

Kentucky Department for Environmental Protection

# Kentucky Toxic Release Inventory Analysis

## 2012 Reporting Year



February 24, 2014



## Executive Summary

Under the national Toxic Release Inventory (TRI) program, facilities within specific industry sectors that manufacture, process or use chemical amounts over the TRI thresholds must report releases, transfers, disposal, reuse and recycling activities to the U.S. Environmental Protection and the corresponding state agency. Those reports are due on July 1 of each year for the previous calendar year.

The TRI program was established in response to the 1986 chemical release incident in Bhopal, India. The United States Congress passed the Emergency Planning and Community Right to Know Act in 1986. The purpose is to provide information to federal and state agencies and make the data available to the public. The U.S. EPA compiles the data and publishes the information for public information and analysis.

The Kentucky Department for Environmental Protection completed an analysis of the data submitted to the TRI program. This report contains the analysis of data reported by Kentucky industries for the 2012 reporting year. Within Kentucky, there were a total of 431 facilities and 173 chemicals that were reported for the 2012 calendar year. This is an increase from the 423 Kentucky facilities and 154 chemicals that were reported for the 2011 calendar year.

Total on-site releases in Kentucky for 2012 were 67,334,575 pounds, off-site releases were 10,651,743 pounds and a total of 77,986,319 pounds were released or disposed in Kentucky for 2012. This represents a 5,702,580 pound decrease from 2011 reported releases on-site, 85,213 pounds increase off-site, and a total decrease of 5,617,367 pounds from 2011. That equates to a 6.7 percent decrease for total releases, a 7.8 percent decrease on-site, and a 0.8 percent increase in off-site releases. When compared to 2010, reporting year 2012 releases represent a decrease of 20.4% on-site, 13.6% off-site, and 19.6% for total releases. Chemicals reported through the TRI Program do not directly reflect exposure to these chemicals. Eighty-nine percent of the chemicals amounts reported during the 2012 TRI reports are not released to environmental media (air, water, or landfill) but rather are recycled, treated, or used for energy recovery.

Results of the 2012 Toxic Release Inventory analysis were:

- On-site releases in Kentucky for 2012 were 67,334,575 pounds, off-site releases were 10,651,743 pounds, and total on-site and off-site releases and disposal were reported as 77,986,319 pounds in 2012.
- On-site releases decreased 5,702,580 pounds (7.8%) from 2011 reports, off-site releases increased 85,213 pounds (0.8%), and total reductions of 5,617,367 pounds were reported compared to the 2011 reporting year, which is a 6.7 percent decrease for total releases.
- Over 89 percent of the amount reported for TRI chemicals was to recycling, treatment, energy recovery, rather than released or disposed of in environmental media.

- Trends in reported releases for the last 5 years and the core chemicals and industries since 1988 have shown a downward trend that specifically reflects the success of the Clean Air Act and air quality standards.
- Total releases in six out of the top ten Kentucky counties with the highest amounts in 2011 decreased in the 2012 reporting year. On-site releases in seven of the top ten Kentucky counties decreased from 2011 to 2012.
- Total releases for seven out of the top ten facilities in Kentucky decreased from 2011 to 2012.
- Air emissions from Kentucky electrical utilities in 2012 decreased from 2011 and 2010 values.
- With reduction in reported releases, the potential impact on communities that may be disproportionately impacted has also decreased.

### **Introduction**

The Kentucky Department for Environmental Protection conducted an analysis of the 2012 Reporting Year data from the Toxic Release Inventory (TRI). The deadline for data submittal to the United States Environmental Protection Agency (U.S. EPA) was July 1, 2013 for calendar year 2012. Facilities are also required to submit a copy of reporting forms to the state where the facility is located. Kentucky is a member of the State Data Exchange and receives electronic copies of all forms submitted via the Central Data Exchange (CDX). This report presents the results of the analysis of TRI data and considers trends in releases, transfers, disposal, and pollution prevention in Kentucky.

The Kentucky Department for Environmental Protection conducted this analysis to identify trends in reporting and identify key metrics. The TRI reporting data could be evaluated many different ways. These metrics were selected to give a better understanding of the reporting data for Kentucky, answer relevant questions related to the state of our environment, and assist with identifying areas of success in reducing pollutants and focus future efforts to improve Kentucky's environment.

Metrics that were selected for this report were:

- total pounds released in Kentucky and the United States for 2012 compared to 2011 and 2010 and changes in pounds and percentage,
- releases and disposal by media (air, land, water),
- number of facilities and chemicals reporting in Kentucky,
- comparison of Kentucky releases to surrounding states, U.S. EPA Region 4 states, and other states in the US,
- trends in reporting for the last five years,
- 10 highest releases by chemical,
- 10 highest counties with releases,
- the 10 facilities with the greatest reported releases or disposal,

- pollution prevention activities reported by Kentucky facilities,
- the 5 industry sectors with the greatest reported releases or disposal,
- the status of newly added chemicals to the TRI Program in Kentucky, and
- the top 10 reducers of releases from 2011 to 2012 in Kentucky.

### **Description and Background of the Toxic Release Inventory (TRI) Program**

The Emergency Planning and Community Right-to-Know Act (also known as EPCRA) was enacted in 1986 as a result of concerns related to the deadly cloud of methyl isocyanate that killed thousands of people in Bhopal, India. Shortly thereafter, there was a serious chemical release at a sister plant in West Virginia. These incidents underscored demands by industrial workers and communities in several states for information on hazardous materials.

In 1990, Congress passed the Pollution Prevention Act, which requires facilities to report additional data on waste management and source reduction activities to EPA under TRI. The goal of the Toxics Release Inventory Program is to provide communities with information about toxic chemical releases and waste management activities and to support informed decision making at all levels by industry, government, non-governmental organizations, and the public.

One of EPCRA's primary purposes is to inform citizens of toxic chemical releases in their areas. EPCRA Section 313 requires EPA and the States to collect data annually on releases and transfers of certain toxic chemicals from industrial facilities and make the data available to the public through the Toxics Release Inventory (TRI). The covered industries can be found at: <http://www.epa.gov/tri/coveredindustries/index.html> and the covered chemicals are listed at: <http://www.epa.gov/tri/trichemicals/index.htm>

Section 313 of EPCRA, requires certain facilities that manufacture, process, or otherwise use listed toxic chemicals in amounts above reporting threshold levels to report their environmental releases and other waste management quantities of such chemicals annually. These facilities must also report pollution prevention and recycling data for such chemicals, pursuant to section 6607 of the PPA, 42 U.S.C. 13106. Facilities submit their reports on Form R or the shorter Form A.

The Toxics Release Inventory Program compiles the TRI data submitted by regulated facilities each year and makes the data available online. For more information on the Toxic Release Inventory, visit [www.epa.gov\tri](http://www.epa.gov/tri)

### **2012 Reporting Year Data**

Toxic Release Inventory reporting includes on-site releases, off-site releases, energy recovery, recycling activities, and transfers to treatment or disposal facilities. On-site releases include fugitive and stack emissions, releases to surface waters, and groundwater through underground

injection and onsite landfills. Off-site releases include placement in off-site landfills, impoundments, land treatment, and wastewater treatment.

The U.S. EPA added 16 chemicals to TRI reporting for Reporting Year 2011. Of these new chemicals, only vinyl fluoride and isoprene were reported in Kentucky for 2011 and 2012 and there were two facilities reporting manufacture, processing, or use of those chemicals. In 2012, hydrogen sulfide was reinstated to the TRI program and seven facilities reported manufacture, processing or otherwise using hydrogen sulfide.

## **National Data**

Total US on-site releases during 2012 were 3,192,738,253 pounds and 439,404,500 pounds off-site for a total of 3,632,142,753 pounds. This is a 482 million pound (13.1 percent) decrease from 2011 reported on-site releases and 27 million pounds (6.7 percent) decrease in off-site releases. Both on-site and off-site releases had increased from 2010 to 2011. Hydrogen sulfide and 2,4-D had the highest reported increases in pounds from 2011 to 2012 by pounds with an increase of over 25 million pounds for hydrogen sulfide (a newly reinstated chemical for 2012) and 25 million pounds for 2,4-D attributable to one facility. The U.S. EPA released its national analysis of TRI data on February 4, 2014 that considers trends in release reporting pollution prevention activities. The national analysis also considers economic trends, risk information and interpretation of results. Table 1 summarizes the 10 chemicals with the greatest change for on-site, off-site, and total releases from 2011 to 2012 reporting years.

<b>Table 1. US Increases From 2011 to 2012 (pounds)</b>					
	<b>On-site</b>		<b>Off-site</b>		<b>Total</b>
Hydrogen Sulfide	25,773,820	2,4-D	25,480,588	Hydrogen Sulfide	25,800,533
Cadmium Compounds	6,461,580	Aluminum (Fume Or Dust)	7,635,026	2,4-D	25,598,850
Chromium Compounds	4,217,117	Nitrilotriacetic Acid	6,348,516	Chromium Compound)	8,963,088
Methanol	4,213,006	Chromium Compounds	4,745,970	Aluminum (Fume Or Dust)	6,721,259
Asbestos (Friable)	3,932,428	Copper Compounds	4,150,743	Cadmium Compounds	6,488,432
Polycyclic Aromatic Compounds	3,683,887	Nitrate Compounds	3,014,937	Nitrilotriacetic Acid	6,323,318
Aluminum Oxide (Fibrous Forms)	3,637,636	Ethylene Glycol	2,266,220	Methanol	5,364,951
Nickel Compounds	3,303,929	Sodium Nitrite	1,801,026	Nickel Compounds	4,263,491
Ammonia	3,194,577	Copper	1,528,201	Polycyclic Aromatic Compounds	3,479,137
Hydrogen Cyanide	2,317,957	Methanol	1,151,946	Asbestos (Friable)	3,457,147

## **Kentucky Data**

The Kentucky Department for Environmental Protection received reports from 431 facilities and 173 chemicals in 2012. This is an increase from a total of 423 Kentucky facilities and 154 chemicals that were reported in 2011.

Total on-site releases in Kentucky for 2012 were 67,334,575 pounds, off-site releases were 10,651,743 pounds with a total of 77,986,319 pounds released or disposed in Kentucky for 2012. This represents a 5,702,580 pound decrease from 2011 reported releases on-site, 85,213 pound increase off-site, and a total decrease of 5,617,367 pounds from 2011. That equates to a 6.7 percent decrease for total releases, a 7.8 percent decrease on-site and a 0.8 percent increase in off-site releases. The itemized list of all chemicals reported for 2012 are shown in Appendix A summarized by On-site, Off-site, and Total Releases.

The majority of the reported releases or disposals in 2012 were to air with 41,171,493 pounds. 8,639,405 pounds of chemicals were placed in on-site surface impoundments, and 7,417,795 pounds were discharges to surface water. The remainder of notable releases were to on-site landfills, land treatment or off-site solidification or stabilization. In addition to disposal and releases, an additional 120,942,648 pounds were transferred off-site for recycling, energy recovery, Publicly Owned Treatment Works (POTWs), or disposal or further waste management by another entity. In addition, 281,279,122 pounds of chemicals were recycled on-site, 39,568,754 went to on-site energy recovery, and 313,917,006 pounds were treated on-site.

### **Comparison to Other State Reports**

Kentucky's 2011 and 2012 ranking in comparison to all states, surrounding states, and states within U.S. EPA Region 4 are shown below in regard to releases and disposal. Kentucky's ranking increased in total US releases and decreased in on-site US releases when compared to other states. When compared to other Region 4 states and adjacent states, Kentucky's rank dropped or remained the same for on-site and total releases.

<u>Kentucky Rank</u>	<u>2011</u>	<u>2012</u>
US (Total Releases)	14 <sup>th</sup>	13 <sup>th</sup>
US (on-site)	10 <sup>th</sup>	12 <sup>th</sup>
Region 4 (Total)	3 <sup>rd</sup>	3 <sup>rd</sup>
Region 4 (On-site)	2 <sup>nd</sup>	3 <sup>rd</sup>
Adjacent States (Total)	5 <sup>th</sup>	5 <sup>th</sup>
Adjacent States (On-site)	4 <sup>th</sup>	5 <sup>th</sup>

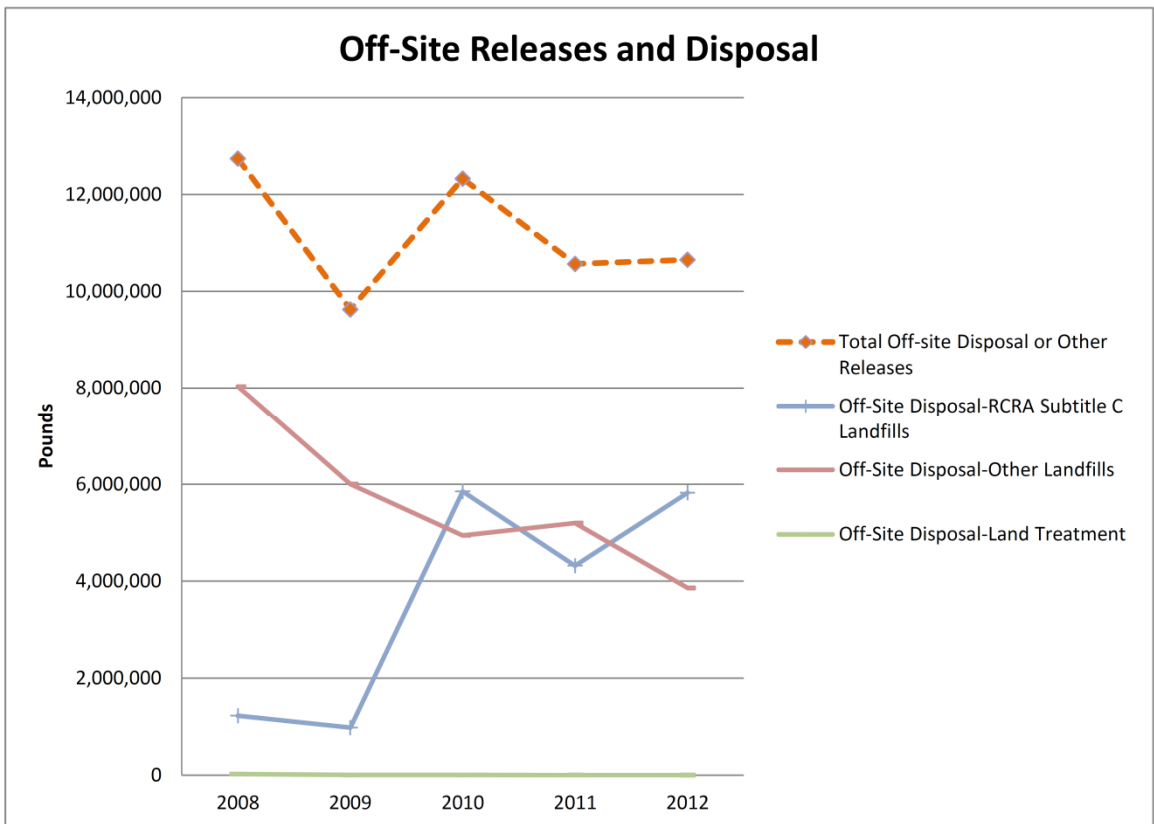
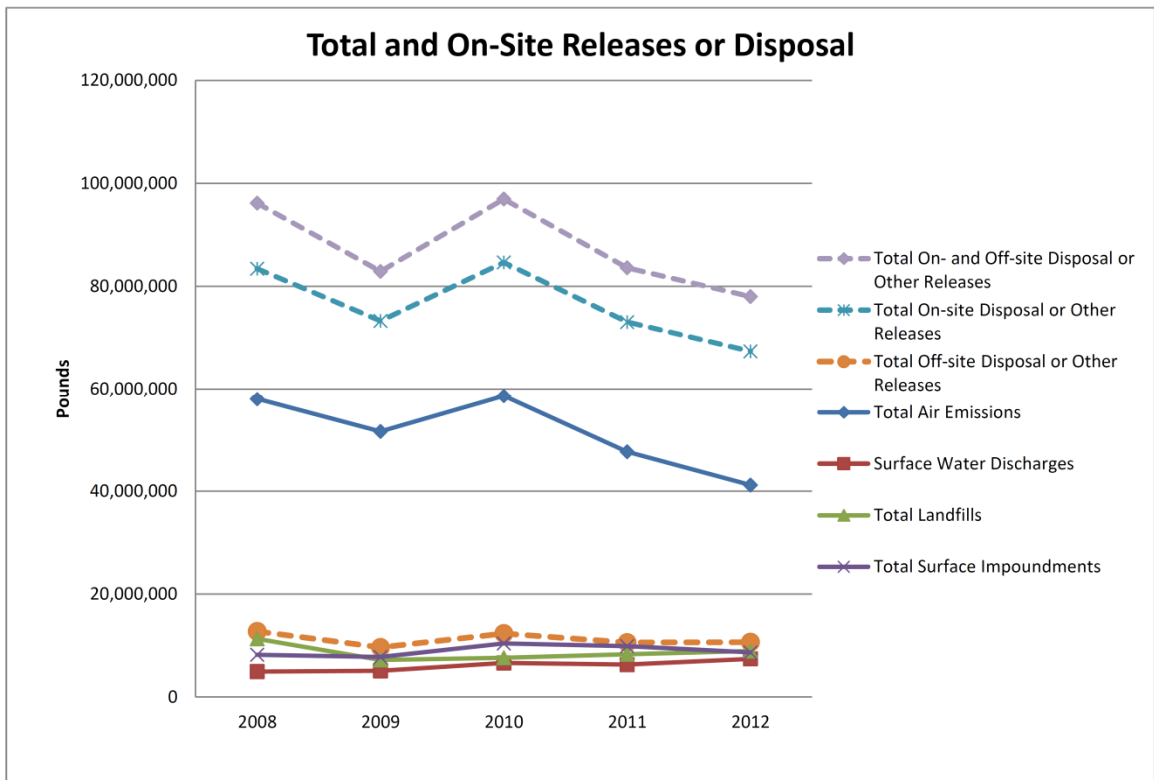
### **5-Year Trends**

Tables 2 and 3 and the following charts summarize the 5-year trend for total on-site, total off-site, and combined total pounds released or disposed in reporting year 2012 and the major

individual components of those numbers. Releases and disposal have generally decreased from 2008 to 2012 with air decreasing and discharges to surface waters and landfills increasing. Releases to surface impoundments have fluctuated. The majority of on-site releases are reflected by air emissions, which can be further broken down into stack, and fugitive emissions. Off-site disposal has fluctuated over the years with disposal in Resource Conservation and Recovery Act (RCRA) landfills increasing over the last 5 years with disposal in other landfills decreasing. Total on-site and total combined releases and disposal decreased over the last 5 reporting years.

<b>Year</b>	<b>Total Air Emissions</b>	<b>Surface Water Discharges</b>	<b>Total Landfills</b>	<b>Total Surface Impoundments</b>	<b>Total On-site Disposal or Other Releases</b>
2008	57,953,357	4,930,427	11,296,531	8,194,015	83,398,793
2009	51,594,659	5,066,868	7,189,423	7,757,428	73,250,300
2010	58,563,370	6,605,678	7,613,872	10,385,887	84,620,519
2011	47,646,163	6,273,169	8,295,739	9,870,818	73,020,591
2012	41,171,493	7,417,795	8,910,676	8,639,405	67,334,575

<b>Year</b>	<b>Off-Site Disposal-RCRA Subtitle C Landfills</b>	<b>Off-Site Disposal-Other Landfills</b>	<b>Off-Site Disposal-Land Treatment</b>	<b>Total Off-site Disposal or Other Releases</b>	<b>Total On- and Off-site Disposal or Other Releases</b>
2008	1,224,786	8,030,615	22,346	12,742,675	96,141,468
2009	979,305	5,999,441	3,214	9,624,567	82,874,867
2010	5,850,597	4,943,173	3,716	12,328,502	96,949,021
2011	4,317,735	5,197,314	1,646	10,566,530	83,587,122
2012	5,823,573	3,859,300	550	10,651,743	77,986,319





## Top Chemicals

The Toxic Release Inventory data were further analyzed to identify the top ten chemicals released on-site and off-site. The results are shown in Tables 4, 5, and 6. On-site releases of sulfuric acid mists and hydrochloric acid comprise 32 percent of all reported releases or disposal for 2012. Sulfuric acid mists and hydrochloric acid are associated with coal-fired power plant emissions. On-site and off-site releases and disposal of nitrates and metals are also influenced by steel and metal processing facilities in Kentucky.

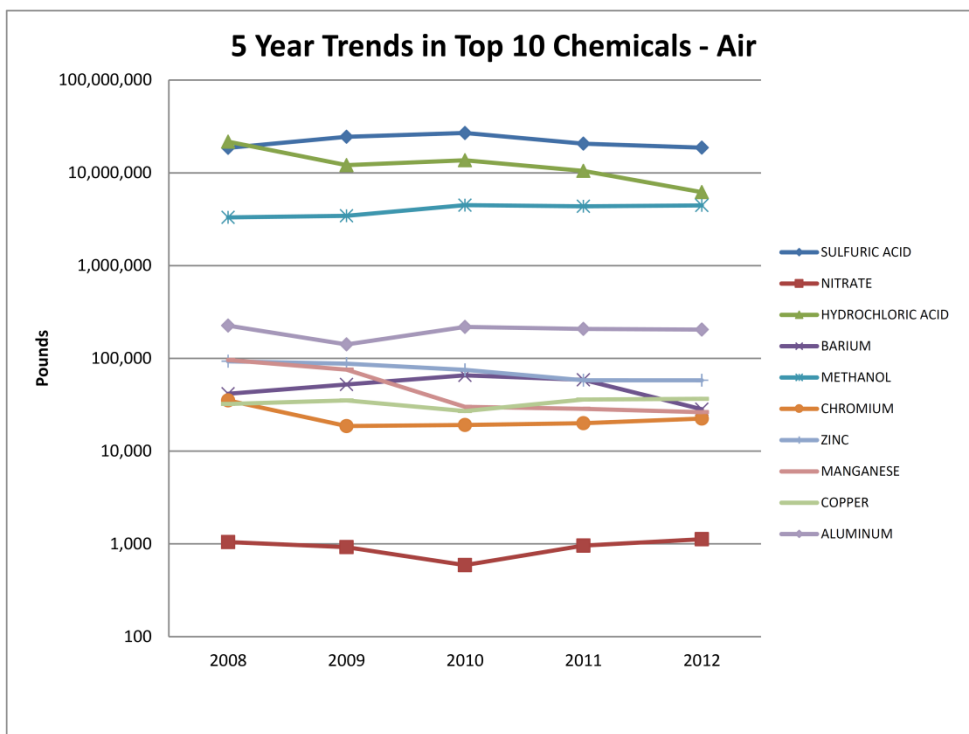
<b>Table 4. Top 10 Chemicals Released or Disposed On-Site (2012)</b>	
<b>Chemical</b>	<b>Pounds</b>
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	18,630,673
NITRATE COMPOUNDS	6,733,852
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	6,183,290
METHANOL	5,005,981
BARIUM COMPOUNDS	4,932,373
ZINC COMPOUNDS	2,456,778
ALUMINUM (FUME OR DUST)	2,250,042
MANGANESE COMPOUNDS	2,160,713
VANADIUM COMPOUNDS	1,895,651
TOLUENE	1,719,936

<b>Table 5. Top 10 Chemicals Released or Disposed Off-Site (2012)</b>	
<b>Chemical</b>	<b>Pounds</b>
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	3,374,342
COPPER COMPOUNDS	1,764,357
ZINC COMPOUNDS	1,668,663
MANGANESE COMPOUNDS	1,158,062
NICKEL COMPOUNDS	562,411
ALUMINUM (FUME OR DUST)	235,474
LEAD COMPOUNDS	228,359
TOLUENE	186,001
BARIUM COMPOUNDS	144,316
XYLENE (MIXED ISOMERS)	138,354

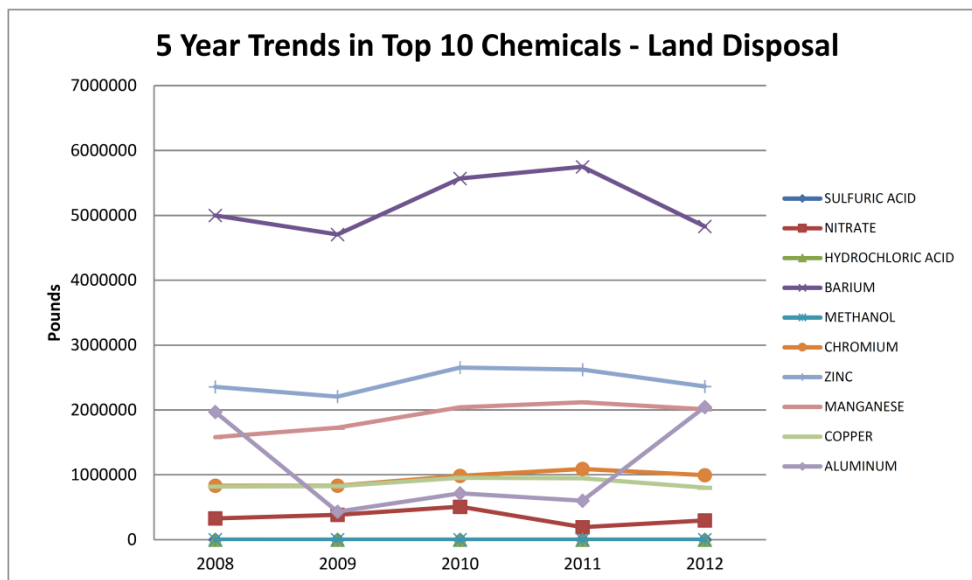
<b>Table 6. Top 10 Chemicals Released or Disposed Total On-Site and Off-Site (2012)</b>	
<b>Chemical</b>	<b>Pounds</b>
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	18,630,673
NITRATE COMPOUNDS	6,870,733
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	6,183,290
BARIUM COMPOUNDS	5,076,688
METHANOL	5,022,368
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	4,398,909
ZINC COMPOUNDS	4,125,442
MANGANESE COMPOUNDS	3,318,776
COPPER COMPOUNDS	2,632,240
ALUMINUM (FUME OR DUST)	2,485,516

The top 10 chemicals for total releases in 2012 were evaluated for trends over the last 5 years for releases to air, land disposal and surface water. Many of Kentucky's industries are implementing pollution control upgrades to eliminate or reduce emissions and disposal of TRI chemicals. Appendix B contains the tables that show these trends for the top 10 chemicals. Air releases and surface water releases are presented on a logarithmic scale due to the range of values from the highest chemical to the lowest. Data tables for the 5-year trends are shown in the appendix.

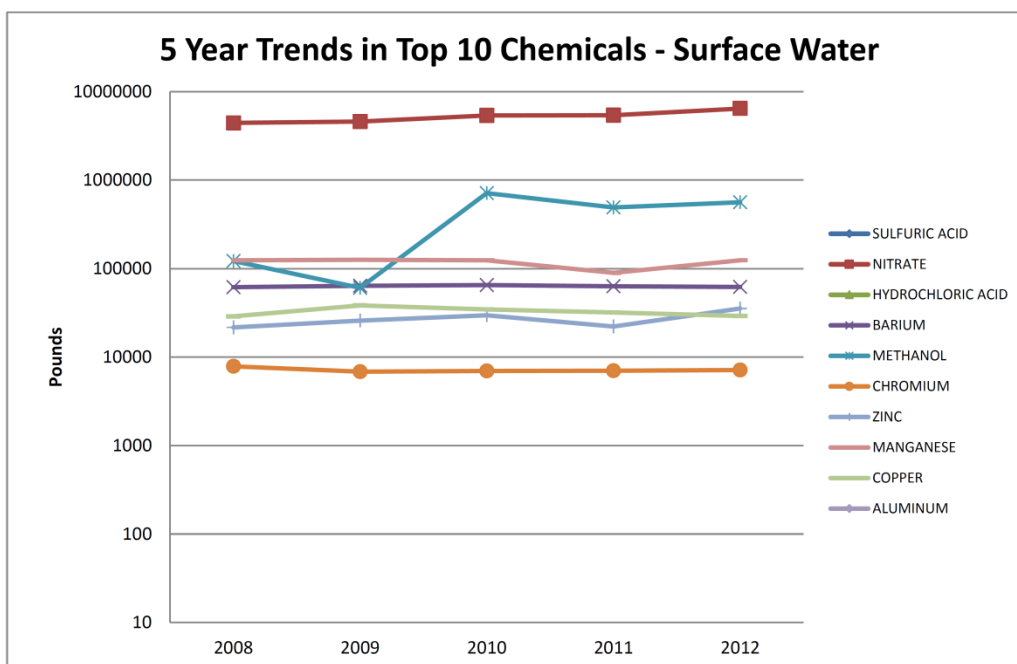
The top ten chemicals in 2012 for air releases have remained relatively steady with sulfuric acid mists increasing from 2008 to 2010 and then dropping in 2011 and 2012. Hydrochloric acid decreased from 2008 to 2012 to less than one-third of 2008 releases. Manganese dropped to almost 25 percent of 2008 levels.



Releases of the Top 10 chemicals for 2012 to land have remained relatively steady with an upward trend for 2009 through 2011 for barium. Over half of all releases of barium, the highest chemical with disposal to land, are associated with two facilities that dispose of waste in on-site or off-site landfills. Aluminum disposal to land tripled from 2011 to 2012. One facility comprises most of the aluminum releases to land.



Surface water discharges for these top 10 chemicals remained relatively the same from 2008 to 2012 with some fluctuation in methanol and a slight upward trend for nitrate.



### Top Counties

The ten counties with the highest total releases in 2012 are shown on Table 7. Carroll County with 6 facilities reporting was followed by Jefferson County (68 facilities), and Muhlenberg County (7 facilities). All three counties have facilities that reported sulfuric acid mists and hydrochloric acid, the first and third highest chemicals reported in the TRI data. Carroll County also has the largest source of nitrate, the second highest chemical reported to TRI in Kentucky. The top 10 counties for on-site releases in 2012 are shown in Table 8. Except for Marshall County, the top 8 counties are the same as those for total releases. Off-site disposal to landfills caused Marshall County to rank high in total releases, while ranking lower for on-site releases or disposal.

The top 10 counties for 2011 are shown for comparison on Table 9 and 10. It is notable that Lawrence County dropped significantly from the 2011 to 2012 reporting data due to significant changes in operations at American Electric Power's Big Sandy plant. American Electric Power plans on shutting down both of its coal-burning units in 2015 rather than upgrading the pollution control equipment to comply with federal rules. The generation will be replaced with power generated in Moundsville, West Virginia. The smaller unit at Big Sandy is slated to be retrofitted to natural gas.

Total releases from the top 10 facilities decreased by 3 million pounds from 2011 to 2012. On-site releases decreased by almost 6 million pounds from 2011 to 2012.

<b>Table 7. Top 10 Kentucky Counties: Total Releases for 2012</b>	
<b>County</b>	<b>Pounds</b>
Carroll	15,393,481
Jefferson	9,606,630
Muhlenberg	7,820,761
Marshall	4,111,349
Hancock	4,045,468
Henderson	3,908,194
McCracken	3,327,450
Ballard	3,132,251
Lawrence	2,816,079
Mason	2,726,466

<b>Table 8. Top 10 Kentucky Counties: On-Site Releases for 2012</b>	
<b>County</b>	<b>Pounds</b>
Carroll	10,048,847
Jefferson	8,737,926
Muhlenberg	7,820,529
Hancock	3,974,349
Henderson	3,879,331
McCracken	3,326,033
Ballard	3,132,250
Lawrence	2,814,808
Trimble	2,696,498
Mason	2,679,466

<b>Table 9. Top 10 Kentucky Counties: Total Releases for 2011</b>	
<b>County</b>	<b>Pounds</b>
Carroll	13,984,327
Jefferson	9,994,139
Muhlenberg	9,055,893
Lawrence	6,499,749
Henderson	4,422,449
McCracken	3,668,511
Hancock	3,417,550
Trimble	3,343,368
Ballard	2,861,488
Marshall	2,571,262

<b>Table 10. Top 10 Kentucky Counties: On-site Releases for 2011</b>	
<b>County</b>	<b>Pounds</b>
Carroll	9,744,137
Jefferson	9,239,853
Muhlenberg	9,055,577
Lawrence	6,498,609
Henderson	4,409,265
McCracken	3,667,274
Trimble	3,343,368
Hancock	3,336,273
Ballard	2,861,487
Marshall	2,507,876

### **Top Facilities**

The top 10 facilities for on-site, off-site, and combined releases were identified and shown on Tables 11, 12, and 13, respectively. Eight of the top ten facilities in Kentucky with on-site and total releases or disposal are in the electric utility industry sector. Total releases decreased for seven of the top 10 facilities from 2011 to 2012. Total releases primarily reflect on-site releases or disposal. Off-site releases in Table 12 were typically lower than on-site releases in Table 11.

<b>Table 11. Top 10 Facilities for On-site Releases or Disposal (2012 Reporting Year)</b>	
<b>Facility</b>	<b>Total On-site Disposal or Other Releases</b>
US TVA Paradise Fossil Plant (Muhlenberg)	7,036,210
Kentucky Utilities Co Ghent Station (Carroll)	6,710,819
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	4,808,229
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	3,291,659
North American Stainless (Carroll)	3,256,094
Wickliffe Paper Co (Ballard)	3,120,607
US TVA Shawnee Fossil Plant (McCracken)	2,889,190
American Electric Power Big Sandy Plant (Lawrence)	2,814,808
Louisville Gas & Electric Co - Trimble County Station (Trimble)	2,696,498
Spurlock Power Station (Mason)	2,207,385

<b>Table 12. Top 10 Facilities for Off-site Releases or Disposal (2012 Reporting Year)</b>	
<b>Facility</b>	<b>Total Off-site Disposal or Other Releases</b>
North American Stainless (Carroll)	5,176,495
Gerdau Ameristeel US Inc (Marshall)	1,636,101
Safety-Kleen Systems Inc (Henry)	374,415
Momentive Specialty Chemicals Inc (Jefferson)	282,350
Kentucky Electric Steel (Boyd)	231,533
Novelis Corp (Madison)	229,625
Owensboro Municipal Utilities Elmer Smith Station (Davies)	218,319
Akebono - Elizabethtown Plant (Hardin)	184,539
Gallatin Steel Co (Gallatin)	178,443
Dow Corning Corp (Carroll)	168,137

<b>Table 13. Top 10 Facilities for Total Releases or Disposal (2011 Reporting Year)</b>	
<b>Facility</b>	<b>Total Disposal or Other Releases</b>
North American Stainless (Carroll)	8,432,589
US TVA Paradise Fossil Plant (Muhlenberg)	7,036,253
Kentucky Utilities Co Ghent Station (Carroll)	6,710,819
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	4,808,229
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	3,291,659
Wickliffe Paper Co (Ballard)	3,120,607
US TVA Shawnee Fossil Plant (McCracken)	2,889,225
American Electric Power Big Sandy Plant (Lawrence)	2,816,079
Louisville Gas & Electric Co - Trimble County Station (Trimble)	2,696,498
Spurlock Power Station (Mason)	2,207,385

The top 10 facilities for 2011 were identified for on-site, off-site, and total releases and the change in their reported releases and disposal from 2011 to 2012 was calculated and are shown in Tables 14, 15, and 16, respectively. Releases from six of the eight top power plants decreased from 2011 to 2012. Due to changes in facility operations, on-site releases from AEP's Big Sandy plant decreased by over 56 percent. Off-site releases and disposal decreased significantly for three facilities. These changes reflect changes in processes, reduction in industrial operations, or improvements in pollution control.

<b>Table 14. Top 10 Facilities for On-Site Releases or Disposal in 2011 and Percent Change</b>	
<b>Facility</b>	<b>Percent Change from 2011 to 2012</b>
US TVA Paradise Fossil Plant (Muhlenberg)	-15.9%
Kentucky Utilities Co Ghent Station (Carroll)	2.9%
American Electric Power Big Sandy Plant (Lawrence)	-56.7%
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-5.7%
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-15.5%
Louisville Gas & Electric Co - Trimble County Station (Trimble)	-19.3%
US TVA Shawnee Fossil Plant (McCracken)	-10.5%
North American Stainless (Carroll)	3.3%
Wickliffe Paper Co (Ballard)	9.5%
Spurlock Power Station (Mason)	11.2%



<b>Facility</b>	<b>Percent Change from 2011 to 2012</b>
North American Stainless (Carroll)	26.3%
Federal-Mogul VSP (Barren)	-99.9%
Safety-Kleen Systems Inc (Henry)	-38.9%
Owensboro Municipal Utilities Elmer Smith Station (Davies)	-50.2%
Momentive Specialty Chemicals Inc (Jefferson)	-5.0%
Novelis Corp (Madison)	-9.9%
Kentucky Electric Steel (Boyd)	13.3%
Gallatin Steel Co (Gallatin)	4.7%
Dow Corning Corp (Carroll)	20.0%
Sud-Chemie Inc 12th Street Facility (Jefferson)	15.6%

<b>Facility</b>	<b>Percent Change from 2011 to 2012</b>
US TVA Paradise Fossil Plant (Muhlenberg)	-15.9%
North American Stainless (Carroll)	16.3%
Kentucky Utilities Co Ghent Station (Carroll)	2.9%
American Electric Power Big Sandy Plant (Lawrence)	-56.7%
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-5.7%
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-15.5%
Louisville Gas & Electric Co - Trimble County Station (Trimble)	-19.3%
US TVA Shawnee Fossil Plant (McCracken)	-10.5%
Wickliffe Paper Co (Ballard)	9.5%
Federal-Mogul VSP (Barren)	-11.7%

### **Top Industry Sectors**

The top 5 industry sectors in 2012 and the reported releases are shown below in Table 17 for on-site releases, Table 18 for off-site releases or disposal, and Table 19 for total releases or disposal. Electric utilities make up 52% of total pounds released or disposed in 2012. On-site releases are primarily from electric utilities, and primary metals production is in the top 5 for both on-site and off-site releases and disposal.

<b>Industry Sector</b>	<b>On-site Releases</b>
NAICS 2211 - Electric Utilities	40,434,727
NAICS 331 - Primary Metals	7,791,658
NAICS 325 - Chemicals	5,189,586
NAICS 322 - Paper	5,082,464
NAICS 311/312 - Food/Beverages/Tobacco	2,867,798

<b>Industry Sector</b>	<b>Off-site Releases</b>
NAICS 331 - Primary Metals	7,719,028
NAICS 325 - Chemicals	1,107,820
NAICS 336 - Transportation Equipment	697,729
NAICS 562 - Hazardous Waste/Solvent Recovery	374,415
NAICS 2211 - Electric Utilities	219,681

<b>Industry Sector</b>	<b>Total Releases</b>
NAICS 2211 - Electric Utilities	40,654,408
NAICS 331 - Primary Metals	15,510,686
NAICS 325 - Chemicals	6,297,406
NAICS 322 - Paper	5,082,939
NAICS 311/312 - Food/Beverages/Tobacco	2,913,659

### **Dioxins**

In the Toxic Release Inventory program, dioxin and dioxin equivalents are reported separately from other chemicals. Thirty-seven Kentucky facilities reported releases of dioxins or dioxin-like compounds in 2012. On-site releases ranged from 0.0002 to 80.55 grams (0.18 pounds). Off-site releases ranged from 0.00058 to 2,858 grams (6.3 pounds). The top 5 facilities for on-site and off-site releases are shown in the Table 20 and 21 below.

Aleris Recycling Inc. (Butler)	80.55
Westlake Vinyls Inc.(Marshall)	18.5457
Hydro Aluminum. (Henderson)	15.0742
Carmeuse Lime & Stone Maysville Facility. (Mason)	4.0135
US TVA Paradise Fossil Plant (Muhlenberg)	3.1

Westlake Vinyls Inc. (Marshall)	2,858.92
Owl's Head Alloys Inc. (Warren)	3.05
Dow Corning Corp. (Carroll)	2.655606
JL French Glasgow Plant #1. (Barren)	1.8225522
Novelis Corp. (Madison)	0.00058

### TRI Data for Electrical Utilities

Since the electric utilities industry sector makes up a large percentage of the total TRI reported releases and disposal in Kentucky, that sector was evaluated further to consider trends in power plant emissions. The combined fugitive and stack air releases for 2010, 2011, and 2012 TRI data were evaluated and ranked by state. When compared to 2010, 2011 releases decreased for 8 of the top 10 states. Kentucky air releases decreased by over 23 percent and total releases for all states decreased by 17.7 percent. Reported air releases in 2012 decreased for all of the top 10 states when compared to 2011 and 2010. Kentucky had the highest reported air releases from power plants for all three years, which is consistent with the role that coal-fired electrical generation plays in Kentucky's energy portfolio. However, 2012 releases were 20.9 percent lower than 2011 and 39.7 percent lower than 2010.

These reductions may be due to changes in fuel from coal to other fuels, improved pollution control, economic factors reducing power demand, or closing of facilities. The top ten states with air releases from the electrical utilities sector are listed in Table 22 (2010), Table 23 (2011), and Table 24 (2012) along with percent change from 2010 to 2011, 2011 to 2012, and 2010 to 2012. The data for all states is listed in Appendix D. Nationally, releases from the electric utilities sector dropped by 17.7% from 2010 to 2011, 25.2% from 2011 to 2012, and 38.5% from 2010 to 2012.

Rank	State	Air Emissions
1	Kentucky	40,642,049
2	Ohio	36,521,078
3	Pennsylvania	31,520,487
4	Indiana	26,540,627
5	West Virginia	18,118,582
6	Florida	16,711,674
7	Michigan	15,579,860
8	North Carolina	14,699,212
9	Georgia	13,547,104
10	Tennessee	9,897,919
	<b>TOTAL</b>	<b>313,239,133</b>

<b>Rank</b>	<b>State</b>	<b>Air Emissions</b>	<b>Change from 2010</b>
1	Kentucky	31,008,237	-23.7%
2	Ohio	30,366,900	-16.9%
3	Indiana	23,164,181	-12.7%
4	Pennsylvania	21,359,036	-32.2%
5	Michigan	17,406,693	11.7%
6	West Virginia	14,609,499	-19.4%
7	Florida	13,159,886	-21.3%
8	Georgia	11,340,526	-16.3%
9	Tennessee	10,688,693	8.0%
10	North Carolina	9,271,514	-36.9%
	<b>TOTAL</b>	<b>257,798,610</b>	<b>-17.7%</b>

<b>Rank</b>	<b>State</b>	<b>Air Emissions</b>	<b>Change from 2011</b>	<b>Change from 2010</b>
1	Kentucky	24,517,354	-20.9%	-39.7%
2	Ohio	21,174,351	-30.3%	-42.0%
3	Indiana	17,583,643	-24.1%	-33.7%
4	Pennsylvania	16,139,816	-24.4%	-48.8%
5	West Virginia	13,025,933	-10.8%	-28.1%
6	Michigan	12,903,861	-25.9%	-17.2%
7	Florida	9,797,423	-25.6%	-41.4%
8	Georgia	8,614,084	-24.0%	-36.4%
9	Alabama	6,130,047	-23.3%	-26.8%
10	North Carolina	6,086,092	-34.4%	-58.6%
	<b>TOTAL</b>	<b>192,779,273</b>	<b>-25.2%</b>	<b>-38.5%</b>

### **Other Management**

In addition to on-site and off-site releases and disposal, facilities also report on amount of TRI chemicals that undergo on-site recycling, energy recovery, and treatment; transfers off-site for recycling, energy recovery, or treatment; and transfers to a POTW. During the 2012 calendar year 120,942,648 pounds of chemicals were transferred off-site for further waste management and 634,764,882 pounds were treated, recycled or used for energy recovery on-site. The total releases, disposal and other management of TRI chemicals were 823,134,081 pounds during

calendar year 2012. Of the total production-related waste that was managed during 2012, 89.4 percent was recycled, treated or used for energy recovered rather than released or disposed.

### **Facility Increases and Decreases**

The Kentucky TRI data were evaluated to identify the top ten facilities with increases by pounds and percentage, and the top ten facilities with decreases by pounds and percentage from the 2011 to 2012 reporting years. The results of the analysis are shown in Appendix C. The top 10 facilities with increases had a total of 6,755,354 pounds in increased releases or disposal. The top 10 facilities with decreases reduced a total of 11,770,645 pounds of releases or disposal. The top ten facilities with the greatest percentage increase and decrease are also presented in Appendix C. Finally, the top ten facilities with percentage decreased are also presented for those that reported releases in both 2011 and 2012 since some facilities with 2011 reports may have ceased operations or changed operations and therefore did not report in 2012.

The U.S. EPA TRI program included enhanced Pollution Prevention (P2) reporting in Section 8 of Form R during reporting year 2011 and 2012. Facilities can voluntarily select activity codes and provide additional descriptive text to for Pollution Prevention activities implemented during the reporting year. This allows the facility to give additional detail of activities that affect reductions and changes in releases and disposal. Source reduction activities include good operating practices, process modifications, spill and leak prevention, and raw material and product modifications. Nationally, 3,152 facilities reported initiating 10,250 source reduction activities during 2012. The U.S. EPA has enhanced and expanded its TRI Pollution Prevention Search Tool that improves the opportunities to evaluate practices being used at facilities that report to the Toxic Release Inventory. The tool was used to obtain all data in the database for Kentucky facilities. Table 25 lists the top 10 facilities with reductions in releases and the practices that were implemented in 2012.

**Table 25. Top Ten Reductions in Releases from 2011 to 2012 and Associated Pollution Prevention Activities**

FACILITY NAME	CHEMICAL	Difference in Pounds	POLLUTION PREVENTION INFORMATION (ACTIVITY CODES/TEXT)
OWENSBORO GRAIN CO LLC	N-Hexane	-147,000.00	W52: Modified equipment, layout, or piping
SEKISUI SPECIALTY CHEMICALS AMERICA LLC	Methanol	-94,968.00	W52: Modified equipment, layout, or piping - The agitator seals on each of the four (4) #1 Polymer Cutting Machines (PCM) on each Saponification Process Line were upgraded to reduce fugitive emissions from equipment leaks. Method(s) to Identify P2 Activities: T01 [Internal Pollution Prevention Opportunity Audit(S)] - An opportunity to reduce fugitive equipment leak component emissions from the #1 PCM on each Saponification Line was identified by the maintenance department and engineering group. The design of the lip and rotor seals on the #1 PCM agitator for each Saponification Line was originally a Gore-Tex packing gland type seal. This conventional seal design was replaced with seals that have a nitrogen purge and grease ring. The upgraded seal configuration is intended to reduce fugitive emissions from seal leaks, and LDAR monitoring completed since the seal change indicates the new design is achieving the desired objective.
OWENSBORO MUNICIPAL UTILITIES ELMER SMITH STATION	Barium Compounds	-73,807.00	W19: Other changes in operating practices
OWENSBORO MUNICIPAL UTILITIES ELMER SMITH STATION	Manganese Compounds	-70,828.00	W19: Other changes in operating practices
HITACHI AUTOMOTIVE SYSTEMS AMERICAS INC-BEREA KY	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	-56,304.52	W52: Modified equipment, layout, or piping
SUD-CHEMIE INC CRITTENDEN DRIVE FACILITY	Ammonia	-45,606.00	W89: Other product modifications
BANDO USA INC	Toluene	-33,320.00	W13: Improved maintenance scheduling, recordkeeping, or procedures Decrease in emissions and use reflects improved internal controls, processes and accounting.

FEDERAL-MOGUL VSP	Copper	-30,880.00	W19: Other changes in operating practices - We are removing brass from our product at a corporate level.
JIM BEAM BRANDS CO	Hydrochloric Acid (1995 And After "Acid Aerosols" Only)	-27,413.00	W58: Other process modifications - Relied more on the natural gas boiler to reduce coal usage for steam generation. Cut greenhouse gases by 3% while production increased 2%
SUD-CHEMIE INC CRITTENDEN DRIVE FACILITY	Nickel Compounds	-24,204.22	W52: Modified equipment, layout, or piping W58: Other process modifications

## Application and Conclusions

The data reported to EPA and the states through the Toxic Release Inventory provides a tool for communicating and informing residents near facilities, and allow state and EPA officials to evaluate chemical releases, disposal, and management and pollution prevention activities since 1988. The data represents the pounds of production-related chemicals that were managed during the calendar year.

Chemicals reported through the TRI Program do not directly reflect exposure to these chemicals. Over 89 percent of the chemicals amounts reported during the 2012 TRI reports are not released to environmental media (air, water, or landfill) but rather are recycled, treated, or used for energy recovery. In order to evaluate exposure and risk, it is necessary to consider dispersion and dilution factors and the toxicity of the chemicals. The TRI chemicals have varying toxicity where some chemicals have more serious effects than others. The chemicals that are released or disposed in the greatest amount are not necessarily the ones that are of greatest concern once potential exposure is considered. The EPA has developed a Risk Screening for Environmental Indicators model to take those factors into consideration. That tool is available on U.S. EPA's website for comparing areas on a site-specific basis using TRI data, generic dispersion modeling, toxicity scores, and population characteristics to calculate a RSEI score.

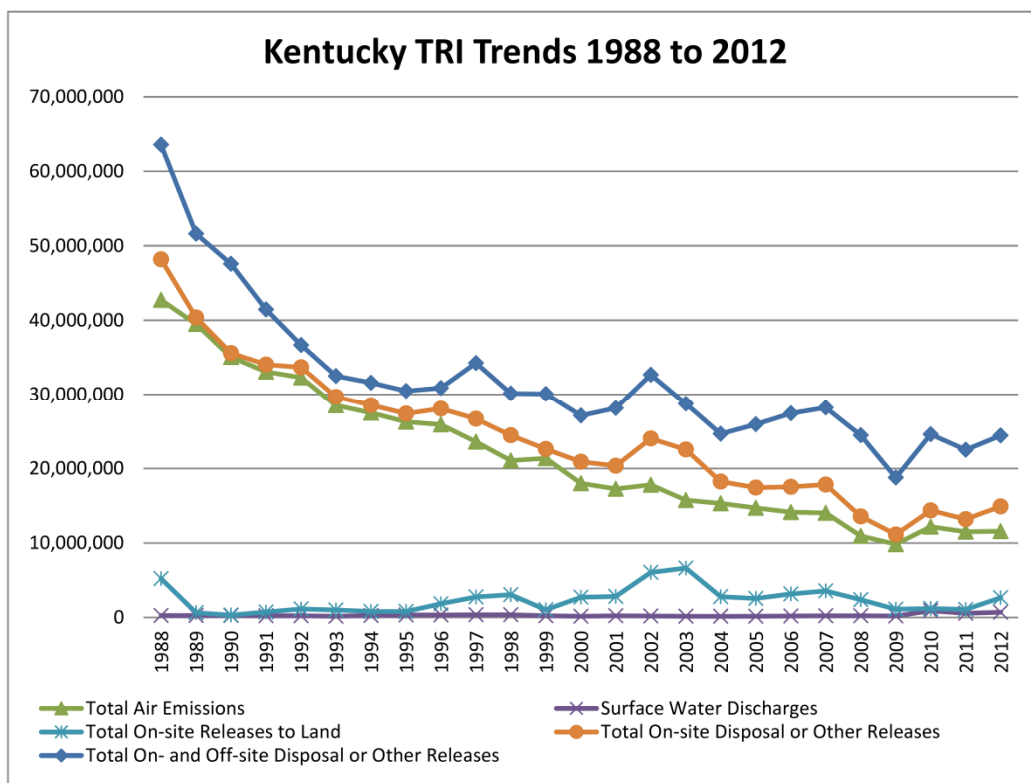
Kentucky's facilities continue to make progress toward reducing releases and disposal and improving their processes to reduce or eliminate toxic releases. Releases and disposal have decreased since the beginning of the TRI program. Considering the chemicals and industries that were part of the initial 1988 reporting cycle, the following chart illustrates reductions in total releases both on-site and off-site and notably air emissions. This illustrates the effect of environmental standards over the last 25 years of TRI reporting. As new chemicals and industry sectors have been added, releases and disposals exhibit a downward trend that reflects efforts to reduce toxic releases and disposal. With reduction in reported releases, the potential impact on communities that may be disproportionately impacted has also decreased. There is still work to be done as new pollution control technologies become available and facilities in Kentucky evaluate their processes and make facility upgrades to improve their processes. The Kentucky Department for Environmental Protection will continue to assist facilities in Kentucky with compliance with their environmental permits and pollution control activities.

Results of the 2012 Toxic Release Inventory analysis were:

- On-site releases in Kentucky for 2012 were 67,334,575 pounds, off-site releases were 10,651,743 pounds, and total on-site and off-site releases and disposal were reported as 77,986,319 pounds in 2012.
- On-site releases decreased 5,702,580 pounds (7.8%) from 2011 reports, off-site releases increased 85,213 pounds (0.8%), and total reductions of 5,617,367 pounds were reported compared to the 2011 reporting year, which is a 6.7 percent decrease for total releases.



- Over 89 percent of the amount reported for TRI chemicals was recycled, treated, or used for energy recovery, rather than released or disposed of in environmental media.
- Trends in reported releases for the last 5 years and the core chemicals and industries, show that since 1988 a downward trend that specifically reflects the success of the Clean Air Act and air quality standards.
- Total releases in six out of the top ten Kentucky counties with the highest amounts in 2011 decreased in the 2012 reporting year. On-site releases in seven of the top ten Kentucky counties decreased from 2011 to 2012.
- Total releases for seven out of the top ten facilities in Kentucky decreased from 2011 to 2012.
- Air emissions from Kentucky electrical utilities in 2012 decreased from 2011 and 2010 values.
- With reduction in reported releases, the potential impact on communities that may be disproportionately impacted has also decreased.



## **Appendices**

## Appendix A

2012 TRI Releases for Kentucky by Chemical			
Chemical	Onsite	Offsite	Total
1,1,1-TRICHLOROETHANE	989		989
1,1,2,2-TETRACHLOROETHANE	89		89
1,1,2-TRICHLOROETHANE	248		248
1,1-DICHLORO-1-FLUOROETHANE	8,120		8,120
1,2,4-TRIMETHYLBENZENE	260,298	2,042	262,340
1,2-DICHLORO-1,1-DIFLUOROETHANE	29,580		29,580
1,2-DICHLOROETHANE	16,584	3	16,587
1,2-DICHLOROETHYLENE	36		36
1,2-DICHLOROPROPANE			
1,3-BUTADIENE	13,876	828	14,704
1-CHLORO-1,1,2,2-TETRAFLUROETHANE	1,338		1,338
1-CHLORO-1,1-DIFLUOROETHANE	122,120		122,120
2,2-DICHLORO-1,1,1-TRIFLUOROETHANE	41,256		41,256
2,4-DINITROPHENOL	1,963		1,963
2,4-DINITROTOLUENE	6,576		6,576
2,6-DINITROTOLUENE	1,915		1,915
2-CHLORO-1,1,1,2-TETRAFLUROETHANE	26,175		26,175
2-CHLORO-1,1,1-TRIFLUOROETHANE	25,028		25,028
2-METHOXYETHANOL	248		248
3-iodo-2-propynyl butylcarbamate	7	28	35
4,4'-ISOPROPYLIDENEDIPHENOL	14	234	248
ACETALDEHYDE	119,441	1	119,442
ACETONITRILE	55	0	55
ACRYLAMIDE	437		437
ACRYLIC ACID	7,495	278	7,773
ACRYLONITRILE	4,052	2,222	6,274
ALLYL ALCOHOL	9		9
ALLYL CHLORIDE	314		314
ALUMINUM (FUME OR DUST)	2,250,042	235,474	2,485,516
ALUMINUM OXIDE (FIBROUS FORMS)	10		10
AMMONIA	1,212,949	33,448	1,246,397
ANTHRACENE	201		201
ANTIMONY	1	0	2
ANTIMONY COMPOUNDS	30,761	91,028	121,788
ARSENIC	5	10	15
ARSENIC COMPOUNDS	596,467	8,093	604,560

BARIUM	1,031	298	1,329
BARIUM COMPOUNDS	4,932,373	144,316	5,076,688
BENZENE	58,554	21	58,575
BENZO(G,H,I)PERYLENE	35,367	1,267	36,634
BENZOYL PEROXIDE	5	6,400	6,405
BERYLLIUM COMPOUNDS	61,492	0	61,492
BIPHENYL	680	3,889	4,569
BUTYL ACRYLATE	13,327	821	14,148
CADMIUM	13	2	15
CARBON DISULFIDE	4,711		4,711
CARBON TETRACHLORIDE	2,706		2,706
CARBONYL SULFIDE	947,105		947,105
CATECHOL	71		71
CERTAIN GLYCOL ETHERS	378,309	3,114	381,423
CHLORINE	27,197		27,197
CHLORINE DIOXIDE	20,875		20,875
CHLOROBENZENE	865	2	867
CHLORODIFLUOROMETHANE	871,889		871,889
CHLOROETHANE	130		130
CHLOROFORM	1,565	58	1,623
CHLOROMETHANE	67,316		67,316
CHLOROPRENE	25		25
CHLOROTHALONIL	4	450	454
CHROMIUM	7,190	43,348	50,538
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	1,024,567	3,374,342	4,398,909
COBALT	10	1,532	1,542
COBALT COMPOUNDS	133,656	2,934	136,590
COPPER	292,697	127,626	420,324
COPPER COMPOUNDS	867,883	1,764,357	2,632,240
CREOSOTE	8,051	800	8,851
CRESOL (MIXED ISOMERS)	21,231		21,231
CUMENE	7,798	19	7,817
CUMENE HYDROPEROXIDE	2		2
CYANIDE COMPOUNDS	15,967	15,562	31,529
CYCLOHEXANE	183,387	278	183,665
DAZOMET			
DECABROMODIPHENYL OXIDE			
DIBUTYL PHTHALATE	34,337		34,337
DICHLOROFLUOROMETHANE	260		260
DICHLOROMETHANE	132,827		132,827

DICHLOROTETRAFLUOROETHANE (CFC-114)	184,195		184,195
DICYCLOPENTADIENE	5,762		5,762
DIETHANOLAMINE	5	744	749
DIETHYL SULFATE	4,515		4,515
DIISOCYANATES	6,558	59,582	66,140
DIMETHYL SULFATE	10		10
DIMETHYLAMINE			
DINITROTOLUENE (MIXED ISOMERS)	93,632		93,632
DIOXIN AND DIOXIN-LIKE COMPOUNDS	**	**	**
ETHYL ACRYLATE	14,927	10	14,937
ETHYLBENZENE	32,858	30,776	63,634
ETHYLENE	199,152		199,152
ETHYLENE GLYCOL	25,227	5,898	31,125
ETHYLENE OXIDE	2,414		2,414
ETHYLENEBISDITHIOCARBAMIC ACID, SALTS AND ESTERS			
ETHYLIDENE DICHLORIDE	57		57
FLUORINE	7,061		7,061
FORMALDEHYDE	62,633	6,226	68,859
FORMIC ACID	4,614	10,118	14,732
HEXACHLOROBENZENE	792	51	843
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	6,183,290	0	6,183,290
HYDROGEN FLUORIDE	1,372,417	130	1,372,548
HYDROGEN SULFIDE	219,643		219,643
ISOPRENE	1		1
LEAD	43,926	7,304	51,230
LEAD COMPOUNDS	1,051,080	228,359	1,279,438
LITHIUM CARBONATE	0	4,030	4,030
M-XYLENE	6,406		6,406
MALEIC ANHYDRIDE	2,985		2,985
MANGANESE	66,986	126,852	193,838
MANGANESE COMPOUNDS	2,160,713	1,158,062	3,318,776
MERCURY	516	122	638
MERCURY COMPOUNDS	5,641	698	6,339
METHANOL	5,005,981	16,386	5,022,368
METHYL ACRYLATE	1,177	0	1,177
METHYL IODIDE	10		10
METHYL ISOBUTYL KETONE	118,717	200	118,917
METHYL METHACRYLATE	58,661	8,880	67,541
METHYL TERT-BUTYL ETHER	12		12

MOLYBDENUM TRIOXIDE	2,063	4,467	6,530
N,N-DIMETHYLFORMAMIDE	1,148		1,148
N-BUTYL ALCOHOL	387,078	78	387,156
N-HEXANE	543,487	23	543,510
N-METHYL-2-PYRROLIDONE	9,112		9,112
N-METHYLOLACRYLAMIDE	2,739		2,739
NAPHTHALENE	49,093	254	49,347
NICKEL	6,914	61,563	68,477
NICKEL COMPOUNDS	964,717	562,411	1,527,128
NICOTINE AND SALTS	2,172	42,000	44,172
NITRATE COMPOUNDS	6,733,852	136,881	6,870,733
NITRIC ACID	176,353	1,500	177,853
NITROBENZENE	2,875		2,875
NITROGLYCERIN	118,369		118,369
PERACETIC ACID	0		0
PHENANTHRENE	7,925	0	7,925
PHENOL	72,889	113,409	186,297
PHOSPHORUS (YELLOW OR WHITE)	5		5
PHTHALIC ANHYDRIDE	417	6,895	7,312
POLYCHLORINATED BIPHENYLS			
POLYCYCLIC AROMATIC COMPOUNDS	322,555	16,877	339,432
PROPYLENE	49,311		49,311
PROPYLENE OXIDE	3,013		3,013
SEC-BUTYL ALCOHOL	32,071		32,071
SELENIUM COMPOUNDS	55,683	0	55,683
SILVER COMPOUNDS	20	0	20
SODIUM NITRITE	1,209	17,695	18,904
STYRENE	492,772	138,266	631,038
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	18,630,673		18,630,673
TERT-BUTYL ALCOHOL	2,490		2,490
TETRACHLOROETHYLENE	5,091	22,181	27,272
THALLIUM COMPOUNDS	145,071	0	145,071
TITANIUM TETRACHLORIDE	7		7
TOLUENE	1,719,936	186,001	1,905,938
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2,976		2,976
TOLUENE-2,4-DIISOCYANATE	4		4
TRICHLOROETHYLENE	49,329		49,329
TRIETHYLAMINE	544		544
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)	2	163	165

VANADIUM COMPOUNDS	1,895,651	1,389	1,897,040
VINYL ACETATE	150,830	1,029	151,859
VINYL CHLORIDE	59,514		59,514
VINYL FLUORIDE	11,196		11,196
VINYLDENE CHLORIDE	49		49
XYLENE (MIXED ISOMERS)	264,505	138,354	402,859
ZINC (FUME OR DUST)	14,913	2,084	16,997
ZINC COMPOUNDS	2,456,778	1,668,663	4,125,442
<b>Total</b>	<b>67,334,575</b>	<b>10,651,743</b>	<b>77,986,319</b>

**Appendix B**  
**5-Year Trends for Top 10 Chemicals from 2011**

**Air**

	2008	2009	2010	2011	2012
SULFURIC ACID	18,578,619	24,401,578	26,887,953	20,613,304	18,630,673
NITRATE	1,049	921	591	959	1,124
HYDROCHLORIC ACID	21,672,216	12,106,417	13,672,545	10,471,716	6,183,290
BARIUM	41,604	52,442	65,657	58,760	28,294
METHANOL	3,307,373	3,441,837	4,484,542	4,353,751	4,442,678
CHROMIUM	35,222	18,651	19,157	20,038	22,395
ZINC	92,904	87,442	74,977	58,074	58,004
MANGANESE	96,024	75,745	29,968	28,601	26,294
COPPER	32,323	35,206	27,042	36,079	36,669
ALUMINUM	225,461	141,275	218,473	208,034	203,944

**Land Disposal**

	2008	2009	2010	2011	2012
SULFURIC ACID	0	0	0	0	0
NITRATE	328931	384217	509098	192959	295638
HYDROCHLORIC ACID	0	0	0	0	0
BARIUM	4,999,271	4,705,284	5,568,187	5,749,707	4,829,852
METHANOL	630	5	37	171	538
CHROMIUM	831,456	833,129	984,713	1,089,893	995,045
ZINC	2,354,815	2,205,804	2,653,672	2,622,235	2,363,348
MANGANESE	1,580,332	1,726,474	2,039,944	2,118,021	2,010,047
COPPER	820035	824168	953818	945931	802127
ALUMINUM	1,968,093	431,537	713,302	601,687	2,046,098



**Surface Water**

	2008	2009	2010	2011	2012
SULFURIC ACID	0	0	0	0	0
NITRATE	4436182	4581323	5385770	5419765	6437090
HYDROCHLORIC ACID	0	0	0	0	0
BARIUM	61,696	63,791	65,152	63,301	62,086
METHANOL	121,621	60,638	712,924	491,946	562,765
CHROMIUM	7,853	6,844	6,987	7,001	7,126
ZINC	21,651	25,747	29,682	22,171	35,426
MANGANESE	123,924	125,745	124,245	89,582	124,372
COPPER	28869	38344	34542	31864	29087
ALUMINUM	0	0	0	0	0

**Appendix C**  
**Top 10 Facility Increases and Decreases by Pounds and Percentage**

<b>Top 10 Increases by Pounds from 2011 to 2012</b>					
<b>Facility</b>	<b>Onsite</b>	<b>Facility</b>	<b>Offsite</b>	<b>Facility</b>	<b>Total</b>
Aleris Recycling Inc (Butler)	1,341,723	Gerdau Ameristeel US Inc (Marshall)	1,636,057	Gerdau Ameristeel US Inc (Marshall)	1,636,082
Perdue Cromwell Processing Plant (Ohio)	918,074	North American Stainless (Carroll)	1,076,362	Aleris Recycling Inc (Butler)	1,341,723
Domtar Paper Co LLC Hawesville Mill (Hancock)	393,352	Guardian Automotive-Morehead Plant (Rowan)	135,129	North American Stainless (Carroll)	1,179,682
Century Aluminum Of Kentucky (Hancock)	320,694	Akebono - Elizabethtown Plant (Hardin)	91,994	Perdue Cromwell Processing Plant (Ohio)	918,074
American Synthetic Rubber Co (Jefferson)	276,716	Sypris Technologies Inc (Jefferson)	83,689	Domtar Paper Co LLC Hawesville Mill (Hancock)	393,352
Wickliffe Paper Co (Ballard)	270,111	YKK (USA) Inc Snap & Button Products (Anderson)	73,974	Century Aluminum Of Kentucky (Hancock)	324,505
Spurlock Power Station (Mason)	221,476	Ford Louisville Assembly (Jefferson)	60,445	American Synthetic Rubber Co (Jefferson)	276,839
US Army Blue Grass Army Depot (Madison)	193,510	Grupo Antolin Kentucky (Christian)	37,687	Wickliffe Paper Co (Ballard)	270,111
Kentucky Utilities Co Ghent Station (Carroll)	190,658	Dow Corning Corp (Carroll)	28,081	Spurlock Power Station (Mason)	221,476
North American Stainless (Carroll)	103,321	Kentucky Electric Steel (Boyd)	27,180	US Army Blue Grass Army Depot (Madison)	193,510

<b>Top 10 Decreases by Pounds from 2011 to 2012</b>					
<b>Facility</b>	<b>Onsite</b>	<b>Facility</b>	<b>Offsite</b>	<b>Facility</b>	<b>Total</b>
American Electric Power Big Sandy Plant (Lawrence)	-3,683,801	Federal-Mogul VSP (Barren)	-2,459,658	American Electric Power Big Sandy Plant (Lawrence)	-3,683,670
US TVA Paradise Fossil Plant (Muhlenberg)	-1,331,062	Safety-Kleen Systems Inc (Henry)	-238,578	Federal-Mogul VSP (Barren)	-2,496,259
Cooper Power Station (Pulaski)	-990,542	Owensboro Municipal Utilities Elmer Smith Station (Davies)	-220,151	US TVA Paradise Fossil Plant (Muhlenberg)	-1,331,064
QG LLC (Simpson)	-722,540	Ticona Polymer (Boone)	-109,193	Cooper Power Station (Pulaski)	-990,542
Louisville Gas & Electric Co - Trimble County Station (Trimble)	-646,870	Hitachi Automotive Systems Americas Inc-Berea KY (Madison)	-72,683	QG LLC (Simpson)	-773,188
Dale Power Station (Clark)	-615,873	RT Vanderbilt Co Inc - Murray Div (Calloway)	-59,571	Louisville Gas & Electric Co - Trimble County Station (Trimble)	-646,870
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-605,098	QG LLC (Simpson)	-50,648	Dale Power Station (Clark)	-615,873
US TVA Shawnee Fossil Plant (McCracken)	-337,439	AK Steel Corp (Boyd)	-50,087	Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-605,098
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-290,656	Wacker Chemical Corp Polymers Div (Marshall)	-35,918	US TVA Shawnee Fossil Plant (McCracken)	-337,425
T.RAD NA Inc. (Christian)	-272,147	Bando USA Inc (Warren)	-35,501	Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-290,656

<b>Top 10 Increases by Percent from 2011 to 2012</b>					
<b>Facility</b>	<b>Onsite</b>	<b>Facility</b>	<b>Offsite</b>	<b>Facility</b>	<b>Total</b>
Cemex Kosmos Cement Co (Jefferson)	52,287.8%	Gerdau Ameristeel US Inc (Marshall)	3,718,311.4%	Gerdau Ameristeel US Inc (Marshall)	3,86,947.2%
Firestone Industrial Products (Whitley)	2065.6%	Guardian Automotive-Morehead Plant (Rowan)	79,958.0%	Cemex Kosmos Cement Co (Jefferson)	47,445.7%
Griffin Industries LLC (Pendleton)	1627.8%	Libertas Copper LLC (Henry)	37,007.4%	Sun Products Corp (Warren)	7390.0%
T.RAD NA Inc (Christian)	1570.0%	Grupo Antolin Kentucky (Christian)	15074.8%	Libertas Copper LLC (Henry)	4684.0%
US DOE Paducah Site (McCracken)	775.0%	Marathon Petroleum Co - Covington KY Terminal (Kenton)	13888.9%	Guardian Automotive-Morehead Plant (Rowan)	4475.3%
McKechnie Vehicle Components (Jessamine)	460.7%	Motor Wheel Commercial Vehicle Systems Inc (Madison)	1845.2%	US DOE Paducah Site (McCracken)	2025.0%
Meggitt Aircraft Braking Systems Kentucky Corp (Boyle)	345.2%	US Army Garrison Fort Knox (Hardin)	1468.0%	Motor Wheel Commercial Vehicle Systems Inc (Madison)	1845.2%
Guardian Automotive-Morehead Plant (Rowan)	342.9%	North American Galvanizing Co Louisville (Jefferson)	1398.4%	T.RAD NA Inc (Christian)	1570.0%
US Army Blue Grass Army Depot (Madison)	313.5%	Marathon Petroleum Co - Louisville (Algonquin) KY Terminal (Jefferson)	976.9%	Escue Wood Preserving Inc (Grayson)	1375.0%
Gerdau Ameristeel US Inc (Marshall)	277.8%	ACG NA (Hardin)	850.0%	ACG NA (Hardin)	850.0%

<b>Top 10 Decreases by Percent from 2011 to 2012</b>					
<b>Facility</b>	<b>Onsite</b>	<b>Facility</b>	<b>Offsite</b>	<b>Facility</b>	<b>Total</b>
AK Steel Corp Ashland Works - Coke Plant (Boyd)	-100.0%	Louisville Gas & Electric Co - Cane Run Station (Jefferson)	-100.0%	AK Steel Corp Ashland Works - Coke Plant (Boyd)	-100.0%
Covol Fuels No2 LLC - Rock Crusher Plant (Part) (Muhlenberg)	-100.0%	Bando USA Inc (Warren)	-100.0%	Covol Fuels No2 LLC- Rock Crusher Plant (Part) (Muhlenberg)	-100.0%
Swift & Co (Jefferson)	-100.0%	Arkema Inc (Marshall)	-100.0%	Swift & Co (Jefferson)	-100.0%
Inoac Packaging Group (Nelson)	-100.0%	The Smithfield Packing Co Grayson (Carter)	-100.0%	Inoac Packaging Group (Nelson)	-100.0%
Chevron Louisville Terminal/Lubricants Blend Plant (Jefferson)	-100.0%	Greif Packaging LLC (Boone)	-100.0%	Mubea Inc (Kenton)	-100.0%
Kentucky Utilities Co - Tyrone Station (Woodford)	-100.0%	3M Co - Cynthiana (Harrison)	-100.0%	Kentucky Utilities Co - Tyrone Station (Woodford)	-100.0%
Country Oven Bakery (Warren)	-100.0%	Marathon Petroleum Co - Louisville (Kramers) KY (Jefferson)	-100.0%	Country Oven Bakery (Warren)	-100.0%
JCIM LLC Louisville 2 (Jefferson)	-100.0%	Mubea Inc (Kenton)	-100.0%	LTW Ramset Red Head (Bourbon)	-100.0%
Dave O'Mara Contractor Inc (Carroll)	-100.0%	Marathon Petroleum Co - Lexington KY Terminal (Fayette)	-100.0%	Pan Oston Co (Warren)	-100.0%
MSSC (Christian)	-100.0%	Hendrickson Truck Suspension Systems (Marion)	-100.0%	JCIM LLC Louisville 2 (Jefferson)	-100.0%

<b>Top 10 Decreases by Percent (for facilities with reported releases in both years)</b>					
<b>Facility</b>	<b>Onsite</b>	<b>Facility</b>	<b>Offsite</b>	<b>Facility</b>	<b>Total</b>
Fruit Of The Loom - Jamestown (Russell)	-100.0%	Federal-Mogul VSP (Barren)	-99.9%	Federal-Mogul VSP (Barren)	-99.9%
Donaldson Co Inc (Jessamine)	-99.8%	Meritor (Simpson)	-99.9%	Donaldson Co Inc (Jessamine)	-99.6%
Federal-Mogul VSP (Barren)	-98.5%	Engineered Polymer Solutions Inc D/B/A Valspar Coatings (Warren)	-98.5%	Chevron Phillips Chemical Co Performance Pipe Div (Grant)	-98.4%
Hendrickson Trailer Suspension Systems (Pulaski)	-94.1%	Chevron Phillips Chemical Co Performance Pipe Div (Grant)	-98.4%	Obara Corp USA (Boone)	-98.1%
Osram Sylvania (Woodford)	-93.2%	Wacker Chemical Corp Polymers Div (Marshall)	-97.2%	Hendrickson Truck Suspension Systems (Marion)	-97.3%
Color Corp Of America (Jefferson)	-92.4%	Ticona Polymer (Boone)	-96.8%	Meritor (Simpson)	-96.6%
Hendrickson Truck Suspension Systems (Marion)	-88.6%	Precoat Metals (Hancock)	-96.7%	Hendrickson Trailer Suspension Systems (Pulaski)	-94.1%
Southern Clay Products Inc (Jefferson)	-76.6%	Portland Forge An Allegheny Technology Co (Marion)	-94.3%	Fruit Of The Loom - Jamestown (Russell)	-93.8%
Dale Power Station (Clark)	-74.6%	Toyo Automotive Parts (USA) Inc (Simpson)	-89.8%	Ticona Polymer (Boone)	-92.8%
YKK (USA) Inc Snap & Button Products (Anderson)	-69.8%	Emerson Power Transmission Corp Gearco (Mason)	-89.5%	Emerson Power Transmission Corp Gearco (Mason)	-89.5%

## Appendix D. Air and Total Releases from the Electric Utilities Sector

2010

Rank	State	Air Emissions	Total On- and Off-site Disposal or Other Releases
1	Kentucky	40,642,049	58,939,036
2	Ohio	36,521,078	56,250,294
3	Pennsylvania	31,520,487	47,115,341
4	Indiana	26,540,627	47,614,328
5	West Virginia	18,118,582	30,816,676
6	Florida	16,711,674	25,221,362
7	Michigan	15,579,860	32,557,682
8	North Carolina	14,699,212	26,311,978
9	Georgia	13,547,104	29,076,847
10	Tennessee	9,897,919	24,178,138
11	Virginia	9,496,989	12,805,901
12	South Carolina	9,440,208	12,156,930
13	Texas	8,506,277	39,268,142
14	Alabama	8,373,651	25,074,635
15	Missouri	5,114,784	17,059,145
16	Illinois	4,746,755	24,903,531
17	Mississippi	3,995,991	8,278,454
18	Puerto Rico	3,678,002	3,747,507
19	Wisconsin	3,576,761	10,007,255
20	Maryland	3,154,296	6,432,939
21	Delaware	2,945,885	3,131,785
22	New Hampshire	2,845,904	2,991,899
23	Iowa	2,368,897	11,103,517
24	Nebraska	2,154,986	10,186,351
25	New York	2,030,475	4,793,285
26	New Jersey	1,716,079	1,797,992
27	Louisiana	1,533,231	10,294,187
28	Massachusetts	1,422,596	1,497,729
29	Hawaii	1,307,716	1,434,730
30	Kansas	1,279,174	9,857,841
31	Minnesota	1,266,121	11,609,985
32	Arkansas	1,078,438	8,113,721
33	Oklahoma	1,076,050	3,300,121

34	North Dakota	992,678	16,686,624
35	Utah	937,115	6,834,385
36	Colorado	905,373	8,168,090
37	Arizona	850,646	10,391,425
38	Montana	613,462	14,809,660
39	Wyoming	565,403	12,597,287
40	New Mexico	327,286	7,264,646
41	Nevada	247,231	1,859,917
42	California	210,928	462,405
43	Connecticut	209,044	440,298
44	South Dakota	113,164	834,041
45	Oregon	112,835	524,849
46	Guam	100,253	100,253
47	Washington	93,041	3,541,069
48	Virgin Islands	30,261	30,261
49	Rhode Island	24,988	24,988
50	Alaska	17,508	548,555
51	District Of Columbia	53	2,623
52	Maine	5	7
	<b>TOTAL</b>	<b>313,239,133</b>	<b>703,050,647</b>

## 2011

Rank	State	Air Emissions	Change from 2010	Total On- and Off-site Disposal or Other Releases
1	Kentucky	31,008,237	-9,633,812	49,405,915
2	Ohio	30,366,900	-6,154,178	47,821,465
3	Indiana	23,164,181	-8,356,306	42,830,375
4	Pennsylvania	21,359,036	-5,181,591	36,210,825
5	Michigan	17,406,693	-711,889	32,928,460
6	West Virginia	14,609,499	-2,102,175	28,142,456
7	Florida	13,159,886	-2,419,974	19,240,009
8	Georgia	11,340,526	-3,358,686	23,528,455
9	Tennessee	10,688,693	-2,858,411	22,690,431
10	North Carolina	9,271,514	-626,405	20,251,318
11	Alabama	7,988,013	-1,508,976	22,781,077
12	South Carolina	6,949,547	-2,490,661	9,340,657
13	Virginia	6,721,820	-1,784,457	9,103,617



14	Texas	5,711,761	-2,661,890	39,358,098
15	Mississippi	5,563,926	449,142	8,394,177
16	Illinois	4,973,625	226,870	24,542,045
17	Missouri	4,462,408	466,417	16,708,373
18	Puerto Rico	3,420,388	-257,614	3,473,430
19	Maryland	3,150,930	-425,831	5,651,232
20	Wisconsin	2,769,863	-384,433	7,308,539
21	Iowa	2,106,487	-839,398	9,375,450
22	Nebraska	1,768,252	-1,077,652	9,379,566
23	Delaware	1,767,327	-601,570	2,024,714
24	New Hampshire	1,741,528	-413,458	1,805,579
25	Louisiana	1,693,588	-336,887	7,879,491
26	Wyoming	1,421,069	-295,010	9,749,232
27	Hawaii	1,351,593	-181,638	1,551,712
28	New York	1,316,190	-106,406	2,856,166
29	Kansas	1,160,927	-146,789	9,916,429
30	Oklahoma	1,138,209	-140,965	3,967,119
31	Arkansas	1,097,168	-168,953	8,192,448
32	North Dakota	1,036,969	-41,469	17,625,061
33	Utah	905,144	-170,906	6,885,587
34	Colorado	827,842	-164,836	7,694,473
35	Massachusetts	760,890	-176,225	849,847
36	Arizona	760,548	-144,825	11,070,738
37	Minnesota	673,574	-177,072	10,874,619
38	Montana	509,858	-103,604	12,109,464
39	California	362,537	-202,866	475,473
40	New Mexico	341,997	14,711	7,674,960
41	New Jersey	339,605	92,374	418,072
42	Nevada	256,584	45,656	1,147,283
43	Oregon	130,237	-78,807	406,147
44	South Dakota	91,714	-21,450	658,530
45	Guam	69,078	-43,757	69,078
46	Washington	45,020	-55,233	1,686,451
47	Virgin Islands	25,478	-67,563	25,478
48	Alaska	5,813	-24,448	504,890
49	Rhode Island	4,307	-20,681	4,307
50	Connecticut	1,405	-16,103	1,449
51	District Of Columbia	221	168	224
52	Maine	4	-1	4
	<b>TOTAL</b>	<b>257,798,610</b>	<b>-55,440,523</b>	<b>616,590,993</b>

## 2012

Rank	State	Air Emissions (Pounds)	Change from 2011	Change from 2010	Total On- and Off- site Disposal or Other Releases
1	Kentucky	24,517,354	-20.9%	-39.7%	40,654,408
2	Ohio	21,174,351	-30.3%	-42.0%	34,615,109
3	Indiana	17,583,643	-24.1%	-33.7%	34,940,680
4	Pennsylvania	16,139,816	-24.4%	-48.8%	32,064,638
5	West Virginia	13,025,933	-10.8%	-28.1%	25,736,857
6	Michigan	12,903,861	-25.9%	-17.2%	26,450,220
7	Florida	9,797,423	-25.6%	-41.4%	13,616,506
8	Georgia	8,614,084	-24.0%	-36.4%	17,253,373
9	Alabama	6,130,047	-23.3%	-26.8%	19,181,157
10	North Carolina	6,086,092	-34.4%	-58.6%	15,532,044
11	Tennessee	5,510,022	-48.4%	-44.3%	13,707,935
12	Illinois	5,305,017	6.7%	11.8%	36,325,224
13	Texas	4,989,485	-12.6%	-41.3%	33,530,508
14	Mississippi	4,675,317	-16.0%	17.0%	7,690,182
15	South Carolina	4,464,786	-35.8%	-52.7%	6,025,619
16	Virginia	3,781,565	-43.7%	-60.2%	5,922,349
17	Puerto Rico	3,146,005	-8.0%	-14.5%	3,231,836
18	Missouri	2,937,813	-34.2%	-42.6%	12,065,368
19	Maryland	2,121,937	-32.7%	-32.7%	3,191,659
20	Wisconsin	1,802,585	-34.9%	-49.6%	5,091,285
21	Iowa	1,650,865	-21.6%	-30.3%	7,502,916
22	Nebraska	1,636,427	-7.5%	-24.1%	7,445,641
23	Louisiana	1,555,178	-8.2%	1.4%	7,634,393
24	Hawaii	1,403,413	3.8%	7.3%	1,598,259
25	Arkansas	1,186,622	8.2%	10.0%	7,791,041
26	North Dakota	1,042,109	0.5%	5.0%	19,919,560
27	Oklahoma	1,004,614	-11.7%	-6.6%	3,104,088
28	Wyoming	1,003,705	-29.4%	77.5%	10,159,003
29	Utah	965,912	6.7%	3.1%	6,483,610
30	Kansas	880,454	-24.2%	-31.2%	6,415,937
31	Minnesota	699,093	3.8%	-44.8%	12,864,352
32	Colorado	692,605	-16.3%	-23.5%	8,046,108
33	New York	642,431	-51.2%	-68.4%	1,253,631

34	Arizona	512,901	-32.6%	-39.7%	9,343,388
35	Montana	481,472	-5.6%	-21.5%	10,564,918
36	Massachusetts	419,519	-44.9%	-70.5%	431,174
37	New Jersey	389,742	14.8%	-77.3%	444,528
38	Guam	335,264	385.3%	234.4%	335,265
39	New Mexico	322,081	-5.8%	-1.6%	6,803,062
40	New Hampshire	306,304	-82.4%	-89.2%	328,623
41	Delaware	292,557	-83.4%	-90.1%	549,556
42	Nevada	212,839	-17.0%	-13.9%	658,455
43	Oregon	106,447	-18.3%	-5.7%	484,928
44	South Dakota	104,445	13.9%	-7.7%	890,145
45	California	81,262	-77.6%	-61.5%	113,402
46	Northern Mariana Islands	75,910	2012 Only	2012 Only	76,163
47	Washington	43,344	-3.7%	-53.4%	824,182
48	Connecticut	14,073	901.6%	-93.3%	14,138
49	Alaska	8,146	40.1%	-53.5%	368,109
50	Rhode Island	1,344	-68.8%	-94.6%	1,344
51	Virgin Islands	1,062	-95.8%	-96.5%	1062
52	District Of Columbia	0	-100.0%	-100.0%	6
53	Maine	0	-100.0%	-100.0%	0
	<b>TOTAL</b>	<b>192,779,273</b>	<b>-25.2%</b>	<b>-38.5%</b>	<b>519,277,944</b>

### Appendix E. Pollution Prevention Activities Reported to TRI

FACILITY NAME	CHEMICAL	POLLUTION PREVENTION INFORMATION (ACTIVITY CODES/TEXT)
3m Co - Cynthia	Toluene, Cyclohexane	W73: Substituted coating materials used
Ahlstrom Filtration LLC	Formaldehyde	W49: Other raw material modifications
Aichi Forge USA Inc	Lead	Customer requirements / specifications changed from using leaded steel to using un-leaded steel
Air Products & Chemicals Inc	Ethylene Glycol, Methyl Isobutyl Ketone	W14: Changed production schedule to minimize equipment and feedstock changeovers
Air Products & Chemicals Inc	Nitrate Compounds	W50: Optimized reaction conditions or otherwise increased efficiency of synthesis
American Synthetic Rubber Co	Styrene, Sulfuric Acid (1994 And After "Acid Aerosols" Only), Lead Compounds, Mercury Compounds	W58: Other process modifications
American Synthetic Rubber Co	Acrylonitrile	W14: Changed production schedule to minimize equipment and feedstock changeovers W36: Implemented inspection or monitoring program of potential spill or leak sources
American Synthetic Rubber Co	Acrylic Acid	W14: Changed production schedule to minimize equipment and feedstock changeovers
American Synthetic Rubber Co	Ammonia	W36: Implemented inspection or monitoring program of potential spill or leak sources W52: Modified equipment, layout, or piping
American Synthetic Rubber Co	1,3-Butadiene	W13: Improved maintenance scheduling, recordkeeping, or procedures W52: Modified equipment, layout, or piping
American Synthetic Rubber Co	Toluene	W58: Other process modifications

Bando USA Inc	Toluene	W13: Improved maintenance scheduling, recordkeeping, or procedures Decrease in emissions and use reflects improved internal controls, processes and accounting.
BASF Corp	O-Anisidine, Sodium Nitrite, 3-Iodo-2-Propynyl Butylcarbamate, Nitrate Compounds, Manganese Compounds	W89: Other product modifications
Bekaert Corp	Hydrochloric Acid (1995 And After "Acid Aerosols" Only)	W50: Optimized reaction conditions or otherwise increased efficiency of synthesis Fully deployed use of a chemical agent to extend the life of the HCL in the pickling bath. This has reduced consumption.
Bekaert Corp	Zinc Compounds	Waste zinc compounds from the galvanizing bath is recycled.
Belden Wire & Cable	Copper, Zinc Compounds, Antimony Compounds	W19: Other changes in operating practices
Bowling Green Metalforming	Lead, Chromium, Nickel, Manganese, Zinc Compounds,	W36: Implemented inspection or monitoring program of potential spill or leak sources W74: Improved application techniques
Brake Parts Inc	Phenol	W42: Substituted raw materials Less resin used in product and less production parts ran.
Brake Parts Inc	Antimony Compounds	Just in time manufacturing process using lean cell processes.
Brake Parts Inc	Zinc Compounds, Copper	W29: Other changes in inventory control Just in Time production & less inventory. Increased use of Copper in product but reduced in-house inventory of finished product.
Caterpillar Track Components	Manganese	W58: Other process modifications - Eliminated rough machining process from current pin line at the facility.
Color Corp of America	Certain Glycol Ethers, Ethylene Glycol, Xylene (Mixed Isomers), Sec-	W14: Changed production schedule to minimize equipment and feedstock changeovers W21: Instituted procedures to ensure that materials do not stay in inventory beyond W33: Installed overflow alarms or automatic shutoff valves W72: Modified spray

	Butyl Alcohol, 1,2,4-Trimethylbenzene, Naphthalene, Cobalt Compounds, Zinc Compounds, Manganese Compounds, Lead Compounds, Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	systems or equipment
Covalence Adhesives	Zinc Compounds	W19: Other changes in operating practices W74: Improved application techniques
CTA Acoustics Inc	Ammonia	W49: Other raw material modifications
Daramic LLC	Ethylene Glycol	W36: Implemented inspection or monitoring program of potential spill or leak sources. Leak checks are performed by employees every two hours to promptly identify and correct issues that could potentially allow a release into the environment.
DuPont Louisville Plant	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	W58: Other process modifications
DuPont Louisville Plant	Vinyl Fluoride	W52: Modified equipment, layout, or piping
DuPont Wurtland Plant	Sulfuric Acid (1994 And After "Acid Aerosols" Only)	W39: Other spill or leak prevention
Ebonite International Inc	Dichloromethane	W42: Substituted raw materials Continued to replace hazardous solvents with non-hazardous cleaners once they are tested to perform.

Ebonite International Inc	Styrene	W14: Changed production schedule to minimize equipment and feedstock changeovers - Production scheduling has worked to minimize excess material waste by scheduling longer runs in the areas that generated large amounts of waste on small runs.
Energys Delaware Inc	Antimony Compounds, Lead Compounds	W81: Changed product specifications
Equity Group Kentucky Div Llc Processing Plant	Ammonia, Nitrate Compounds	W33: Installed overflow alarms or automatic shutoff valves W52: Modified equipment, layout, or piping
Federal Bureau Of Prisons USP Big Sandy	Lead	USP Big Sandy has installed commercially purchased bullet catch type backstops. These backstops are designed to catch any bullet fired into them and contain the bullet in the material of the backstop... The backstop can then be sent to a recycler and the bullets removed to be recycled. Additionally, the Bureau of Prisons Environmental and Safety Compliance Division is working with the various regulators on approving ceramic or other non-lead type bullets for use during annual recertification of fire arms proficiency for employees.
Federal-Mogul VSP	Copper, Zinc (Fume Or Dust), Lead	W19: Other changes in operating practices - We are removing brass from our product at a corporate level.
Felker Brothers	Hydrogen Fluoride	W49: Other raw material modifications Many Changes have been made to the Production and Waste Water Systems this past year. Upgrades and material substitutions have occurred. The net effect for 2012 was a waste neutral effect; however the reductions are expected to become evident in 2013.
Felker Brothers	Nitrate Compounds	W42: Substituted raw materials Many Changes have been made to the Production and Waste Water Systems this past year. Upgrades and material substitutions have occurred. The net effect for 2012 was a waste neutral effect; however, the reductions are expected to become evident in 2013.
Felker Brothers	Nitric Acid	W52: Modified equipment, layout, or piping Many Changes have been made to the Production and Waste Water Systems this past year. Upgrades and material substitutions have occurred. The net effect for 2012 was a waste neutral effect; however, the reductions are expected to become evident in 2013.
Firestone Industrial Products	Zinc Compounds, Polycyclic Aromatic Compounds, Benzo(g,h,i)Perylene	Reduction is manufacturing waste and defective led to reduced pollution

Hausner Hard-Chrome Of Kentucky	Lead Compounds	W13: Improved maintenance scheduling, recordkeeping, or procedures W19: Other changes in operating practices You look to recycle the Lead Components
Hausner Hard-Chrome Of Kentucky	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	W13: Improved maintenance scheduling, recordkeeping, or procedures W19: Other changes in operating practices
Hennessy Industries Inc Bada Div	Lead, Antimony	W58: Other process modifications
Hitachi Automotive Systems Americas Inc - Hk	Chromium	The Laser welders that produce the Fugitive Air Release of Chromium have filtration systems that capture nearly all of the welding soot created. All of the stainless steel chips and turnings machined off the Fuel Pump body are captured and recycled.
Hitachi Automotive Systems Americas Inc- Berea KY	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	W52: Modified equipment, layout, or piping
Hitachi Automotive Systems Americas Inc- Berea KY	Zinc Compounds	W13: Improved maintenance scheduling, recordkeeping, or procedures
Hitachi Automotive Systems Americas Inc- Berea KY	Certain Glycol Ethers	W49: Other raw material modifications
Holley Performance Products	Lead	W41: Increased purity or raw materials W49: Other raw material modifications
Hunter Douglas	Zinc Compounds	W13: Improved maintenance scheduling, recordkeeping, or procedures
Hunter Manufacturing LLP	Lead	In 2012 we changed our printing ink system to an organic system. We no longer use leaded inks to decorate glass.
International Crankshaft Inc	Chromium, Nickel, Manganese	Freedom Metals remelts/reuses scrap metal and shot dust



International Paper - Henderson Mill	Lead Compounds	W51: Instituted recirculation within a process W58: Other process modifications Method(s) to Identify P2 Activities: T11 [Other] - Installed a filtration system, which allows significant reuse of water. Resulted in lower fresh water intake and corresponding reduction in wastewater discharge to POTW.
Interplastic Corp - Fort Wright Trd	Styrene	We are looking into the possibility of contracting some distillation activities from a Vendor. A decision has not been made. This plays into our 2013 and 2014 energy recovery offsite projections.
Jim Beam Brands Co	Hydrochloric Acid (1995 And After "Acid Aerosols" Only)	W58: Other process modifications - Relied more on the natural gas boiler to reduce coal usage for steam generation. Cut greenhouse gases by 3% while production increased 2%
Jim Beam Brands Co	Lead	W58: Other process modifications - See below. Method(s) to Identify P2 Activities: T11 [Other] - Due to price of natural gas in 2012, we burned less coal and increased natural gas consumption. This lowered the amount of lead that was otherwise used from our coal boiler. We are actively reducing coal consumption based on the pricing of natural gas versus coal costs. In 2012, favorable gas costs allowed a reduction in coal usage. This resulted in a 3% reduction in GHG while production increased 5%.
Jim Beam Brands Co	Lead Compounds	W58: Other process modifications - We reduced coal consumption and therefore reduced the amount of lead compounds produced. We augmented the coal boiler by burning more natural gas in our gas boiler. Jim Beam Brands made a decision to reduce coal consumption when feasible by increasing the amount of natural gas we burn to manufacture steam. In 2012, we reduced coal usage and therefore reduced GHG by 3% even with a 5% increase in production.
Jlok Corp	Styrene	W19: Other changes in operating practices W21: Instituted procedures to ensure that materials do not stay in inventory beyond W52: Modified equipment, layout, or piping W58: Other process modifications - Reduced Waste from an average of 1.9% down to 1.3%
Joy Global	N-Butyl Alcohol	W81: Changed product specifications - We will continue to seek support from our vendor for potential alternatives and reductions Method(s) to Identify P2 Activities: T10 [Vendor Assistance] - We will continue to seek support from our vendor for potential alternatives and reductions
Joy Global	1,2,4-Trimethylbenzene	W81: Changed product specifications

Katayama American Co Inc	Zinc Compounds	We are using galvanized steel in more products; most is used in processes that do not release the zinc from the steel.
Kimberly-Clark Corp Owensboro Operations	Nitrate Compounds	W19: Other changes in operating practices - Changed pumps to obtain additional flow control.
Kingsford Manufacturing Co	Nitrate Compounds	W42: Substituted raw materials
Kustom Group	Certain Glycol Ethers	W42: Substituted raw materials
Logan Aluminum Inc	Lead, Copper, Manganese	W51: Instituted recirculation within a process - A project was instituted to reduce water usage and water discharge, which affected the amount of release of this metal.
Lord Corp	Formaldehyde	W73: Substituted coating materials used
Lord Corp	Tetrachloroethylene	W82: Modified design or composition of product Transition from solvent-based primers and adhesives to water-based
Lubrizol Advanced Materials Inc	Chlorine	W32: Improved procedures for loading, unloading, and transfer operations
Lubrizol Advanced Materials Inc	Vinylidene Chloride, Vinyl Acetate, Vinyl Chloride, Dioxin And Dioxin-Like Compounds, Ethyl Acrylate	W21: Instituted procedures to ensure that materials do not stay in inventory beyond W32: Improved procedures for loading, unloading, and transfer operations W33: Installed overflow alarms or automatic shutoff valves
Meritor	Manganese, Nickel, Lead, Chromium, Copper	Slag is now being recycled instead of going to the landfill
Mitsubishi Electric Automotive America	Lead	W42: Substituted raw materials

Mouser Custom Cabinetry	Toluene	W13: Improved maintenance scheduling, recordkeeping, or procedures W14: Changed production schedule to minimize equipment and feedstock changeovers W73: Substituted coating materials used. We replaced old gluten pumps with new style that requires significantly less solvent to clean the pump. This has resulted in a 4% increase in the use of Toluene while seeing an 18% increase in production from 2011 to 2012.
Mouser Custom Cabinetry	Xylene (Mixed Isomers)	W13: Improved maintenance scheduling, recordkeeping, or procedures W58: Other process modifications W73: Substituted coating materials used New gluten pumps were installed which use less solvent to clean between applications. This resulted in a 10% increase in the use of Xylene while experiencing an 18% increase in cabinet count.
NASCO	4,4'-Isopropylidenediphenol	W52: Modified equipment, layout, or piping - IMPROVED FILTRATION METHODS Method(s) to Identify P2 Activities: T06 [Employee Recommendation (Under A Formal Company Program)] - employees turn in ideas to the kaizen committee for review and compensated for a variable rate for the successful implementation of the idea. Paint sent to the landfill is paint powder that was swept off the floor or otherwise contaminated. This practice has been reduced by modifying filtration and better storage practices.
North American Galvanizing Co Louisville	Lead, Zinc Compounds	W25: Instituted clearinghouse to exchange materials that would otherwise be discarded
Obara Corp USA	Copper	Prior year reporting included an estimate 500 lbs of material going into our garbage with mixed scrap metals. Now, all metal scraps are collected and sent to Bluegrass Recycling for metal recovery.
Owensboro Grain Co LLC	N-Hexane	W52: Modified equipment, layout, or piping
Owensboro Municipal Utilities Elmer Smith Station	Barium Compounds, Manganese Compounds, Sulfuric Acid (1994 And After "Acid Aerosols" Only), Zinc Compounds, Nickel Compounds,	W19: Other changes in operating practices

	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region), Copper Compounds, Arsenic Compounds, Lead Compounds, Hydrochloric Acid (1995 And After "Acid Aerosols" Only), Vanadium Compounds, Hydrogen Fluoride, Mercury Compounds, Dioxin And Dioxin-Like Compounds, Ammonia	
Pella Corp - Murray Operations	Styrene	W51: Instituted recirculation within a process
PMC Organometallix Inc	Methanol	Current pollution prevention activities include the use of a thermal oxidizer to reduce air emissions, incineration for on-site energy recovery and biological wastewater treatment to reduce effluent concentrations.
PMC Organometallix Inc	Chloromethane	Methyl chloride is used as a reactant in a primarily closed system. Current pollution prevention activities include the use of a thermal oxidizer to reduce air emissions.
PMC Organometallix Inc	Toluene , Xylene (Mixed Isomers)	Current pollution prevention activities include the use of a thermal oxidizer to reduce air emissions, incineration for on-site energy recovery and biological wastewater treatment to reduce effluent concentrations. This solvent is also recycled when possible.
PMC Organometallix Inc	Chlorine	Current pollution prevention activities include the use of a scrubber to reduce air emissions and biological wastewater treatment to reduce effluent concentrations.
PMC Organometallix Inc	Triphenyltin Hydroxide	Current pollution prevention activities include incineration for recovery of tin and biological wastewater treatment to reduce effluent concentrations.

PMC Organometallics Inc	Lead	Lead is present as an impurity of tin, which is one of our raw materials. We purchase tin, which is already of a high purity. Other pollution prevention activities include the use of a biological wastewater treatment to remove solids from the wastewater and incineration for off-site metals reclamation.
PMC Organometallics Inc	Benzene	Current pollution prevention activities include the use of a thermal oxidizer to reduce air emissions, incineration for on-site energy recovery and biological wastewater treatment to reduce effluent concentrations.
Pmc Organometallics Inc	Chlorobenzene	Current pollution prevention activities include the use of a thermal oxidizer to reduce air emissions and biological wastewater treatment to reduce effluent concentrations.
PPG Architectural Coatings	Zinc Compounds	W42: Substituted raw materials reformulation of finished goods over time; product mix change
PPG Architectural Coatings	Cobalt Compounds, Xylene (Mixed Isomers)	W49: Other raw material modifications
PPG Architectural Finishes Inc	Zinc Compounds	W42: Substituted raw materials
Rohm & Haas - Louisville Plant	Methyl Methacrylate	W21: Instituted procedures to ensure that materials do not stay in inventory beyond W22: Began to test outdated material - continue to use if still effective W32: Improved procedures for loading, unloading, and transfer operations W52: Modified equipment, layout, or piping
Sekisui Specialty Chemicals America LLC	Methanol	W52: Modified equipment, layout, or piping - The agitator seals on each of the four (4) #1 Polymer Cutting Machines (PCM) on each Saponification Process Line were upgraded to reduce fugitive emissions from equipment leaks. Method(s) to Identify P2 Activities: T01 [Internal Pollution Prevention Opportunity Audit(S)] - An opportunity to reduce fugitive equipment leak component emissions from the #1 PCM on each Saponification Line was identified by the maintenance department and engineering group. The design of the lip and rotor seals on the #1 PCM agitator for each Saponification Line was originally a Gore-tex packing gland type seal. This conventional seal design was replaced with seals that have a nitrogen purge and grease ring. The upgraded seal configuration is intended to reduce fugitive emissions from seal leaks, and LDAR monitoring completed since the seal change indicates the new design is achieving the desired objective.

Sensus Precision Die Casting	Aluminum (Fume Or Dust)	W58: Other process modifications
Southern Graphic Systems LLC	Copper Compounds	W13: Improved maintenance scheduling, recordkeeping, or procedures W14: Changed production schedule to minimize equipment and feedstock changeovers
Sud-Chemie Inc 12th Street Facility	Manganese Compounds, Nickel Compounds, Zinc Compounds, Copper Compounds,	W52: Modified equipment, layout, or piping
Sud-Chemie Inc 12th Street Facility	Molybdenum Trioxide	W31: Improved storage or stacking procedures
Sud-Chemie Inc 12th Street Facility	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	W58: Other process modifications
Sud-Chemie Inc Crittenden Drive Facility	Ammonia	W89: Other product modifications
Sud-Chemie Inc Crittenden Drive Facility	Nickel Compounds	W52: Modified equipment, layout, or piping W58: Other process modifications
Sud-Chemie Inc Crittenden Drive Facility	Copper Compounds, Silver Compounds, Zinc Compounds, Antimony Compounds	W52: Modified equipment, layout, or piping
Sud-Chemie Inc Crittenden Drive Facility	Nitric Acid, Nitrate Compounds	W39: Other spill or leak prevention
Sumitomo Electric Wiring Systems Inc	Copper	W58: Other process modifications Implemented engineering controls to reduce the amount of scrap
Sumitomo Electric Wiring Systems Inc	Lead	We have attempted to improve our quality at the facility. Moreover, the mitigating factors in the reductions of the lead bearing waste (for recycling) lies in the product mix. All new products at our facility use lead-free solder; our sales department as well as our customers has decreed to manufacture our parts without the need for lead bearing

		solder.
Superior Battery Manufacturing Co Inc	Lead Compounds	W82: Modified design or composition of product
The Smithfield Packing Co Grayson	Nitrate Compounds	W13: Improved maintenance scheduling, recordkeeping, or procedures
Toyota Boshoku Kentucky LLC - Bardstown	Cyclohexane	W19: Other changes in operating practices W74: Improved application techniques. We are continually working to increase yield, reduce scrap, and prevent overspray for all chemical usages.
Trace Die Cast Inc	Chromium	W41: Increased purity or raw materials
Trace Die Cast Inc	Lead, Aluminum (Fume Or Dust), Nickel, Manganese, Copper,	W58: Other process modifications
Trace Die Cast Inc	Ethylene Glycol	W13: Improved maintenance scheduling, recordkeeping, or procedures W36: Implemented inspection or monitoring program of potential spill or leak sources
T.RAD NA Inc	Lead	W49: Other raw material modifications
T.RAD NA Inc	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region), Nickel	W35: Installed vapor recovery systems
Transcraft Corp	Nickel, Manganese	W82: Modified design or composition of product
Us Army Fort Campbell Range Facility	Ethylene Glycol	W29: Other changes in inventory control W58: Other process modifications ETHYLENE GLYCOL, (ANTIFREEZE) is recycled and used over again until the material is expended.

Webasto Roof Systems Inc	Diisocyanates	W19: Other changes in operating practices W36: Implemented inspection or monitoring program of potential spill or leak sources W42: Substituted raw materials. We have begun to change out old hydraulic presses for new electrically run presses. This will help to make our overall process more efficient and allow us to stabilize our chemical usage. We project to complete the stabilization project by the end of this year and should see smaller usage in the future. We are in the process of adding automated priming process to some of our lines. This will allow us to better control chemical usage during our processes.
Welding Alloys Usa Inc	Manganese, Chromium, Nickel	W13: Improved maintenance scheduling, recordkeeping, or procedures