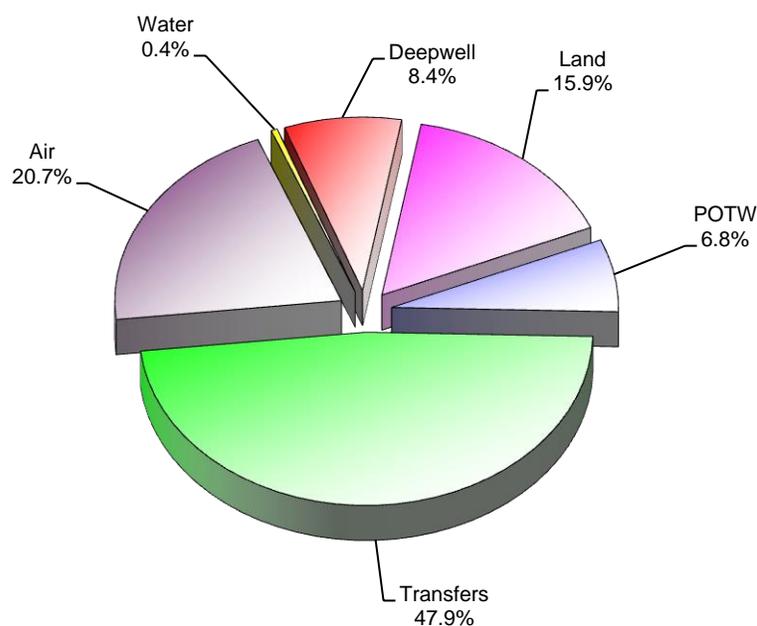
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Table 3: 10 Year-Trend: Original Facilities and Chemicals (millions of pounds)

Comparison	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Releases to Air	28.0	27.5	26.2	25.7	23.9	21.5	16.1	15.4	15.4	14.1
Releases to Water	0.6	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.4	0.3
Deepwell Injection	14.6	8.6	14.2	10.0	7.6	9.0	7.5	8.3	7.0	5.7
Releases to Land On-Site	16.3	7.6	13.1	12.7	16.4	16.7	9.3	12.8	12.6	10.9
Discharges to POTW	4.4	4.7	5.6	4.6	4.2	3.1	4.3	2.5	2.8	4.8
Off-Site Disposal/ Treatment	46.5	56.5	64.9	83.5	65.3	50.7	31.1	35.9	42.9	32.6
Total Releases and Transfers*	105.1	110.3	105.1	124.4	136.8	117.7	101.4	68.5	81.0	68.1
Energy Recovery On-Site	71.9	81.6	79.1	93.8	70.7	67.3	41.0	55.1	70.0	101.6
Energy Recovery Off-Site	20.3	21.9	20.0	26.4	19.2	17.4	14.9	16.6	12.3	14.0
Recycling On-Site	113.3	78.2	63.8	64.0	59.8	54.7	43.4	52.1	70.3	85.6
Recycling Off-Site	143.4	142.2	142.3	139.0	130.6	128.0	83.4	113.6	121.5	148.2
Treatment On-Site	148.0	149.7	110.9	106.8	108.0	110.0	100.9	104.4	114.2	107.5
Number of Reporting Facilities	1,510	1,473	1,423	1,419	1,407	1,341	1,283	1,195	1,213	1,166

* Does not include releases that were transferred off-site to facilities that reported the same chemical under TRI.

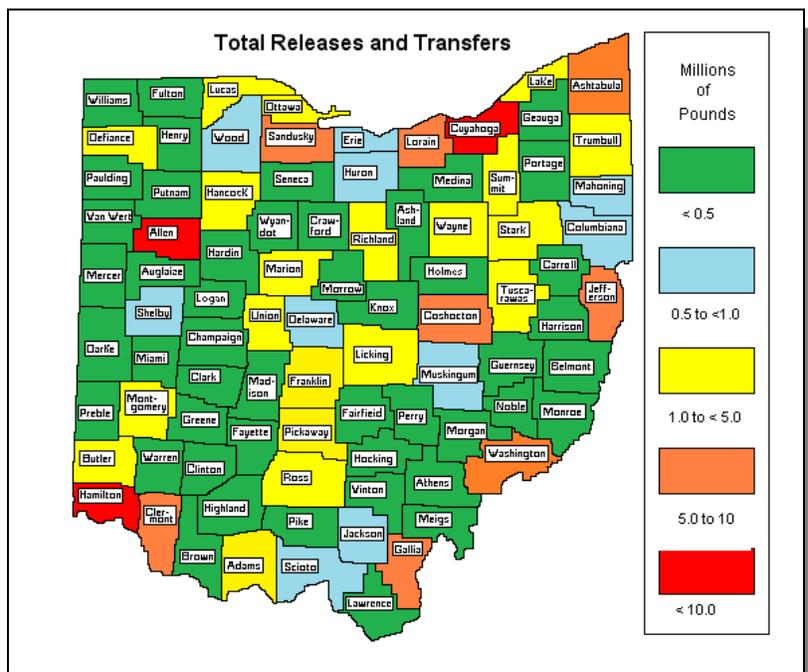
**Figure 6: 2012 Toxic Releases and Transfers
Original Chemicals**



Total Releases and Transfers for 2012*

Top 10 Counties

County	Pounds
1. Hamilton	15,588,754
2. Cuyahoga	14,398,624
3. Allen	10,341,174
4. Ashtabula	9,663,460
5. Sandusky	8,076,504
6. Coshocton	7,404,881
7. Washington	6,963,699
8. Lorain	6,437,269
9. Jefferson	5,610,705
10. Gallia	5,568,691



Top 10 Chemicals

Chemical	Pounds
1. Nitrate compounds	25,112,946
2. Zinc and zinc compounds	16,198,645
3. Manganese and manganese compounds	13,078,497
4. Hydrochloric acid (aerosols)	12,578,299
5. Sulfuric acid (aerosols)	10,845,533
6. Methanol	7,245,910
7. Nitric Acid	6,749,735
8. Ammonia	6,369,128
9. Barium and barium compounds	5,862,564
10. Carbonyl Sulfide	4,310,120

Top 10 Facilities

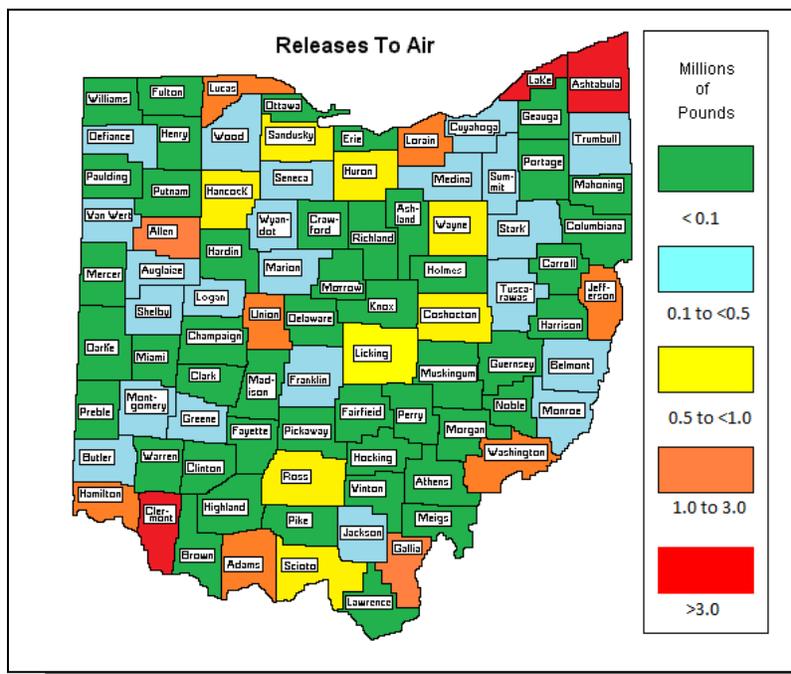
Facility/County	Pounds
1. Shepherd Chemical Co./Hamilton	9,543,067
2. INEOS USA LLC / Allen	7,473,078
3. Vickery Environmental Inc./Sandusky	7,380,984
4. Cristal USA, Inc./Ashtabula	5,376,459
5. Arcelormittal Cleveland LLC/Cuyahoga	4,702,005
6. AK Steel Corp Coshocton Works/Coshocton	4,687,339
7. American Electric Power Gavin Plant/Gallia	4,057,811
8. Eastlake Plant/Lake	3,718,940
9. Beckjord Generating Station/Clermont	3,538,243
10. J.M Stuart Station/Adams	3,369,546

* All data included.

Releases to Air for 2012*

Top 10 Counties

County	Pounds
1. Ashtabula	4,742,506
2. Clermont	4,225,548
3. Lake	3,359,326
4. Hamilton	2,951,566
5. Lorain	2,784,401
6. Washington	2,386,668
7. Jefferson	2,274,088
8. Allen	2,264,003
9. Gallia	2,242,007
10. Adams	1,754,177



Top 10 Chemicals

Chemical	Pounds
1. Hydrochloric acid (aerosols)	12,381,834
2. Sulfuric acid (aerosols)	10,845,533
3. Carbonyl sulfide	4,310,120
4. Ammonia	3,979,852
5. Certain glycol ethers	1,935,713
6. Hydrogen fluoride	1,403,175
7. N-Hexane	1,285,565
8. N-Butyl alcohol	972,983
9. Styrene	932,778
10. Toluene	670,012

Top 10 Facilities

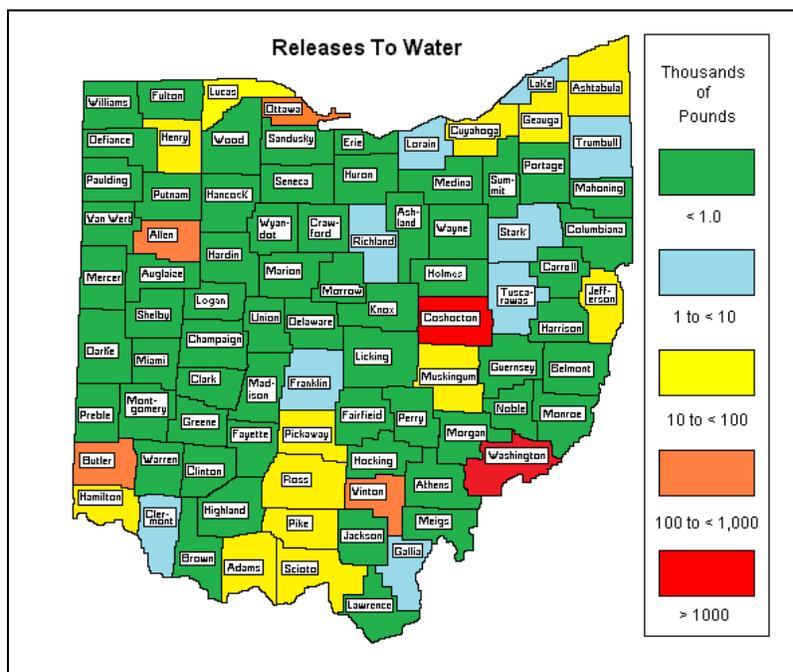
Facility/County	Pounds
1. Duke Energy, Beckjord Generating Station/Clermont	3,094,921
2. Cristal USA, Inc./Ashtabula	3,023,269
3. Eastlake Plant/Lake	3,019,951
4. Miami Fort Generating Station/Hamilton	2,402,811
5. Avon Lake Power Plant/Lorain	2,150,546
6. PCS Nitrogen Ohio L.P./Allen	1,877,984
7. American Electric Power Muskingum River Plant/Washington	1,512,260
8. W. H. Sammis Plant/Jefferson	1,417,299
9. American Electric Power Gavin Plant/Gallia	1,297,142
10. J.M. Stuart Station/Adams	1,289,912

* All data included.

Releases to Water for 2012*

Top 10 Counties

County	Pounds
1. Coshocton	4,332,583
2. Washington	1,178,043
3. Ottawa	827,711
4. Vinton	202,054
5. Allen	193,145
6. Butler	145,757
7. Muskingum	97,501
8. Jefferson	89,683
9. Geauga	86,282
10. Ashtabula	63,561



Top 10 Chemicals

Chemical	Pounds
1. Nitrate compounds	6,917,167
2. Ammonia	302,908
3. Manganese and manganese compounds	230,344
4. Barium and barium compounds	23,951
5. Methanol	20,792
6. Copper and copper compounds	18,881
7. Zinc and zinc compounds	16,748
8. Ethylene glycol	13,512
9. Acetaldehyde	5,556
10. Lead and lead compounds	5,035

Top 10 Facilities

Facility/County	Pounds
1. AK Steel Corp. Coshocton Works/Coshocton	4,301,250
2. Kraton Polymers US LLC/Washington	996,904
3. Materion Brush Inc./Ottawa	827,709
4. Sands Hill Mining LLC/Vinton	196,766
5. AK Steel Corp./Butler	141,086
6. Eramet Marietta Inc./Washington	118,808
7. PCS Nitrogen of Ohio LP/Allen	106,156
8. AK Steel Corp – Zanesville Works/Muskingum	97,501
9. Lima Refining Co/Allen	86,987
10. Middlefield Cheese/Geauga	86,268

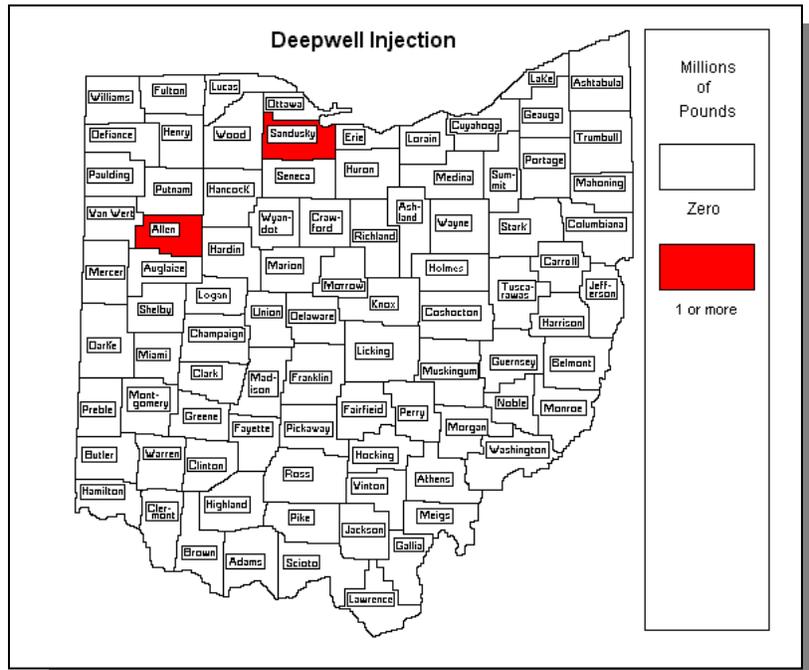
* All data included.

Deepwell Injection for 2012*

Top Counties

County	Pounds
1. Sandusky	7,374,493
2. Allen	7,362,540

Note: Only 2 facilities reported on-site deepwell injection.



Top 10 Chemicals

Chemical	Pounds
1. Nitric acid	4,341,649
2. Acetonitrile	2,593,056
3. Hydrogen fluoride	1,551,402
4. Ammonia	1,498,054
5. Acrylamide	916,830
6. Methanol	879,787
7. Chromium and chromium Compounds	406,553
8. Cyanides	377,845
9. Nitrate compounds	263,690
10. Acrylonitrile	244,488

Top Facilities

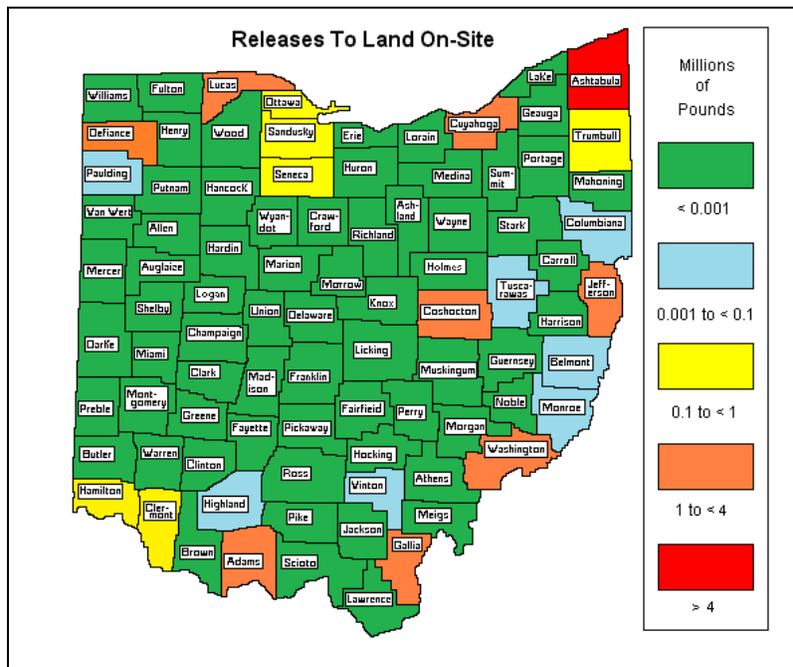
Facility/County	Pounds
1. Vickery Environmental Inc./Sandusky	7,374,493
2. INEOS USA LLC/Allen	7,362,540

* All data included.

Releases to Land On-Site for 2012*

Top 10 Counties

County	Pounds
1. Ashtabula	4,300,353
2. Cuyahoga	3,986,633
3. Gallia	3,315,846
4. Adams	2,726,153
5. Jefferson	1,374,139
6. Lucas	1,298,660
7. Washington	1,294,137
8. Defiance	1,083,325
9. Coshocton	1,005,406
10. Clermont	973,966



Top 10 Chemicals

Chemical	Pounds
1. Manganese and manganese compounds	7,655,868
2. Zinc and zinc compounds	4,769,060
3. Barium and barium compounds	3,695,698
4. Vanadium and vanadium compounds	1,521,830
5. Lead and lead compounds	1,185,893
6. Copper and copper compounds	1,049,876
7. Chromium and chromium compounds	848,727
8. Nickel and nickel compounds	732,469
9. Arsenic and arsenic compounds	397,692
10. Cobalt and cobalt compounds	262,452

Top 10 Facilities

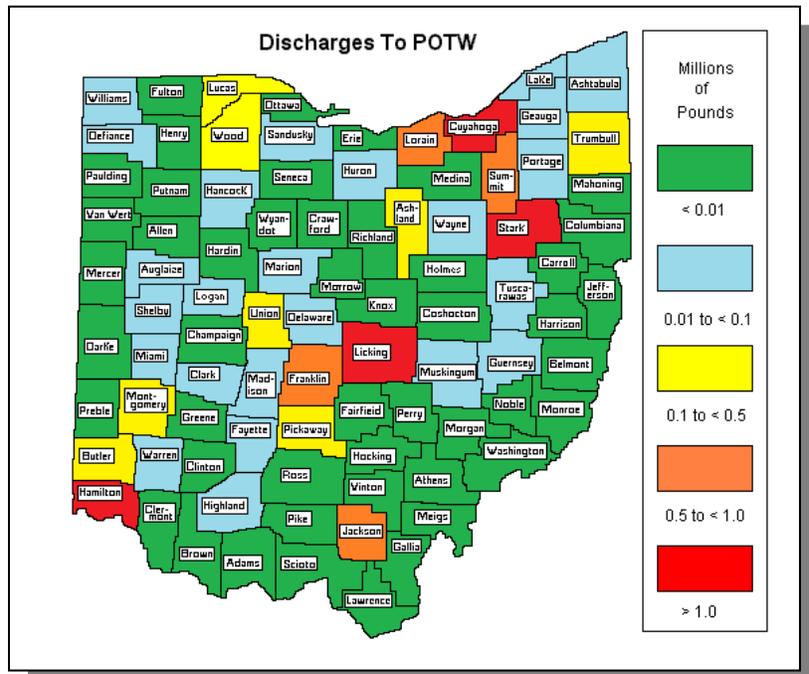
Facility/County	Pounds
1. Arcelormittal Cleveland Inc./Cuyahoga	3,985,125
2. American Electric Power Gavin Plant/Gallia	2,756,104
3. Cristal USA Inc./Ashtabula	2,300,190
4. L.M. Stuart Station/Adams	2,065,537
5. Cristal USA Inc./Ashtabula	2,000,163
6. American Electric Power Cardinal Plant/Jefferson	1,228,322
7. Envirosafe Services of Ohio Inc./Lucas	1,184,634
8. Eramet Marietta Inc./Washington	1,090,814
9. GM Defiance Casting Operations/Defiance	1,083,325
10. American Electric Power Conesville/Coshocton	1,005,406

* All data included.

Discharges to POTW for 2012*

Top 10 Counties

County	Pounds
1. Hamilton	11,175,565
2. Cuyahoga	3,385,618
3. Stark	1,591,965
4. Licking	1,356,346
5. Franklin	733,823
6. Lorain	661,578
7. Summit	649,303
8. Jackson	599,710
9. Ashland	448,020
10. Butler	253,805



Top 10 Chemicals

Chemical	Pounds
1. Nitrate compounds	17,336,040
2. Methanol	3,188,208
3. Sodium Nitrite	391,992
4. Ethylene Glycol	293,050
5. Allyl Alcohol	251,095
6. Certain Glycol Ethers	234,298
7. Ammonia	169,908
8. Zinc and zinc compounds	104,797
9. Formaldehyde	86,506
10. Nitric Acid	73,889

Top 10 Facilities

Facility/County	Pounds
1. Shepherd Chemical Co./Hamilton	9,538,280
2. Research Organics Inc./Cuyahoga	2,499,980
3. Anomatic Corp./Licking/Licking	1,026,126
4. Envirite Of Ohio Inc./Stark	773,263
5. Jewel Acquisition LLC – Louisville/Stark	695,684
6. Ohio Precious Metals LLC/Jackson	599,710
7. BASF Corp./Lorain	524,183
8. Emery Oleochemicals LLC Cincinnati/Hamilton	520,161
9. PPG Industries Inc. Barberton/Summit	520,062
10. Tremco Inc./Ashland	448,008

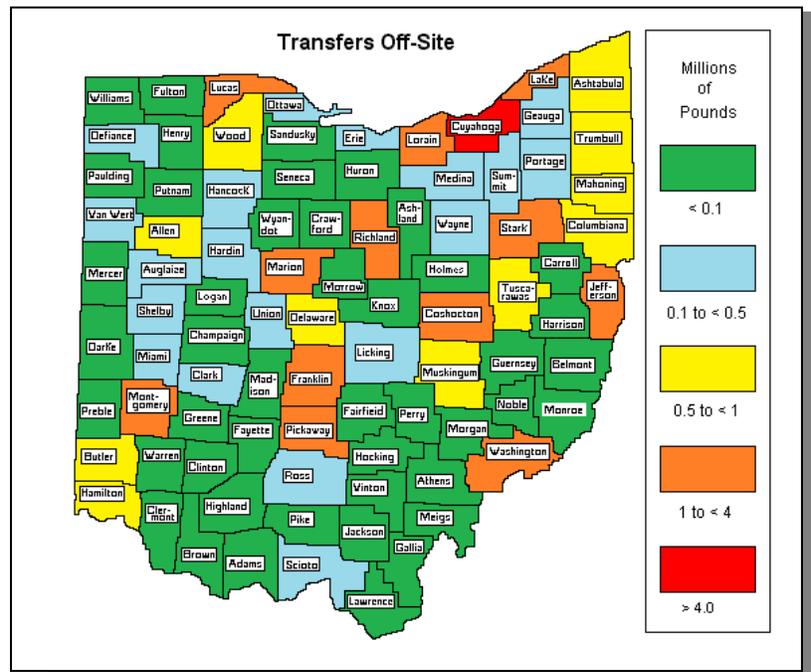
* All data included.

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Transfers Off-Site To Disposal or Treatment for 2012*

Top 10 Counties

County	Pounds
1. Cuyahoga	6,500,286
2. Lorain	2,985,694
3. Stark	2,887,218
4. Montgomery	2,795,806
5. Pickaway	2,744,989
6. Richland	2,709,784
7. Washington	2,104,847
8. Marion	2,076,357
9. Jefferson	1,872,793
10. Coshocton	1,196,380



Top 10 Chemicals

Chemical	Pounds
1. Zinc and zinc compounds	11,083,669
2. Manganese and manganese compounds	5,011,463
3. Methanol	2,499,200
4. Toluene	2,187,062
5. Barium and barium compounds	2,091,939
6. Chromium and chromium compounds	2,050,962
7. Nitric Acid	2,044,105
8. Xylene (Mixed Isomers)	1,619,548
9. Nickel and nickel compounds	1,420,817
10. Copper and copper compounds	1,255,824

Top 10 Facilities

Facility/County	Pounds
1. AK Steel Corp. – Mansfield Works/Richland	2,605,734
2. DuPont Electronic Polymers/Montgomery	2,572,732
3. PPG Industries Ohio Inc. Circleville/Pickaway	2,484,343
4. Chemtron Corp./Lorain	2,038,987
5. Envirite of Ohio Inc./Stark	1,832,412
6. Hukill Environmental Services/Cuyahoga	1,676,921
7. Energizer Battery Mfg. Inc./Washington	1,559,803
8. W.H. Sammis Plant/Jefferson	1,358,190
9. Ohio Galvanizing Corp./Marion	1,056,826
10. Charter Steel Cleveland/Cuyahoga	1,034,867

* All data included.

PBT Chemicals

Persistent, bioaccumulative and toxic chemicals (PBTs) are highly toxic, long-lasting substances that can build up in the food chain to levels that are harmful to human and ecosystem health. They are associated with a range of adverse human health effects including effects on the nervous system, reproductive and developmental problems, cancer and genetic impacts. The challenge in reducing risks from PBTs stems from the chemicals' ability to travel long distances; to transfer among air, water and land; and to linger for generations in the environment. The populations especially at risk from PBTs such as mercury, dioxins and polychlorinated biphenyls (PCBs) are children and the developing fetus.

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 four PBTs with the largest volume of reported releases, transfers and treatment in Ohio for 2012 were lead and lead compounds; PACs; mercury and mercury compounds; and benzo(g,h,i)perylene.

Overall releases and transfers of PBT chemicals decreased 11.2 percent for reporting year 2012. There was a 17.8 percent increase (6,502 pounds) in releases of PBTs to the air.

In 2012, 777 Form Rs were submitted for PBT chemicals. Mercury and mercury compounds were reported by 88 facilities in 2012, compared to 94 in 2011. Reporting facilities include power plants, paper mills, steel works, refuse systems, glass manufacturing and electric light manufacturers.

A total of 485 reports were submitted for lead and lead compounds in 2012, compared to 502 reports for 2011. Lead and lead compounds were reported from nearly every major NAICS code classification required to report to TRI. EnviroSafe Services of Ohio Inc. (Lucas County) reported more than 471 thousand pounds of lead and lead compounds released or disposed on-or off-site, while Toxco Inc. (Fairfield County) reported more than 21 million pounds of lead sent off-site for recycling.

Most PACs, including individually listed benzo(g,h,i)perylene, are constituents of fossil fuels. Other industrial processes that produce PACs include hot mix asphalt plants, asphalt roofing manufacturers, iron foundries, primary aluminum producers, coke ovens, pulp mills, Portland cement kilns and carbon black manufacturers. A total of 136 Ohio facilities reported PACs and/or benzo(g,h,i)perylene in 2012.

Dioxin and dioxin-like compounds were reported by 43 facilities, three facilities less than 2011. Those industries reporting dioxin and dioxin-like compounds include fossil fuel power plants, paper mills, foundries and petroleum refineries. Small quantities of dioxins are formed as a result of combustion processes, chlorine bleaching pulp and paper, certain types of chemical manufacturing and processing and other industrial processes.

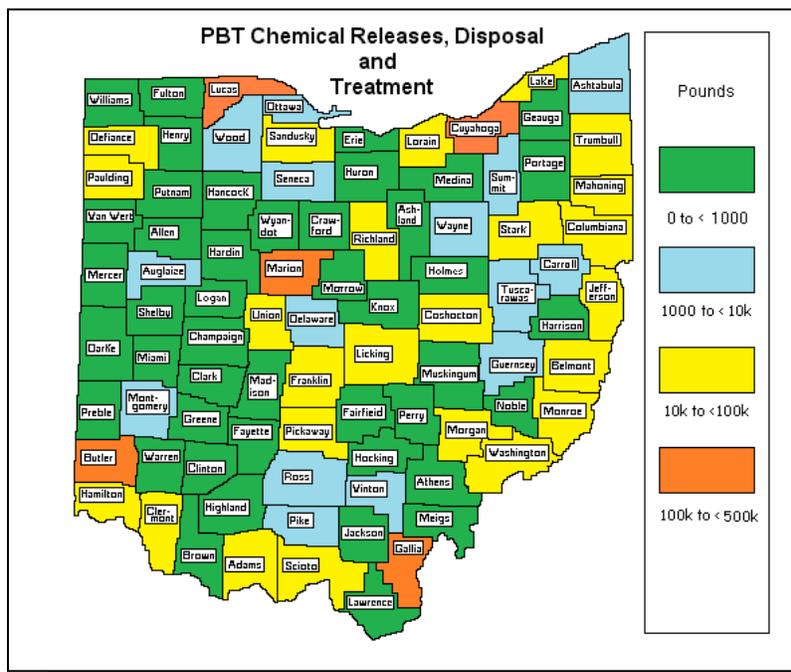
Pendimethalin is a selective herbicide used to control most annual grasses and certain broadleaf weeds in field corn, potatoes, rice, cotton, soybeans, tobacco, peanuts and sunflowers. It is also used on crops, residential lawns and ornamental shrubs and trees. The chemical was reported by five companies in Ohio: Turf Care Supply (Belmont County); Anderson Lawn Products (Lucas County); Ross Incineration Services (Lorain County); Scotts Co. (Wayne County); and The Scotts Company (Union County).

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PBT Chemical Releases, Disposal and Treatment for 2012*

Top 10 Counties

County	Pounds
1. Lucas	481,355
2. Cuyahoga	399,500
3. Butler	132,174
4. Gallia	124,520
5. Marion	101,666
6. Adams	99,636
7. Stark	97,121
8. Jefferson	86,055
9. Lorain	83,434
10. Pickaway	71,043



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	109	35	0	319	1	1,475
Chlordane	4	0	0	0	0	30
Dioxin & compounds	27.812 gr	0.2074 gr	0	366.256 gr	0	127.232 gr
Heptachlor	2	0	0	0	0	2
Hexachlorobenzene	2	0	0	0	5	1,942
Isodrin	0	0	0	0	0	0
Lead & compounds	22,868	5,035	11,391	1,185,593	8,475	1,108,120
Mercury & compounds	3,808	22	28	7,020	16	3,289
Methoxychlor	1	0	0	0	0	30
Pendimethalin	171	0	0	0	5	5,897
Pentachlorobenzene	438	0	0	0	0	45
PCBs	0	0	0	0	0	45
PACs	15,438	55	0	2,781	5	27,486
Tetrabromobisphenol A	0	0	0	0	0	0
Toxaphene	1	0	0	131	0	38
Trifluralin	0	0	0	0	0	0

† Units are pounds unless specified otherwise.

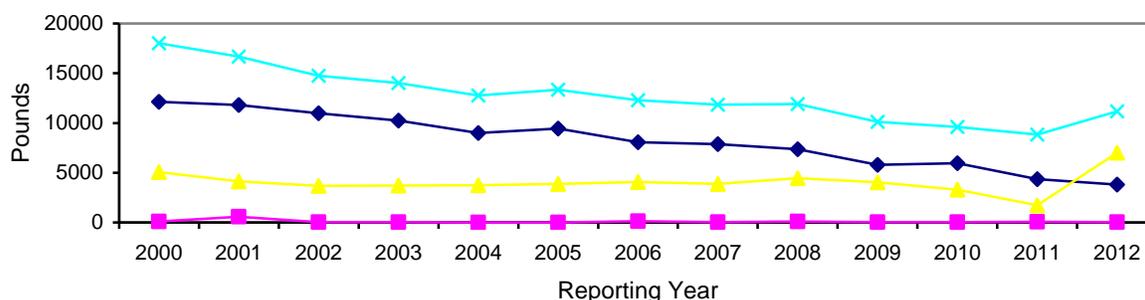
* All data included.

Mercury and Mercury Compounds

Mercury and mercury compounds were reported by 88 facilities, compared to 90 in 2011. Reporting facilities include power plants, paper mills, steel works, refuse systems, glass manufacturing and electric light manufacturers.

Facilities in Ohio reported an increase of 23.3 percent of on-site releases of mercury and mercury compounds. Ohio Valley Coal Co. (Belmont County) reported 1,979 pounds of mercury released on-site, American Electric Power Gavin Plant (Gallia County) reported 1,783 pounds of mercury released on-site, and American Energy Corp. (Monroe County) reported 1,479 pounds of mercury released on-site. USA Lamp & Ballast Recycling Inc. (Hamilton County) reported 3,968 pounds recycled off-site in 2012.

Figure 7: Ohio Mercury Trends On-Site Releases

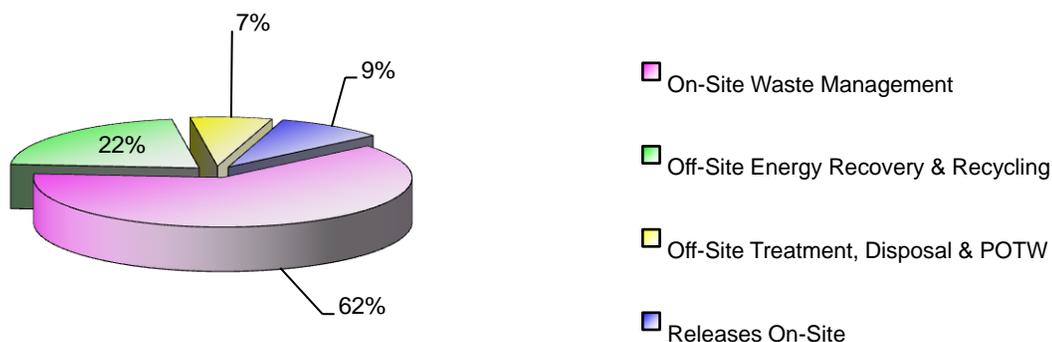


Management of TRI Chemicals in Waste

The Pollution Prevention Act (PPA) of 1990 required facilities to report information about the quantities of TRI chemicals in waste managed both on and off-site. The PPA established a hierarchy of waste management options in which source reduction is the preferred approach to manage 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.

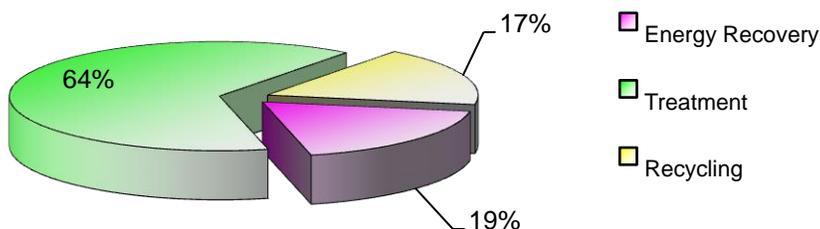
The TRI data can be used to analyze trends in total quantities of TRI chemicals to determine if facilities are reducing the amount generated. As reported under TRI, waste falls under one of four categories based on its final disposition. The first category is releases on-site, which include releases to air, water, deepwell injection and land on-site. The second 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 provides the percentages of waste generated in these four categories. As illustrated by Figure 8, much of the waste never leaves the facility, but is managed on-site through treatment, recycling or energy recovery.

**Figure 8: Management Of Total Waste
(All industries and chemicals)**



The on-site waste management data, when combined with the amounts released on-site and transferred off-site, is important to understand the overall annual amount of waste generated by a facility.

**Figure 9: On-Site Waste Management
(All industries and chemicals)**



Nearly 306 facilities implemented source reduction activities during 2012 for more than 459 chemicals. Source reduction means any activity which: (1) reduces the amount of any chemical entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and (2) reduces the hazard to public health and the environment associated with releases 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 to housekeeping, maintenance, training or inventory control. This continued level of source reduction by the reporting facilities demonstrates a commitment to continue to reduce toxic releases beyond environmental regulations.

Six codes that describe green chemistry and green engineering practices were first added to the list of source reduction activity codes in reporting year 2012. These codes fell into the good operating practices and raw material, process and product modifications categories. Approximately 12 facilities reported the new green codes for more than 20 chemicals.

Facilities also reported 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

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reflects the toxic chemical usage. A ratio of 1.1 would indicate a 10 percent increase in production related to the reported chemical. In 2012, nearly 48 percent of TRI reports indicated an increase in production when compared to 2011 data. Table 4 indicates the changes in production reported by facilities covered by TRI.

Table 4: Changes in Production from 2011 to 2012

Change in Production (Production Ratio)	Number of Form Rs	Percent Reporting
Increase by \geq 30%	532	11.26%
Increase by \geq 20%, less than 30%	351	7.43%
Increase by \geq 10%, less than 20%	515	10.90%
Less than 10% increase	854	18.08%
No Change	336	7.11%
Less than 10% decrease	815	17.25%
Decrease by \geq 10%, less than 20%	511	10.82%
Decrease by \geq 20%, less than 30%	242	5.12%
Decrease by \geq 30%	571	17.09%

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. The following tables are based on U.S. EPA's national database.

Table 5: Ohio's National Rank

National Rank In:	2010	2011	2012
Air Releases	1	2	3
Water Releases	9	7	10
Land On-Site Releases	12	12	14
Deepwell Injection	5	5	4
Reporting Facilities	1,375	1,366	1,341

Table 6: Number of Reporting Facilities

Number of Reporting Facilities – RY 2012		
Rank	State	Number of Facilities
1	Texas	1,624
2	Ohio	1,341
3	California	1,229
4	Pennsylvania	1,149
5	Illinois	1,066

Table 7: Top States for 2012 Releases

Medium	Rank	State	Release (pounds)
Air	1	Texas	60,486,694
	2	Louisiana	51,628,735
	3	Ohio	44,312,753
	4	Georgia	41,361,692
	5	Kentucky	41,171,493
Water	1	Indiana	18,311,874
	2	Texas	16,572,655
	3	Louisiana	12,644,689
	4	Alabama	12,290,923
	5	Virginia	11,822,567
	10	Ohio	7,596,944
Land On-Site	1	Alaska	875,165,522
	2	Nevada	279,236,678
	3	Utah	181,946,111
	4	Arizona	82,200,782
	14	Ohio	26,636,090
Deepwell Injection	1	Texas	86,222,792
	2	Louisiana	48,611,114
	3	Florida	27,886,713
	4	Ohio	14,737,033
	5	Mississippi	12,811,382

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Additional Information

Ohio EPA's Division of Air Pollution Control 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 division's TRI program.

Information Requests

TRI staff takes 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) 644-2260 during business hours.

Web Resources

Ohio EPA TRI	epa.ohio.gov/dapc/tri/tri.aspx
U.S. EPA TRI	epa.gov/TRI/
U.S. EPA TRI Explorer	http://iaspub.epa.gov/triexplorer/tri_release.chemical
Toxnet	toxnet.nlm.nih.gov
Envirofacts	epa.gov/enviro/
RTK Network	rtknet.org

Ohio TRI Program Contacts

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