

Kentucky Department for Environmental Protection
Kentucky Toxic Release Inventory Analysis
2011 Reporting Year



January 10, 2013



Executive Summary

Under the national Toxic Release Inventory (TRI) program, facilities within specific industry sectors that manufacture, process or use amounts of chemicals over the TRI thresholds 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 Environment completed an analysis of the TRI data. This report contains the analysis of data reported by Kentucky industries for the 2011 reporting year. Within Kentucky, there were a total of 423 facilities and 154 chemicals that were reported for the 2011 calendar year. This is a decrease from the 436 Kentucky facilities and 172 chemicals that were reported for the 2010 calendar year.

Total on-site releases in Kentucky for 2011 were 73,037,155 pounds, off-site releases were 10,566,530 pounds and a total of 83,603,686 pounds were released or disposed in Kentucky for 2011. This represents an 11,583,364 pound decrease from 2010 reported releases on-site, 1,761,972 pounds off-site, and a total decrease of 13,345,335 pounds from 2010. That equates to a 13.8 percent decrease for total releases, a 13.7 percent decrease on-site and a 14.3 percent decrease in off-site releases. Chemicals reported through the TRI Program do not directly reflect exposure to these chemicals. Ninety percent of the chemicals amounts reported during the 2011 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 2011 Toxic Release Inventory analysis were:

- On-site releases in Kentucky for 2011 were 73,037,155 pounds, off-site releases were 10,566,530 pounds, and total on-site and off-site releases and disposal were reported as 83,603,686 pounds in 2011.
- On-site releases decreased 11,583,364 pounds (13.7%) from 2010 reports, off-site releases decreased 1,761,972 pounds (14.3%), and Total reductions of 13,345,335 pounds were reported compared to the 2010 reporting year which is a 13.8 percent decrease for total releases.
- Over ninety 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 nine out of the top ten counties with the highest amounts also decreased from 2010 to 2011 reporting years. On-site releases in eight of the top ten counties decreased from 2010 to 2011.
- Total releases for nine out of the top ten facilities decreased from 2010 to 2011.
- Air emissions from electrical utilities in 2011 decreased from 2010 and 2009 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 2011 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, 2012 for calendar year 2011. 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 2011 compared to 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,
- 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 2010 to 2011 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

2011 Reporting Year Data

16 new chemicals were added to TRI reporting for Reporting Year 2011 as a result of a final rule published in the Federal Register November 26, 2010 (Docket ID No. EPA-HQ-TRI-2010-0006). The newly added chemicals are: 1-amino-2,4-dibromoanthraquinone, 2,2-bis(bromomethyl)-1,3-propanediol, furan, glycidol, isoprene, methyleugenol, o-nitroanisole, nitromethane, phenolphthalein, tetrafluoroethylene, tetranitromethane, vinyl fluoride, 1,6-dinitropyrene, 1,8-dinitropyrene, 6-nitrochrysene, 4-nitropyrene. Of these new chemicals, only vinyl fluoride and isoprene were reported in Kentucky for 2011 and there were two facilities reporting manufacture, processing or use of those chemicals.

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.

National Data

Total US on-site releases during 2011 were 3,674,803,221 pounds and 411,726,004 pounds off-site for a total of 4,086,529,225 pounds. This is a 300 million pound (8.9 percent) increase from 2010 reported on-site releases and 1.3 million pounds (0.3 percent) increase in off-site releases. Lead and arsenic compounds had the highest reported increases in pounds from 2010 to 2011 by pounds with an increase of over 209 million pounds for lead and 119 million pounds for arsenic. The U.S. EPA releases a national analysis of TRI every year 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 2010 to 2011 reporting years.

	On-site		Off-site		Total
Lead Compounds	209,068,616	Zinc Compounds	7,350,763	Lead Compounds	209,637,779
Arsenic Compounds	119,664,614	Sodium Nitrite	2,446,659	Arsenic Compounds	119,551,862
Zinc Compounds	52,183,918	Nitrate Compounds	1,891,132	Zinc Compounds	59,534,681
Copper Compounds	34,602,996	Copper	1,732,855	Copper Compounds	31,238,628
Aluminum (Fume or Dust)	5,297,559	Manganese	1,218,960	Aluminum (Fume or Dust)	6,311,627
Hydrogen Cyanide	3,418,593	Methanol	1,052,923	Copper	4,178,530
Chlorine	3,230,563	Aluminum (Fume or Dust)	1,014,069	Hydrogen Cyanide	3,420,758
Copper	2,445,674	Ethylene Glycol	930,194	Chlorine	3,220,863
Polychlorinated Biphenyls	1,547,814	Phenol	921,691	Sodium Nitrite	2,868,827
Asbestos (Friable)	1,338,296	Diisocyanates	738,755	Manganese	1,955,972

Kentucky Data

Within Kentucky, there were a total of 436 Kentucky facilities and 172 chemicals that were reported in 2010. The Kentucky Department for Environmental Protection received reports were from 423 facilities and 154 chemicals in 2011.

Total on-site releases in Kentucky for 2011 were 73,037,155 pounds, off-site releases were 10,566,530 pounds with a total of 83,603,686 pounds released or disposed in Kentucky for 2011. This represents an 11,583,364 pound decrease from 2010 reported releases on-site,

1,761,972 pounds off-site, and a total decrease of 13,345,335 pounds from 2010. That equates to a 13.8 percent decrease for total releases, a 13.7 percent decrease on-site and a 14.3 percent decrease in off-site releases. The itemized list of all chemicals reported for 2011 are shown in Appendix A summarized by On-site, Off-site, and Total Releases.

The majority of the reported releases or disposals in 2011 were to air with 47,662,727 pounds. 9,870,818 pounds of chemicals were placed in on-site surface impoundments, and 6,273,169 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 121,401,719 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, 299,571,247 pounds of chemicals were recycled on-site, 45,422,545 went to on-site energy recovery, and 307,094,476 pounds were treated on-site.

Comparison to Other State Reports

Kentucky's 2010 and 2011 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 decreased in all categories from 2010 to 2011.

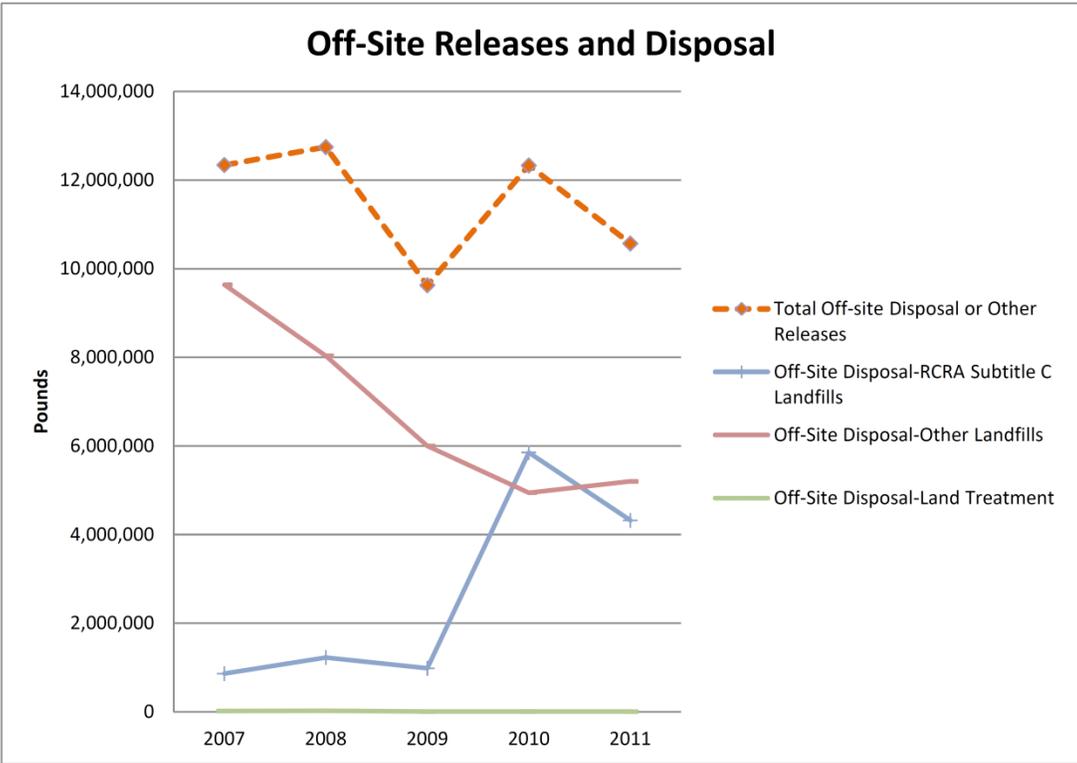
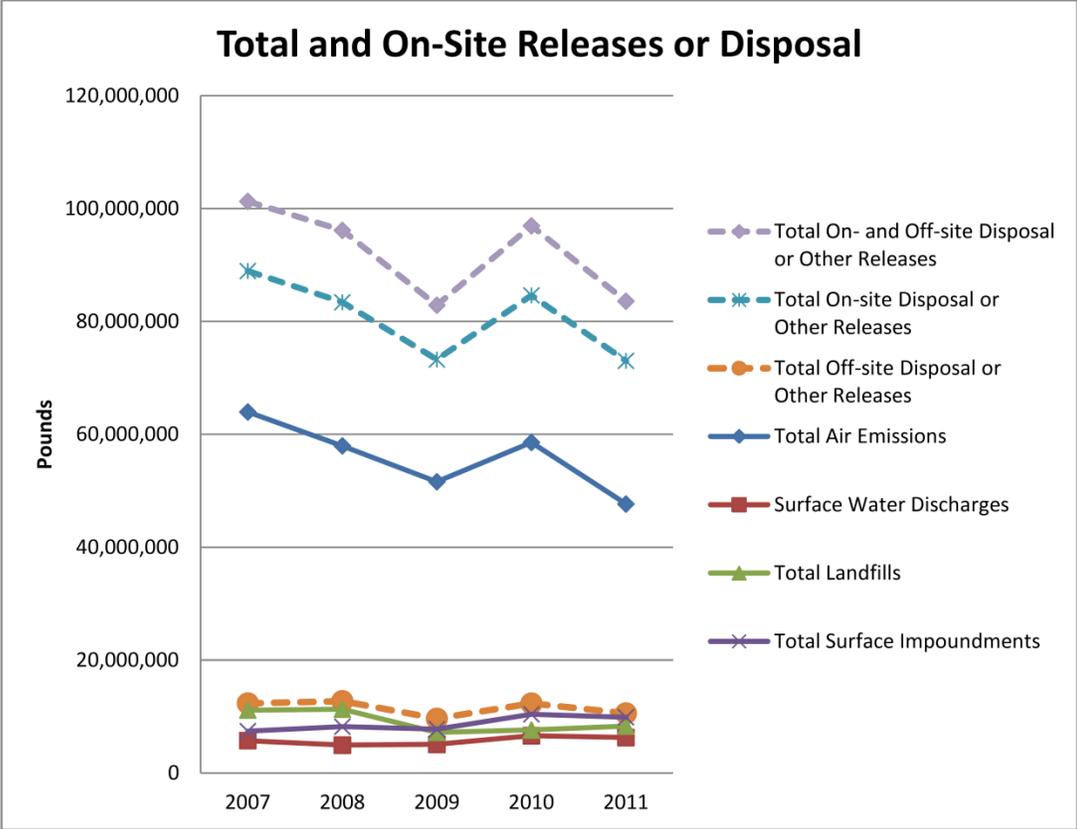
<u>Kentucky Rank</u>	<u>2010</u>	<u>2011</u>
US (Total Releases)	10 th	14 th
US (on-site)	8 th	10 th
Region 4 (Total)	1 st	3 rd
Region 4 (On-site)	1 st	2 nd
Adjacent States (Total)	4 th	5 th
Adjacent States (On-site)	3 rd	4 th

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 2011 and the major individual components of those numbers. Releases and disposal have generally decreased from 2007 to 2011 along with air and landfills decreasing and discharges to surface waters and surface impoundments increasing slightly. 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 fluctuating from year to year and disposal in other landfills decreasing.

Table 2. On-site Releases and Disposal in Kentucky					
Year	Total Air Emissions	Surface Water Discharges	Total Landfills	Total Surface Impoundments	Total On-site Disposal or Other Releases
2007	63,957,489	5,732,892	11,135,801	7,405,987	88,936,792
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

Table 3. Off-site and Total On- and Off-Site Releases and Disposal in Kentucky					
Year	Off-Site Disposal-RCRA Subtitle C Landfills	Off-Site Disposal-Other Landfills	Off-Site Disposal-Land Treatment	Total Off-site Disposal or Other Releases	Total On- and Off-site Disposal or Other Releases
2007	860,196	9,634,696	16,055	12,337,791	101,274,583
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



Top Chemicals

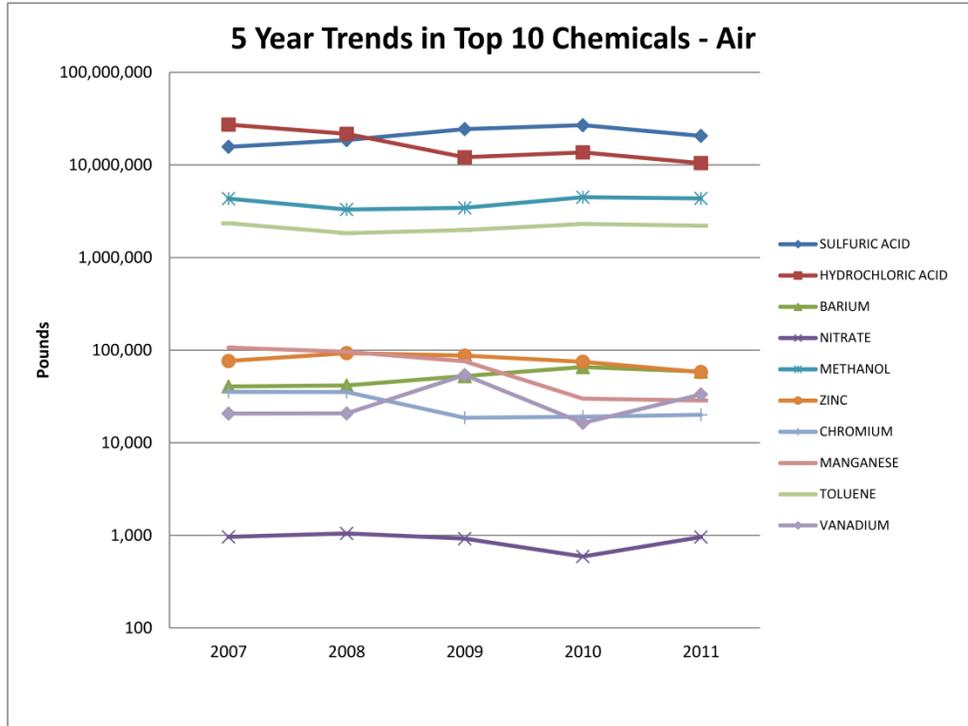
The Toxic Release Inventory data were further analyzed to identify the top ten chemicals released on-site and off-site. The results are shown in Tables 4, 5, and 6. On-site releases of sulfuric acid mists and hydrochloric acid comprise 37 percent of all reported releases or disposal for 2011. Sulfuric acid mists and hydrochloric acid are associated with coal-fired power plant emissions. On-site and off-site releases and disposal are also influenced by steel and metal processing facilities in Kentucky.

Table 4. Top 10 Chemicals Released or Disposed On-Site (2011)	
Chemical	Pounds
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	20,613,304
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	10,471,716
BARIUM COMPOUNDS	5,890,787
NITRATE COMPOUNDS	5,613,683
METHANOL	4,845,868
ZINC COMPOUNDS	2,702,480
MANGANESE COMPOUNDS	2,236,204
TOLUENE	2,212,522
VANADIUM COMPOUNDS	2,162,521
HYDROGEN FLUORIDE	1,746,627

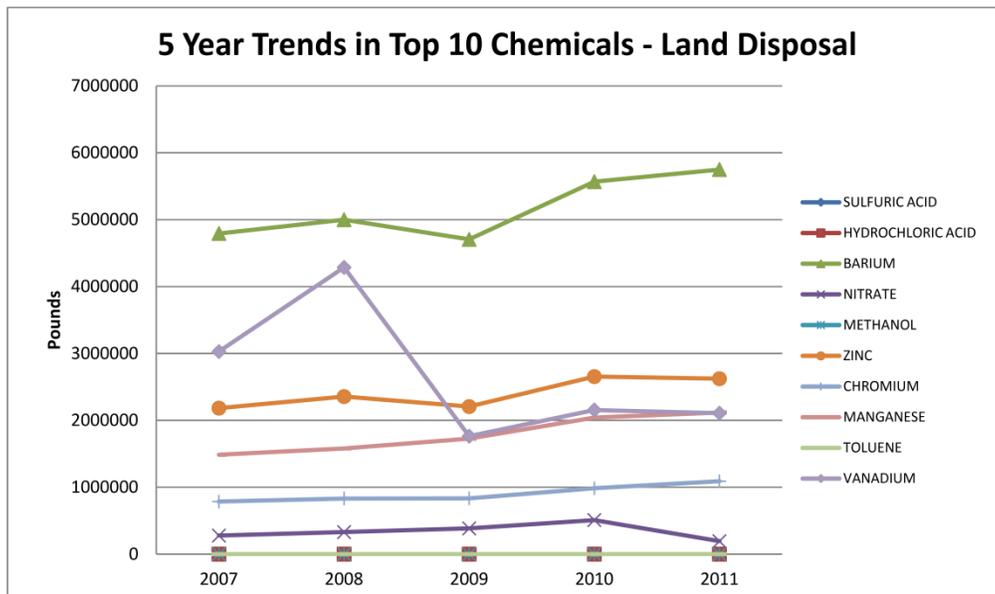
Table 5. Top 10 Chemicals Released or Disposed Off-Site (2011)	
Chemical	Pounds
BARIUM COMPOUNDS	2,411,868
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	2,228,516
ZINC COMPOUNDS	1,761,427
MANGANESE COMPOUNDS	1,037,171
COPPER COMPOUNDS	435,896
NICKEL COMPOUNDS	432,604
TOLUENE	308,624
PHENOL	296,492
ALUMINUM (FUME OR DUST)	284,679
XYLENE (MIXED ISOMERS)	203,338

Table 6. Top 10 Chemicals Released or Disposed Total On-Site and Off-Site (2011)	
Chemical	Pounds
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	20,613,304
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	10,471,716
BARIUM COMPOUNDS	8,302,655
NITRATE COMPOUNDS	5,623,513
METHANOL	4,866,550
ZINC COMPOUNDS	4,463,907
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	3,345,448
MANGANESE COMPOUNDS	3,273,375
TOLUENE	2,521,146
VANADIUM COMPOUNDS	2,162,521

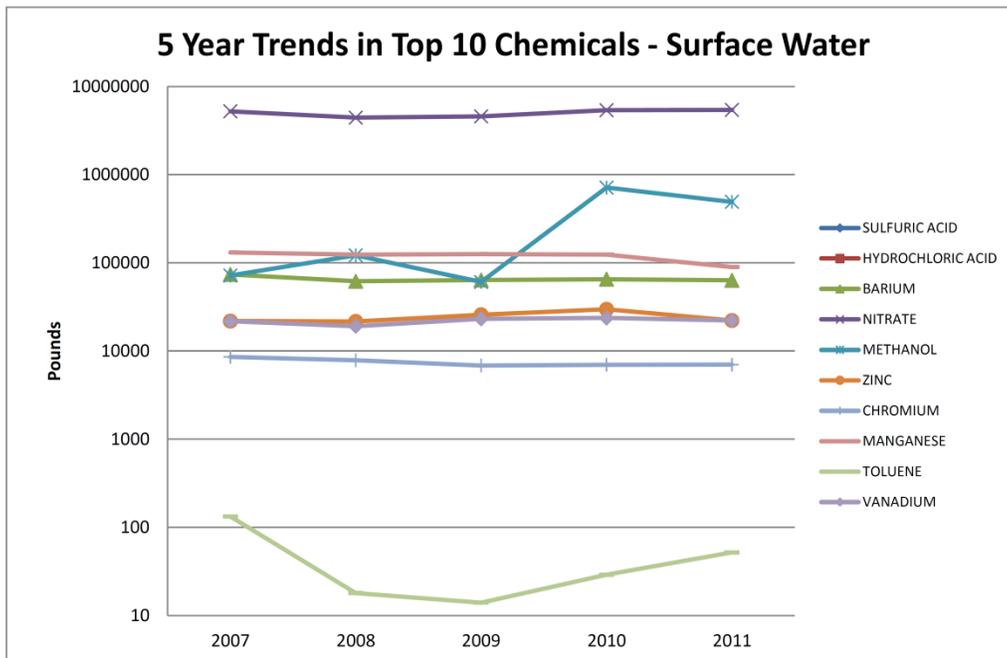
The top 10 chemicals for total releases in 2011 were evaluated for trends over the last 5 years for releases to air, land disposal and surface water. Many of Kentucky's industries are implementing pollution control upgrades to eliminate or reduce emissions and disposal of TRI chemicals. Appendix B contains 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 2011 have remained relatively steady with sulfuric acid mists increasing from 2007 to 2010 and then dropping in 2011. Hydrochloric acid decreased from 2007 to 2011 to almost one-third of 2007 releases. Manganese dropped to 25 percent of 2007 levels.



Releases of the Top 10 chemicals for 2011 to land have remained relatively steady with an upward trend for 2009 through 2011. 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.



Surface water discharges for these top 10 chemicals remained relatively the same from 2007 to 2011 with some fluctuation in methanol and a decrease in manganese.



Top Counties

The ten counties with the highest total releases in 2011 are shown on Table 7. Carroll County with 7 facilities reporting was followed by Jefferson County (71 facilities), and Muhlenburg County (7 facilities). All three counties have facilities that reported sulfuric acid mists and hydrochloric acid, the top two chemicals reported in the TRI data. The top 10 counties for on-site releases in 2011 are shown in Table 8. The top 6 counties are the same as those for total releases.

The top 10 counties for 2010 are shown for comparison on Table 9 and 10. Notably absent from the 2011 reporting data is Ohio County where Big Rivers Electric Corporation's Wilson Station reported much higher releases of sulfuric acid in the 2009 and 2010 reporting years which were reduced in 2011 due to changes in pollution control equipment in recent years. There is also a notable reduction in pounds released from 2010 to 2011 for all 2010 top 10 counties. Hancock County releases were slightly higher in 2010 and Trimble County took Ohio County's place in the top 10.

Table 7. Top 10 Kentucky Counties: Total Releases for 2011	
County	Pounds
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

Table 8. Top 10 Kentucky Counties: On-site Releases for 2011	
County	Pounds
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

Table 9. Top 10 Kentucky Counties: Total Releases for 2010	
County	Pounds
Carroll	14,487,896
Jefferson	11,509,405
Muhlenberg	10,747,923
Lawrence	6,800,552
Henderson	6,427,731
Ohio	6,043,779
McCracken	3,869,115
Hancock	3,244,228
Ballard	3,127,695
Marshall	3,023,765

County	Pounds
Muhlenberg	10,747,696
Jefferson	10,743,012
Carroll	9,315,440
Lawrence	6,798,248
Henderson	6,408,441
Ohio	6,043,779
McCracken	3,866,617
Hancock	3,140,819
Ballard	3,127,686
Marshall	2,971,650

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 that reported on-site releases or disposal are in the electric utility industry sector. Releases decreased for most of the top 10 facilities from 2010 to 2011. 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.

Facility	Total On-site Disposal or Other Releases
US TVA Paradise Fossil Plant (Muhlenberg)	8,367,272
Kentucky Utilities Co Ghent Station (Carroll)	6,520,161
American Electric Power Big Sandy Plant (Lawrence)	6,498,609
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	5,098,885
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	3,896,757
Louisville Gas & Electric Co - Trimble County Station (Trimble)	3,343,368
US TVA Shawnee Fossil Plant (McCracken)	3,226,629
North American Stainless (Carroll)	3,152,773
Wickliffe Paper Co (Ballard)	2,850,496
Spurlock Power Station (Mason)	1,985,909

Table 12. Top 10 Facilities for Off-site Releases or Disposal (2011 Reporting Year)	
Facility	Total Off-site Disposal or Other Releases
North American Stainless (Carroll)	4,100,133
Federal-Mogul VSP (Barren)	2,461,895
Safety-Kleen Systems Inc (Henry)	612,993
Owensboro Municipal Utilities Elmer Smith Station (Davies)	438,470
Momentive Specialty Chemicals Inc (Jefferson)	297,296
Novelis Corp (Madison)	254,911
Kentucky Electric Steel (Boyd)	204,353
Gallatin Steel Co (Gallatin)	170,474
Dow Corning Corp (Carroll)	140,056
Sud-Chemie Inc 12th Street Facility (Jefferson)	139,857

Table 13. Top 10 Facilities for Total Releases or Disposal (2011 Reporting Year)	
Facility	Total Disposal or Other Releases
US TVA Paradise Fossil Plant (Muhlenberg)	8,367,317
North American Stainless (Carroll)	7,252,907
Kentucky Utilities Co Ghent Station (Carroll)	6,520,161
American Electric Power Big Sandy Plant (Lawrence)	6,499,749
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	5,098,885
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	3,896,757
Louisville Gas & Electric Co - Trimble County Station (Trimble)	3,343,368
US TVA Shawnee Fossil Plant (McCracken)	3,226,650
Wickliffe Paper Co (Ballard)	2,850,496
Federal-Mogul VSP (Barren)	2,499,055

The top 10 facilities for 2010 were identified for on-site, off-site, and total releases and the change in their reported releases and disposal from 2010 to 2011 was calculated and are shown in Tables 14, 15, and 16, respectively. There were significant changes in the amount of releases and disposal from 2010 to 2011 for these facilities. These changes reflect changes in processes, reduction in industrial operations, improvements in pollution control, or closing of facilities.

Facility	Percent Change from 2010 to 2011
US TVA Paradise Fossil Plant (Muhlenberg)	-16.4%
American Electric Power Big Sandy Plant (Lawrence)	-4.4%
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-21.4%
Kentucky Utilities Co Ghent Station (Carroll)	8.8%
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-33.5%
Big Rivers Electric Corp Wilson Station (Ohio)	-87.1%
US TVA Shawnee Fossil Plant (McCracken)	-3.1%
North American Stainless (Carroll)	-2.3%
Wickliffe Paper Co (Ballard)	-8.4%
Cooper Power Station (Pulaski)	-13.8%

Facility	Percent Change from 2010 to 2011
North American Stainless (Carroll)	-18.6%
Federal-Mogul VSP (Barren)	8.5%
Safety-Kleen Systems Inc (Henry)	-40.7%
Kentucky Electric Steel (Boyd)	-37.1%
Gallatin Steel Co (Gallatin)	-36.6%
Owensboro Municipal Utilities Elmer Smith Station (Davies)	69.8%
Sud-Chemie Inc 12th Street Facility (Jefferson)	-44.1%
Novelis Corp (Madison)	22.8%
Philips Lighting Co (Boyle)	-100.0%
Dale Power Station (Clark)	-100.0%

Facility	Percent Change from 2010 to 2011
US TVA Paradise Fossil Plant (Muhlenberg)	-16.4%
North American Stainless (Carroll)	-12.2%
American Electric Power Big Sandy Plant (Lawrence)	-4.4%
Louisville Gas & Electric Co - Mill Creek Station (Jefferson)	-21.4%
Kentucky Utilities Co Ghent Station (Carroll)	8.8%
Big Rivers Electric Corp Reid/Green/HMP&L Station II (Henderson)	-33.5%
Big Rivers Electric Corp Wilson Station (Ohio)	-87.1%
US TVA Shawnee Fossil Plant (McCracken)	-3.1%
Wickliffe Paper Co (Ballard)	-8.4%
Federal-Mogul VSP (Barren)	8.5%

Top Industry Sectors

The top 5 industry sectors in 2011 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 59% of total pounds released or disposed in 2011. 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.

Industry Sector	On-site Releases
NAICS 2211 - Electric Utilities	48,966,225
NAICS 331 - Primary Metals	5,894,501
NAICS 325 - Chemicals	5,382,798
NAICS 322 - Paper	4,499,499
NAICS 311/312 - Food/Beverages/Tobacco	1,985,364

Industry Sector	Off-site Releases
NAICS 331 - Primary Metals	5,013,134
NAICS 336 - Transportation Equipment	2,934,386
NAICS 325 - Chemicals	1,213,056
NAICS 562 - Hazardous Waste/Solvent Recovery	612,993
NAICS 2211 - Electric Utilities	439,690

Industry Sector	Total Releases
NAICS 2211 - Electric Utilities	49,405,915
NAICS 331 - Primary Metals	10,907,635
NAICS 325 - Chemicals	6,595,854
NAICS 322 - Paper	4,501,693
NAICS 336 - Transportation Equipment	3,868,343

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. Onsite releases ranged from 0.0003 to 121 grams (0.26 pounds). Offsite releases ranged from 0.00054 to 2,478 grams (5.47 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)	121.473
Westlake Vinyls Inc. (Marshall)	16.9203
Hydro Aluminum. (Henderson)	11.2434
Carmeuse Lime & Stone Maysville Facility. (Mason)	4.195
Kentucky Utilities Co Ghent Station. (Carroll)	2.8421

Westlake Vinyls Inc.(Marshall)	2,478.79
JL French Glasgow Plant #1. (Barren)	110.465615
Owl's Head Alloys Inc. (Warren)	2.66
Dow Corning Corp. (Carroll)	0.761808
Novelis Corp. (Madison)	0.00054

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. Additionally, recent studies have been conducted by third parties that have focused on Toxic Release Inventory reports for air from power plants. Published reports have identified Kentucky as having some of the poorest air quality based on these studies. The air releases for 2009 and 2010 TRI data were evaluated using the same criteria and where other states' emissions dropped from 2009 to 2010, Kentucky's increased by around 11%. In 2009, Kentucky was ranked third for air releases in pounds from the electric utilities sector and first in

2010. The data in the 2011 TRI dataset were re-evaluated using the same criteria and Kentucky still ranks first in pounds released to air, but the emissions were 23.7 percent lower than 2010 emissions and 15.5 percent below 2009 emissions.

This reduction 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 (2009), Table 23 (2010), and Table 24 (2011) along with percent change from 2009 to 2010, 2010 to 2011, and 2009 to 2011. The data for all states is listed in Appendix D. Nationally, releases from the electric utilities sector dropped by 20.2% from 2009 to 2010, 17.7% from 2010 to 2011, and 34.3% from 2009 to 2011.

Rank	State	Air Emissions
1	Ohio	44,606,725
2	Pennsylvania	42,452,113
3	Kentucky	36,681,939
4	Florida	33,640,080
5	Indiana	27,150,254
6	Maryland	27,132,674
7	Michigan	22,742,369
8	West Virginia	21,503,543
9	Georgia	18,402,217
10	North Carolina	14,970,541
	TOTAL	392,315,277

Rank	State	Air Emissions	Change from 2009
1	Kentucky	40,642,049	10.8%
2	Ohio	36,521,078	-18.1%
3	Pennsylvania	31,520,487	-25.8%
4	Indiana	26,540,627	-2.2%
5	West Virginia	18,118,582	-15.7%
6	Florida	16,711,674	-50.3%
7	Michigan	15,579,860	-31.5%
8	North Carolina	14,699,212	-1.8%
9	Georgia	13,547,104	-26.4%
10	Tennessee	9,897,919	9.6%
	TOTAL	313,239,133	-20.2%

Table 24. 2011 Air Emissions from Power Plants				
Rank	State	Air Emissions	Change from 2010	Change from 2009
1	Kentucky	31,008,237	-23.7%	-15.5%
2	Ohio	30,366,900	-16.9%	-31.9%
3	Indiana	23,164,181	-12.7%	-14.7%
4	Pennsylvania	21,359,036	-32.2%	-49.7%
5	Michigan	17,406,693	11.7%	-23.5%
6	West Virginia	14,609,499	-19.4%	-32.1%
7	Florida	13,159,886	-21.3%	-60.9%
8	Georgia	11,340,526	-16.3%	-38.4%
9	Tennessee	10,688,693	8.0%	18.4%
10	North Carolina	9,271,514	-36.9%	-38.1%
	TOTAL	257,798,610	-17.7%	-34.3%

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 2011 calendar year the total releases, disposal and other management of TRI chemicals was 845,828,235 pounds.

Facility Increases and Decreases

The 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 2010 to 2011 reporting years. The results of the analysis are shown in Appendix C. The top 10 facilities with increases had a total of 3,251,726 pounds in increased releases or disposal. The top 10 facilities with decreases reduced a total of 13,100,837 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 2010 and 2011 since some facilities with 2010 reports may have ceased operations or changed operations and therefore did not report in 2011.

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.

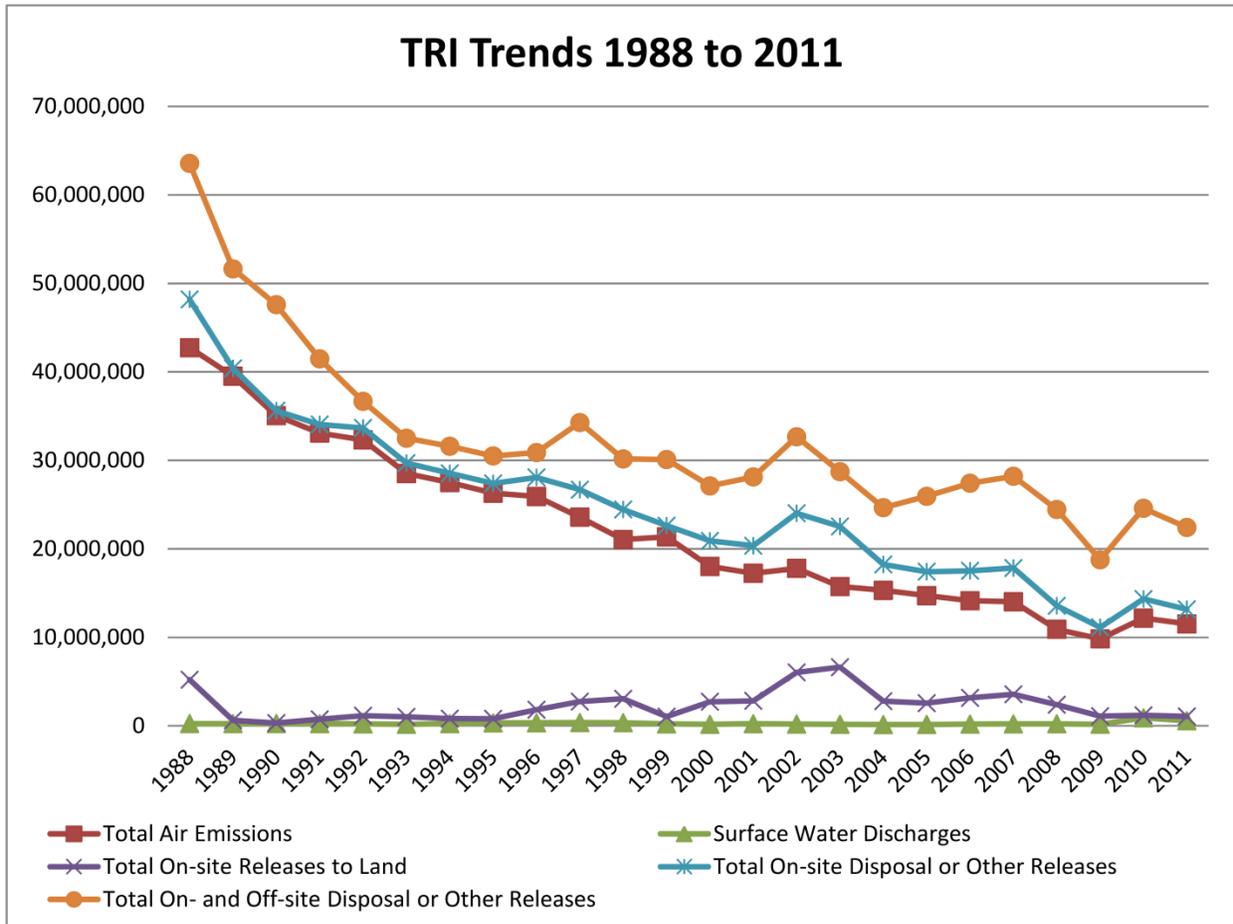
Chemicals reported through the TRI Program do not directly reflect exposure to these chemicals. Ninety percent of the chemicals amounts reported during the 2011 TRI reports are not released to environmental media (air, water, or landfill) but rather are recycled, treated, or used for energy recovery. 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 Environmental Indicators model to take those factors into consideration. That tool is available 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 have made progress toward reducing releases and disposal and improving their processes to reduce or eliminate toxic releases. Even with economic growth and change, 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 reduction in total releases both on-site and off-site and notably air emissions. This illustrates the effect of environmental standards over the last 24 years of TRI reporting. 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 2011 Toxic Release Inventory analysis were:

- On-site releases in Kentucky for 2011 were 73,037,155 pounds, off-site releases were 10,566,530 pounds, and total on-site and off-site releases and disposal were reported as 83,603,686 pounds in 2011.
- On-site releases decreased 11,583,364 pounds (13.7%) from 2010 reports, off-site releases decreased 1,761,972 pounds (14.3%), and Total reductions of 13,345,335 pounds were reported compared to the 2010 reporting year which is a 13.8 percent decrease for total releases.
- Over ninety 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 nine out of the top ten counties with the highest amounts also decreased from 2010 to 2011 reporting years. On-site releases in eight of the top ten counties decreased from 2010 to 2011.
- Total releases for nine out of the top ten facilities decreased from 2010 to 2011.
- Air emissions from electrical utilities in 2011 decreased from 2010 and 2009 values.
- With reduction in reported releases, the potential impact on communities that may be disproportionately impacted has also decreased.



Appendices

Appendix A

2011 TRI Releases for Kentucky by Chemical			
Chemical	Onsite	Offsite	Total
1,1,1-TRICHLOROETHANE	1,387	1,900	3,287
1,1,2,2-TETRACHLOROETHANE	90	0	90
1,1,2-TRICHLOROETHANE	221	0	221
1,1-DICHLORO-1-FLUOROETHANE	17,970	0	17,970
1,2,4-TRIMETHYLBENZENE	181,621	1,690	183,311
1,2-DICHLORO-1,1-DIFLUOROETHANE	30,585	0	30,585
1,2-DICHLOROETHANE	20,214	3	20,217
1,2-DICHLOROETHYLENE	39	0	39
1,2-DICHLOROPROPANE	110	0	110
1,3-BUTADIENE	20,024	671	20,695
1-CHLORO-1,1,2,2-TETRAFLUROETHANE	1,289	0	1,289
1-CHLORO-1,1-DIFLUOROETHANE	90,930	0	90,930
2,2-DICHLORO-1,1,1-TRIFLUOROETHANE	12,739	0	12,739
2,4-DINITROTOLUENE	4,400	0	4,400
2,6-DINITROTOLUENE	1,200	0	1,200
2-CHLORO-1,1,1,2-TETRAFLUROETHANE	25,612	0	25,612
2-CHLORO-1,1,1-TRIFLUOROETHANE	22,042	0	22,042
2-METHOXYETHANOL	233	0	233
3-IODO-2-PROPYNYL BUTYLCARBAMATE	7	0	7
4,4'-ISOPROPYLIDENEDIPHENOL	14	750	764
ACETALDEHYDE	95,709	0	95,709
ACETONITRILE	103	578	681
ACRYLAMIDE	426	0	426
ACRYLIC ACID	7,618	2,714	10,332
ACRYLONITRILE	6,667	2,120	8,787
ALLYL ALCOHOL	6	0	6
ALLYL CHLORIDE	824	0	824
ALUMINUM (FUME OR DUST)	809,748	284,679	1,094,427
ALUMINUM OXIDE (FIBROUS FORMS)	1,089	72,153	73,242
AMMONIA	1,144,077	25,883	1,169,960
ANTHRACENE	51	0	51
ANTIMONY	1	0	2
ANTIMONY COMPOUNDS	34,054	75,398	109,451
ARSENIC	0	0	0
ARSENIC COMPOUNDS	632,016	17,339	649,355
BARIUM	996	248	1,244
BARIUM COMPOUNDS	5,890,787	2,411,868	8,302,655

BENZENE	77,888	34	77,922
BENZO(G,H,I)PERYLENE	5,898	774	6,672
BENZOYL PEROXIDE	5	3,900	3,905
BERYLLIUM COMPOUNDS	63,411	0	63,411
BIPHENYL	227	301	528
BUTYL ACRYLATE	13,744	10	13,754
CADMIUM	14	630	644
CARBON DISULFIDE	3,839	0	3,839
CARBON TETRACHLORIDE	2,705	0	2,705
CARBONYL SULFIDE	766,590	0	766,590
CATECHOL	74	0	74
CERTAIN GLYCOL ETHERS	277,293	2,565	279,858
CHLORINE	68,136	0	68,136
CHLORINE DIOXIDE	731	0	731
CHLOROENZENE	257	10	267
CHLORODIFLUOROMETHANE	1,247,562	0	1,247,562
CHLOROFORM	1,292	40	1,332
CHLOROMETHANE	61,846	0	61,846
CHLOROPRENE	6	0	6
CHLOROTHALONIL	4	148	152
CHROMIUM	7,796	20,901	28,697
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	1,116,932	2,228,516	3,345,448
COBALT	20	1,777	1,797
COBALT COMPOUNDS	198,758	7,549	206,306
COPPER	321,234	139,210	460,444
COPPER COMPOUNDS	1,013,875	435,896	1,449,771
CREOSOTE	8,545	221	8,766
CRESOL (MIXED ISOMERS)	20,367	0	20,367
CUMENE	29,630	14	29,644
CUMENE HYDROPEROXIDE	64	0	64
CYANIDE COMPOUNDS	548	7	555
CYCLOHEXANE	139,777	340	140,117
DIBUTYL PHTHALATE	12,659	0	12,659
DICHLOROFUOROMETHANE	1,040	0	1,040
DICHLOROMETHANE	174,054	380	174,434
DICHLOROTETRAFLUROETHANE (CFC-114)	142,194	0	142,194
DICYCLOPENTADIENE	2,107	0	2,107
DIETHANOLAMINE	10	0	10
DIETHYL SULFATE	4,514	0	4,514
DIISOCYANATES	10,168	21,392	31,560
DIMETHYL SULFATE	10	0	10

DIMETHYLAMINE	608	0	608
DINITROTOLUENE (MIXED ISOMERS)	22,770	0	22,770
ETHYL ACRYLATE	16,062	29	16,091
ETHYLBENZENE	29,171	49,123	78,294
ETHYLENE	153,356	0	153,356
ETHYLENE GLYCOL	39,959	7,298	47,257
ETHYLENE OXIDE	964	0	964
ETHYLENEBISDITHIOCARBAMIC ACID, SALTS AND ESTERS	1,331	0	1,331
ETHYLIDENE DICHLORIDE	60	0	60
FLUORINE	7,489	0	7,489
FORMALDEHYDE	61,567	3,816	65,383
FORMIC ACID	5,411	0	5,411
HEXACHLOROBENZENE	9	3,945	3,954
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	10,471,716	0	10,471,716
HYDROGEN FLUORIDE	1,746,627	1,169	1,747,796
ISOPRENE	1	0	1
LEAD	38,240	7,554	45,795
LEAD COMPOUNDS	1,068,961	185,034	1,253,995
LITHIUM CARBONATE	0	1,656	1,656
M-XYLENE	5,957	0	5,957
MALEIC ANHYDRIDE	2,989	0	2,989
MANGANESE	46,083	107,145	153,228
MANGANESE COMPOUNDS	2,236,204	1,037,171	3,273,375
MERCURY	209	22	231
MERCURY COMPOUNDS	6,657	480	7,137
METHANOL	4,845,868	20,682	4,866,550
METHYL ACRYLATE	1,196	0	1,196
METHYL IODIDE	10		10
METHYL ISOBUTYL KETONE	139,076	26,417	165,493
METHYL METHACRYLATE	56,597	5,722	62,319
METHYL TERT-BUTYL ETHER	13	0	13
MOLYBDENUM TRIOXIDE	146	7,433	7,579
N,N-DIMETHYLFORMAMIDE	2,375	0	2,375
N-BUTYL ALCOHOL	287,742	6,406	294,148
N-HEXANE	759,461	30	759,491
N-METHYL-2-PYRROLIDONE	16,192	0	16,192
N-METHYLOLACRYLAMIDE	2,704	0	2,704
NAPHTHALENE	49,022	172	49,194
NICKEL	9,752	26,889	36,640
NICKEL COMPOUNDS	1,079,355	432,604	1,511,959

NICOTINE AND SALTS	2,210	30,990	33,200
NITRATE COMPOUNDS	5,613,683	9,830	5,623,513
NITRIC ACID	139,803	1,500	141,303
NITROBENZENE	130	0	130
NITROGLYCERIN	9,987	0	9,987
PHENANTHRENE	7,580	0	7,580
PHENOL	80,301	296,492	376,793
PHTHALIC ANHYDRIDE	400	9,617	10,017
POLYCHLORINATED BIPHENYLS	0	7	7
POLYCYCLIC AROMATIC COMPOUNDS	89,450	6,155	95,604
PROPYLENE	51,454	0	51,454
PROPYLENE OXIDE	4,061	0	4,061
SEC-BUTYL ALCOHOL	19,407	582	19,989
SELENIUM COMPOUNDS	60,067	0	60,067
SILVER COMPOUNDS	21	17	38
SODIUM NITRITE	1,001	10,905	11,906
STYRENE	482,528	134,263	616,791
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	20,613,304	0	20,613,304
TERT-BUTYL ALCOHOL	601	0	601
TETRACHLOROETHYLENE	6,887	36,162	43,049
THALLIUM COMPOUNDS	183,840	0	183,840
TITANIUM TETRACHLORIDE	10	0	10
TOLUENE	2,212,522	308,624	2,521,146
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2,737	0	2,737
TOLUENE-2,4-DIISOCYANATE	4	0	4
TRICHLOROETHYLENE	21,736	6,200	27,936
TRIETHYLAMINE	625	0	625
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)	2	213	215
VANADIUM COMPOUNDS	2,162,521	0	2,162,521
VINYL ACETATE	149,142	34,573	183,715
VINYL CHLORIDE	75,392	0	75,392
VINYL FLUORIDE	16,563	0	16,563
VINYLDENE CHLORIDE	7,170	0	7,170
XYLENE (MIXED ISOMERS)	241,734	203,338	445,072
ZINC (FUME OR DUST)	15,170	22,222	37,392
ZINC COMPOUNDS	2,702,480	1,761,427	4,463,907
Total	73,037,155	10,566,530	83,603,686

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

Air

	2007	2008	2009	2010	2011
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	15,718,439	18,578,619	24,401,578	26,887,953	20,613,304
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	27,282,843	21,672,216	12,106,417	13,672,545	10,471,716
BARIUM COMPOUNDS	40,600	41,604	52,442	65,657	58,760
NITRATE COMPOUNDS	962	1,049	921	591	959
METHANOL	4,330,723	3,307,373	3,441,837	4,484,542	4,353,751
ZINC COMPOUNDS	76,301	92,904	87,442	74,977	58,074
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	35,398	35,222	18,651	19,157	20,038
MANGANESE COMPOUNDS	106,786	96,024	75,745	29,968	28,601
TOLUENE	2,342,655	1,838,293	1,987,557	2,308,671	2,212,281
VANADIUM COMPOUNDS	20,672	20,740	53,937	16,394	33,267

Land Disposal

	2007	2008	2009	2010	2011
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	0	0	0	0	0
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	0	0	0	0	0
BARIUM COMPOUNDS	4,793,695	4,999,271	4,705,284	5,568,187	5,749,707
NITRATE COMPOUNDS	277,122	328,931	384,217	509,098	192,959
METHANOL	860	630	5	37	171
ZINC COMPOUNDS	2,182,531	2,354,815	2,205,804	2,653,672	2,622,235
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	785,598	831,456	833,129	984,713	1,089,893
MANGANESE COMPOUNDS	1,485,905	1,580,332	1,726,474	2,039,944	2,118,021
TOLUENE	1	0	0	227	189
VANADIUM COMPOUNDS	3,028,080	4,286,273	1,763,227	2,155,033	2,107,036

Surface Water

	2007	2008	2009	2010	2011
SULFURIC ACID (1994 AND AFTER "ACID AEROSOLS" ONLY)	0	0	0	0	0
HYDROCHLORIC ACID (1995 AND AFTER "ACID AEROSOLS" ONLY)	0	0	0	0	0
BARIUM COMPOUNDS	73,800	61,696	63,791	65,152	63,301
NITRATE COMPOUNDS	5,228,832	4,436,182	4,581,323	5,385,770	5,419,765
METHANOL	71,719	121,621	60,638	712,924	491,946
ZINC COMPOUNDS	21,839	21,651	25,747	29,682	22,171
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	8,581	7,853	6,844	6,987	7,001
MANGANESE COMPOUNDS	131,204	123,924	125,745	124,245	89,582
TOLUENE	133	18	14	29	52
VANADIUM COMPOUNDS	21,711	19,132	23,175	23,700	22,218

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

Top 10 Increases by Pounds					
Facility	Onsite	Facility	Offsite	Facility	Total
Louisville Gas & Electric Co - Trimble County Station. (Trimble)	1422601	Federal-Mogul VSP. (Barren)	191967	Louisville Gas & Electric Co - Trimble County Station. (Trimble)	1422601
Kentucky Utilities Co Ghent Station. (Carroll)	528936	Owensboro Municipal Utilities Elmer Smith Station. (Daviness)	180253	Kentucky Utilities Co Ghent Station. (Carroll)	528936
Owensboro Municipal Utilities Elmer Smith Station. (Daviness)	198042	Momentive Specialty Chemicals Inc. (Jefferson)	120808	Owensboro Municipal Utilities Elmer Smith Station. (Daviness)	378295
Catlettsburg Refining LLC. (Boyd)	156348	Hitachi Automotive Systems Americas Inc-Berea Ky. (Madison)	64880	Federal-Mogul VSP. (Barren)	194935
Us Army Fort Campbell Range Facility. (Christian)	120806	Novelis Corp. (Madison)	47359	Catlettsburg Refining Llc. (Boyd)	158028
Perdue Cromwell Processing Plant. (Ohio)	115949	Qg LLC. (Simpson)	28213	Momentive Specialty Chemicals Inc. (Jefferson)	125220
Century Aluminum of Kentucky. (Hancock)	115188	RT Vanderbilt Co Inc - Murray Div. (Calloway)	21355	Us Army Fort Campbell Range Facility. (Christian)	120806
Dupont Louisville Plant. (Jefferson)	103348	Amfine Chemical Corp. (Christian)	20128	Perdue Cromwell Processing Plant. (Ohio)	115949
Big Rivers Electric Corp Coleman Station. (Hancock)	59460	Alliance Tubular Holdings LLC. (Christian)	17716	Century Aluminum of Kentucky. (Hancock)	109617
Louisville Packaging. (Jefferson)	46476	Meritor. (Simpson)	15133	Dupont Louisville Plant. (Jefferson)	97339

Top 10 Decreases by Pounds					
Facility	Onsite	Facility	Offsite	Facility	Total
Big Rivers Electric Corp Wilson Station. (Ohio)	-4,432,060	North American Stainless. (Carroll)	-936,264	Big Rivers Electric Corp Wilson Station. (Ohio)	-4,432,060
Big Rivers Electric Corp Reid/Green/HMP&L Station II. (Henderson)	-1,963,610	Safety-Kleen Systems Inc. (Henry)	-420,609	Big Rivers Electric Corp Reid/Green/HMP&L Station II. (Henderson)	-1,963,610
US TVA Paradise Fossil Plant. (Muhlenberg)	-1,642,946	Philips Lighting Co. (Boyle)	-199,735	US TVA Paradise Fossil Plant. (Muhlenberg)	-1,642,990
Louisville Gas & Electric Co - Mill Creek Station. (Jefferson)	-1,388,458	Dale Power Station. (Clark)	-188,094	Louisville Gas & Electric Co - Mill Creek Station. (Jefferson)	-1,388,495
Kentucky Utilities Co - E W Brown Station. (Mercer)	-1,246,245	Osram Sylvania. (Woodford)	-142,739	Kentucky Utilities Co - E W Brown Station. (Mercer)	-1,246,237
ISP Chemicals LLC. (Marshall)	-381,029	Kentucky Electric Steel. (Boyd)	-120,571	North American Stainless. (Carroll)	-1,009,367
Cooper Power Station. (Pulaski)	-311,371	Sud-Chemie Inc 12th Street Facility. (Jefferson)	-110,532	Safety-Kleen Systems Inc. (Henry)	-416,853
Equity Group Kentucky Div LLC Processing Plant. (Clinton)	-309,002	Gallatin Steel Co. (Gallatin)	-98,511	ISP Chemicals LLC. (Marshall)	-379,476
American Electric Power Big Sandy Plant. (Lawrence)	-299,639	Jlok Corp. (Hopkins)	-65,496	Cooper Power Station. (Pulaski)	-311,371
TRAD NA Inc. (Christian)	-272,147	Huntington Alloys Corp. (Boyd)	-45,492	Equity Group Kentucky Div LLC Processing Plant. (Clinton)	-310,378

Top 10 Increases by Percent					
Facility	Onsite	Facility	Offsite	Facility	Total
Ensign-Bickford Aerospace & Defense Co. (Muhlenberg)	245200.0%	Alliance Tubular Holdings LLC. (Christian)	253085.7%	Black & Decker - Shelbyville. (Shelby)	259950.0%
Fruit Of The Loom - Jamestown. (Russell)	126800.0%	Black & Decker - Shelbyville. (Shelby)	234950.0%	Alliance Tubular Holdings LLC (Christian)	147675.0%
Donaldson Co Inc. (Jessamine)	64168.8%	Marathon Petroleum Co - Louisville (Kramers) Ky. (Jefferson)	13080.0%	Donaldson Co Inc. (Jessamine)	46763.6%
Mckechnie Vehicle Componets. (Jessamine)	2766.7%	Kobe Aluminum Automotive Products LLC. (Warren)	3527.3%	Fruit Of The Loom - Jamestown. (Russell)	16312.5%
Ticona Polymer. (Boone)	2063.6%	YKK Snap Fasteners America Inc. (Anderson)	3303.0%	YKK Snap Fasteners America Inc. (Anderson)	3406.8%
Richmond Auto Parts Technology. (Madison)	1900.0%	Rohm & Haas - Louisville Plant. (Jefferson)	2019.7%	Mckechnie Vehicle Components. (Jessamine)	2075.0%
Grupo Antolin Kentucky. (Christian)	671.6%	Arkema Inc. (Marshall)	756.4%	Richmond Auto Parts Technology. (Madison)	1900.0%
Firestone Industrial Products. (Whitley)	650.0%	Us Army Garrison Fort Knox. (Hardin)	733.3%	Ensign-Bickford Aerospace & Defense Co. (Muhlenberg)	1874.6%
Precoat Metals. (Hancock)	522.1%	KB Alloys LLC. (Henderson)	550.0%	Precoat Metals. (Hancock)	815.6%
Briggs & Stratton Corp. (Calloway)	402.5%	Fruit Of The Loom - Jamestown. (Russell)	528.6%	Amfine Chemical Corp. (Christian)	731.1%

Top 10 Decreases by Percent					
Facility	Onsite	Facility	Offsite	Facility	Total
Gibbs Die Casting Corp. (Henderson)	-100.0%	Magni Industries Inc. (Boone)	-100.0%	Somerset Energy Refining LLC. (Pulaski)	-100.0%
Federal Bureau Of Prisons USP Big Sandy. (Martin)	-100.0%	Koch Filter Corp. (Jefferson)	-100.0%	Tyson Foods Inc Processing & Rendering. (Henderson)	-100.0%
Service Welding & Machine Co Inc. (Jefferson)	-100.0%	Corning Inc. (Mercer)	-100.0%	Diversified Structural Composites. (Boone)	-100.0%
Somerset Energy Refining LLC. (Pulaski)	-100.0%	Ford Louisville Assembly. (Jefferson)	-100.0%	Covol Fuels No3LLC - Crockett Plant. (Bell)	-100.0%
Custom Resins Inc. (Henderson)	-100.0%	Sunspring America Inc. (Henderson)	-100.0%	Schwan's Food Manufacturing Inc Florence KY. (Boone)	-100.0%
Tyson Foods Inc Processing & Rendering. (Henderson)	-100.0%	GE Co Kentucky Glass Plant. (Fayette)	-100.0%	Sunspring America Inc. (Henderson)	-100.0%
Diversified Structural Composites. (Boone)	-100.0%	Central Motor Wheel of America (dba CMWA). (Bourbon)	-100.0%	GE Co Kentucky Glass Plant. (Fayette)	-100.0%
Covol Fuels No3 LLC - Crockett Plant. (Bell)	-100.0%	Toyotomi America Corp. (Washington)	-100.0%	Toyotomi America Corp. (Washington)	-100.0%
Schwan's Food Manufacturing Inc Florence Ky. (Boone)	-100.0%	Dale Power Station. (Clark)	-100.0%	Ford Louisville Assembly. (Jefferson)	-100.0%
Ford Louisville Assembly. (Jefferson)	-100.0%	Philips Lighting Co. (Boyle)	-100.0%	Philips Lighting Co. (Boyle)	-100.0%

Top 10 Decreases by Percent (for facilities with reported releases in both years)					
Facility	Onsite	Facility	Offsite	Facility	Total
TRAD NA Inc. (Christian)	-99.9%	Osram Sylvania. (Woodford)	-100.0%	Osram Sylvania. (Woodford)	-99.9%
Kentucky Utilities Co - Tyrone Station. (Woodford)	-99.7%	Avantor Performance Materials. (Bourbon)	-99.6%	TRAD NA Inc. (Christian)	-99.8%
Cemex Kosmos Cement Co. (Jefferson)	-99.5%	North American Galvanizing Co Louisville. (Jefferson)	-98.5%	Kentucky Utilities Co - Tyrone Station. (Woodford)	-99.7%
Gourmet Express. (Muhlenberg)	-97.6%	Pilkington North America Inc. (Woodford)	-98.5%	Cemex Kosmos Cement Co. (Jefferson)	-99.4%
Southwire Co Kentucky Plant. (Hancock)	-90.9%	Dal-Tile Corp Lewisport Plant. (Hancock)	-97.6%	Pilkington North America Inc. (Woodford)	-98.5%
Big Rivers Electric Corp Wilson Station. (Ohio)	-87.1%	Nuplex Resins LLC. (Jefferson)	-96.2%	Gourmet Express. (Muhlenberg)	-97.6%
Forth Technologies Inc. (Jefferson)	-76.5%	M-I LLC Sweco Div. (Boone)	-95.2%	Dal-Tile Corp Lewisport Plant. (Hancock)	-96.4%
Valero Louisville Terminal. (Jefferson)	-76.4%	TRAD NA Inc. (Christian)	-94.9%	Sargent & Greenleaf. (Jessamine)	-92.8%
Temple-Inland. (Mason)	-76.0%	Guardian Automotive-Morehead Plant. (Rowan)	-93.8%	North American Galvanizing Co Louisville. (Jefferson)	-89.9%
Equity Group Kentucky Div LLC Processing Plant. (Clinton)	-73.9%	Owl's Head Alloys Inc. (Warren)	-93.1%	Felker Brothers. (Barren)	-89.7%

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

2009

Rank	State	Air Emissions (Pounds)	Total On- and Off- site Disposal or Other Releases
1	Ohio	44,606,725	62,463,162
2	Pennsylvania	42,452,113	57,153,710
3	Kentucky	36,681,939	52,219,528
4	Florida	33,640,080	41,674,534
5	Indiana	27,150,254	47,394,916
6	Maryland	27,132,674	29,824,650
7	Michigan	22,742,369	41,585,116
8	West Virginia	21,503,543	32,958,777
9	Georgia	18,402,217	31,730,546
10	North Carolina	14,970,541	24,999,565
11	Alabama	11,508,502	25,660,754
12	South Carolina	11,484,041	14,221,364
13	Texas	10,147,472	36,950,402
14	Virginia	9,662,655	12,900,907
15	Tennessee	9,030,725	19,311,841
16	Missouri	6,392,766	15,469,670
17	Illinois	5,604,390	22,745,335
18	Puerto Rico	3,514,467	3,548,503
19	Wisconsin	3,454,378	8,249,293
20	New Hampshire	2,526,243	2,641,015
21	Delaware	2,436,256	3,049,227
22	Iowa	2,374,993	8,601,032
23	New York	2,334,016	4,276,308
24	Mississippi	2,030,234	5,772,023
25	New Jersey	1,903,831	1,971,673
26	Hawaii	1,820,240	2,134,319
27	Nebraska	1,797,900	7,485,921
28	Massachusetts	1,769,320	1,863,293
29	Louisiana	1,396,157	8,764,668
30	Arkansas	1,376,183	7,279,566
31	Oklahoma	1,171,569	3,417,475
32	Utah	1,169,142	6,946,913
33	North Dakota	1,102,017	17,458,104
34	Minnesota	1,086,464	11,901,090

35	Kansas	996,516	9,584,805
36	Colorado	920,487	7,601,445
37	Arizona	909,707	9,451,003
38	Wyoming	667,392	13,385,158
39	New Mexico	497,568	8,281,932
40	Montana	459,731	11,202,837
41	Connecticut	406,292	608,559
42	Nevada	315,512	1,997,009
43	California	274,172	358,118
44	Washington	158,472	2,256,251
45	South Dakota	121,932	1,336,507
46	Oregon	102,534	168,840
47	Guam	76,313	76,314
48	Rhode Island	15,830	15,830
49	Alaska	15,233	524,924
50	Virgin Islands	1,161	1,161
51	Maine	6	8
52	District Of Columbia	3	1,755
	TOTAL	392,315,277	741,477,655

2010

Rank	State	Air Emissions (Pounds)	Change from 2009	Total On- and Off- site Disposal or Other Releases
1	Kentucky	40,642,049	10.8%	58,939,036
2	Ohio	36,521,078	-18.1%	56,250,294
3	Pennsylvania	31,520,487	-25.8%	47,115,341
4	Indiana	26,540,627	-2.2%	47,614,328
5	West Virginia	18,118,582	-15.7%	30,816,676
6	Florida	16,711,674	-50.3%	25,221,362
7	Michigan	15,579,860	-31.5%	32,557,682
8	North Carolina	14,699,212	-1.8%	26,311,978
9	Georgia	13,547,104	-26.4%	29,076,847
10	Tennessee	9,897,919	9.6%	24,178,138
11	Virginia	9,496,989	-1.7%	12,805,901
12	South Carolina	9,440,208	-17.8%	12,156,930
13	Texas	8,506,277	-16.2%	39,268,142
14	Alabama	8,373,651	-27.2%	25,074,635

15	Missouri	5,114,784	-20.0%	17,059,145
16	Illinois	4,746,755	-15.3%	24,903,531
17	Mississippi	3,995,991	96.8%	8,278,454
18	Puerto Rico	3,678,002	4.7%	3,747,507
19	Wisconsin	3,576,761	3.5%	10,007,255
20	Maryland	3,154,296	-88.4%	6,432,939
21	Delaware	2,945,885	20.9%	3,131,785
22	New Hampshire	2,845,904	12.7%	2,991,899
23	Iowa	2,368,897	-0.3%	11,103,517
24	Nebraska	2,154,986	19.9%	10,186,351
25	New York	2,030,475	-13.0%	4,793,285
26	New Jersey	1,716,079	-9.9%	1,797,992
27	Louisiana	1,533,231	9.8%	10,294,187
28	Massachusetts	1,422,596	-19.6%	1,497,729
29	Hawaii	1,307,716	-28.2%	1,434,730
30	Kansas	1,279,174	28.4%	9,857,841
31	Minnesota	1,266,121	16.5%	11,609,985
32	Arkansas	1,078,438	-21.6%	8,113,721
33	Oklahoma	1,076,050	-8.2%	3,300,121
34	North Dakota	992,678	-9.9%	16,686,624
35	Utah	937,115	-19.8%	6,834,385
36	Colorado	905,373	-1.6%	8,168,090
37	Arizona	850,646	-6.5%	10,391,425
38	Montana	613,462	33.4%	14,809,660
39	Wyoming	565,403	-15.3%	12,597,287
40	New Mexico	327,286	-34.2%	7,264,646
41	Nevada	247,231	-21.6%	1,859,917
42	California	210,928	-23.1%	462,405
43	Connecticut	209,044	-48.5%	440,298
44	South Dakota	113,164	-7.2%	834,041
45	Oregon	112,835	10.0%	524,849
46	Guam	100,253	31.4%	100,253
47	Washington	93,041	-41.3%	3,541,069
48	Virgin Islands	30,261	2506.5%	30,261
49	Rhode Island	24,988	57.9%	24,988
50	Alaska	17,508	14.9%	548,555
51	District Of Columbia	53	1666.7%	2,623
52	Maine	5	-16.7%	7
	TOTAL	313,239,133	-20.2%	703,050,647

2011

Rank	State	Air Emissions (Pounds)	Change from 2010	Change from 2009	Total On- and Off- site Disposal or Other Releases
1	Kentucky	31,008,237	-23.7%	-15.5%	49,405,915
2	Ohio	30,366,900	-16.9%	-31.9%	47,821,465
3	Indiana	23,164,181	-12.7%	-14.7%	42,830,375
4	Pennsylvania	21,359,036	-32.2%	-49.7%	36,210,825
5	Michigan	17,406,693	11.7%	-23.5%	32,928,460
6	West Virginia	14,609,499	-19.4%	-32.1%	28,142,456
7	Florida	13,159,886	-21.3%	-60.9%	19,240,009
8	Georgia	11,340,526	-16.3%	-38.4%	23,528,455
9	Tennessee	10,688,693	8.0%	18.4%	22,690,431
10	North Carolina	9,271,514	-36.9%	-38.1%	20,251,318
11	Alabama	7,988,013	-4.6%	-30.6%	22,781,077
12	South Carolina	6,949,547	-26.4%	-39.5%	9,340,657
13	Virginia	6,721,820	-29.2%	-30.4%	9,103,617
14	Texas	5,711,761	-32.9%	-43.7%	39,358,098
15	Mississippi	5,563,926	39.2%	174.1%	8,394,177
16	Illinois	4,973,625	4.8%	-11.3%	24,542,045
17	Missouri	4,462,408	-12.8%	-30.2%	16,708,373
18	Puerto Rico	3,420,388	-7.0%	-2.7%	3,473,430
19	Maryland	3,150,930	-0.1%	-88.4%	5,651,232
20	Wisconsin	2,769,863	-22.6%	-19.8%	7,308,539
21	Iowa	2,106,487	-11.1%	-11.3%	9,375,450
22	Nebraska	1,768,252	-17.9%	-1.6%	9,379,566
23	Delaware	1,767,327	-40.0%	-27.5%	2,024,714
24	New Hampshire	1,741,528	-38.8%	-31.1%	1,805,579
25	Louisiana	1,693,588	10.5%	21.3%	7,879,491
26	Wyoming	1,421,069	151.3%	112.9%	9,749,232
27	Hawaii	1,351,593	3.4%	-25.7%	1,551,712
28	New York	1,316,190	-35.2%	-43.6%	2,856,166
29	Kansas	1,160,927	-9.2%	16.5%	9,916,429
30	Oklahoma	1,138,209	5.8%	-2.8%	3,967,119
31	Arkansas	1,097,168	1.7%	-20.3%	8,192,448
32	North Dakota	1,036,969	4.5%	-5.9%	17,625,061
33	Utah	905,144	-3.4%	-22.6%	6,885,587
34	Colorado	827,842	-8.6%	-10.1%	7,694,473
35	Massachusetts	760,890	-46.5%	-57.0%	849,847

36	Arizona	760,548	-10.6%	-16.4%	11,070,738
37	Minnesota	673,574	-46.8%	-38.0%	10,874,619
38	Montana	509,858	-16.9%	10.9%	12,109,464
39	California	362,537	71.9%	32.2%	475,473
40	New Mexico	341,997	4.5%	-31.3%	7,674,960
41	New Jersey	339,605	-80.2%	-82.2%	418,072
42	Nevada	256,584	3.8%	-18.7%	1,147,283
43	Oregon	130,237	15.4%	27.0%	406,147
44	South Dakota	91,714	-19.0%	-24.8%	658,530
45	Guam	69,078	-31.1%	-9.5%	69,078
46	Washington	45,020	-51.6%	-71.6%	1,686,451
47	Virgin Islands	25,478	-15.8%	2094.5%	25,478
48	Alaska	5,813	-66.8%	-61.8%	504,890
49	Rhode Island	4,307	-82.8%	-72.8%	4,307
50	Connecticut	1,405	-99.3%	-99.7%	1,449
51	District Of Columbia	221	317.0%	7266.7%	224
52	Maine	4	-20.0%	-33.3%	4
	TOTAL	257,798,610	-17.7%	-34.3%	616,590,993