Analysis and Communication of Trends: Toxic Release Inventory in Kentucky

2016 National Training Conference on TRI

Data Trends: The Bigger Picture

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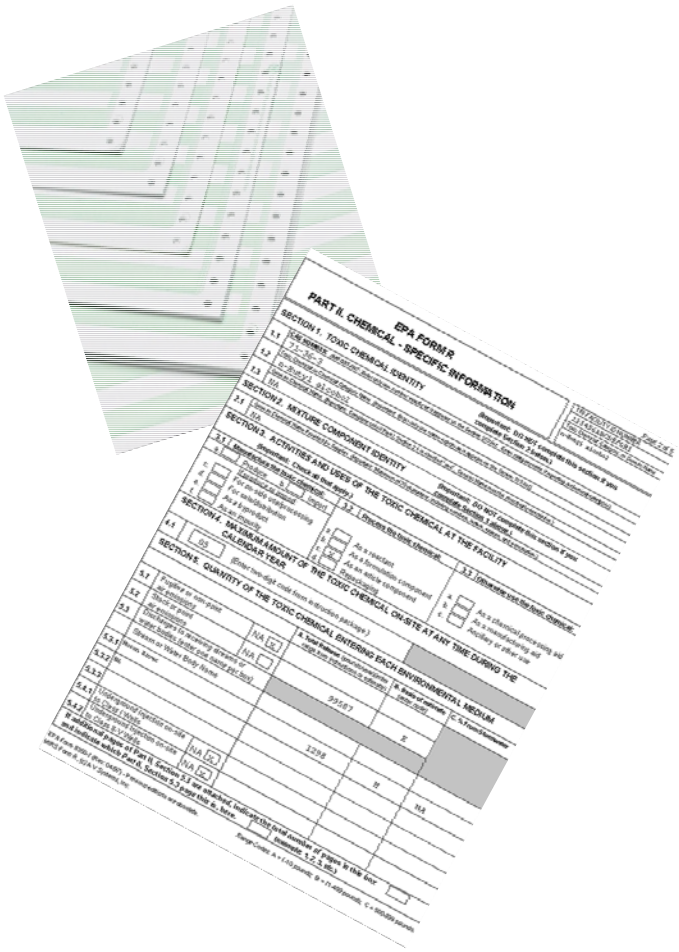
Kentucky TRI Reporting

- Background
  - 1988 Reporting:
    - 374 facilities and 1641 forms
  - 2015 Reporting:
    - 421 facilities and 1930 forms
- Staffing
- No other state-specific requirements

Availability of Resources for Analysis

- Early data and tools:
  - Paper forms
  - Used spreadsheets and tables
    - Lotus 1-2-3
    - Excel
  - State reports
  - Public Data Release and National Analysis

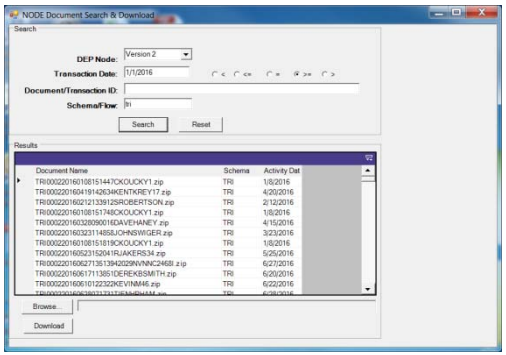


Transition to Interim Tools

- Initially paper forms
- Use of 3.5” Floppies then CDs
- UTIL Software
- Drawbacks for these interim tools:
  - Learning technology
  - Import of data
  - Manipulating the data
  - Formatting issues

State Data Exchange Network

- Benefits:
  - Limited capital cost
  - All in-house capability
  - Standard file format and ease of import and manipulation
  - Ease of filing for facilities



Model Memorandum of Agreement Between the Kentucky Department for Environmental Protection and the US Environmental Protection Agency
TRI State Data Exchange

1 Overview – Exchange of TRI Data

This agreement is a voluntary agreement between the Kentucky Department for Environmental Protection, hereinafter referred to as KYDEP, and the US Environmental Protection Agency, with the US Environmental Protection Agency, Office of Information Analysis and Access acting as a representative for the Agency and hereinafter referred to as EPA, for the exchange of Toxics Release Inventory (TRI) data via the National Environmental Information Exchange Network, hereinafter referred to as the Exchange Network.

2 Purpose

The purpose of this Memorandum of Agreement (MOA) is to outline the specific roles and responsibilities between KYDEP and EPA for the purposes of successfully transmitting TRI data via the Exchange Network.

This agreement does not supersede any existing agreement between KYDEP and EPA, nor any future Memoranda of Agreement between KYDEP and EPA.

3 Background

In 1986, the Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted including Section 313, which created the TRI. Under Section 313(a) of EPCRA, certain covered facilities are required to submit annual toxic chemical release forms to EPA and to "an official or officials of the State designated by the Governor." 42 USC § 11023(a). This project is intended to allow TRI facilities to report to both EPA and their State simultaneously with one action, fulfilling their statutory duty to report to both EPA and the State and reducing burden on the facilities.

When submitting TRI data, facilities may choose between several mechanisms of transmission including via EPA's web services node, the Central Data Exchange (CDX). When a facility reporting to TRI chooses to submit data through a means other than CDX (e.g., paper, diskette), the facility is responsible for submitting the data separately to both EPA and KYDEP. Non-CDX transmission mechanisms fall outside the parameters of this agreement. In these instances, no data is pushed from EPA to KYDEP as described below.

EPCRA requires that EPA "establish and maintain in a computer data base a national toxic chemical inventory based on data submitted … under this section." 42 USC § 11023(j). EPCRA is silent as to what state recipients of TRI data should do with TRI data but individual states may have state laws or policies that govern the use of data

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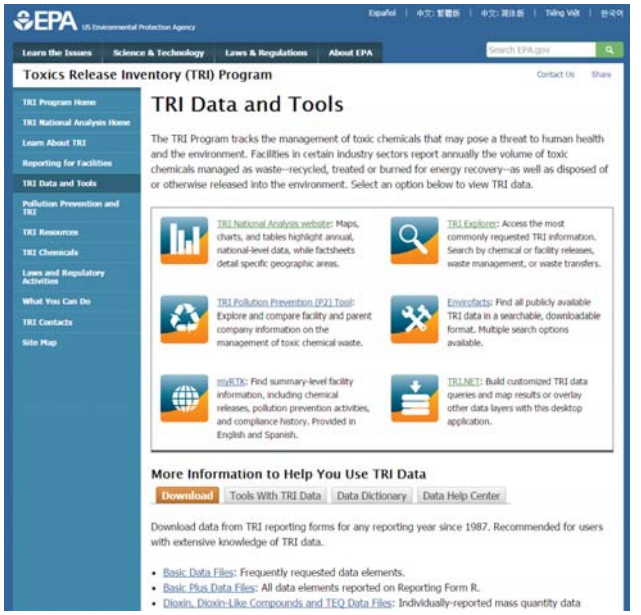
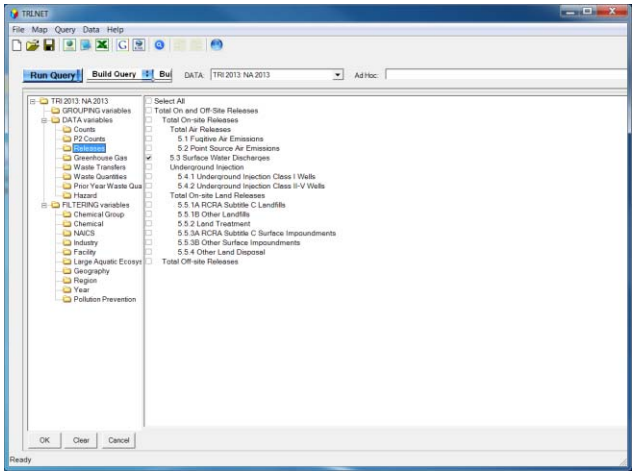
Improved Tools

- Web-based databases
  - TRI Explorer
  - Envirofacts
  - State Fact Sheets
  - TRI National Analysis
- TRI.NET





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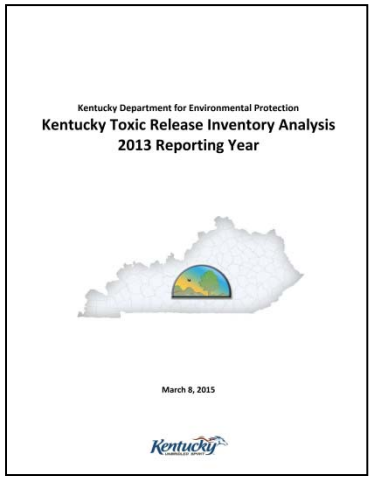
Kentucky Annual Analysis

- Purpose:
  - Examine the data from different perspectives
  - Identify trends in reporting
  - Identify and recognize facilities with reductions and increases
  - Provide clear metrics for agency staff, industry, media, and the public



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Parameters and Results

- Total on-site and of-site releases
- Changes from previous years in pounds and percent
- Amounts and percentage that goes to energy recovery, recycling, and treatment
- 5-year trends to air, water and land
- County rankings and changes in county ranking
- Facility ranking and changes in facility ranking
- Industry sector rankings
- Comparison to surrounding states, Region 4 states, US
- Pollution Prevention activities
- Trends since 1988 for core chemicals

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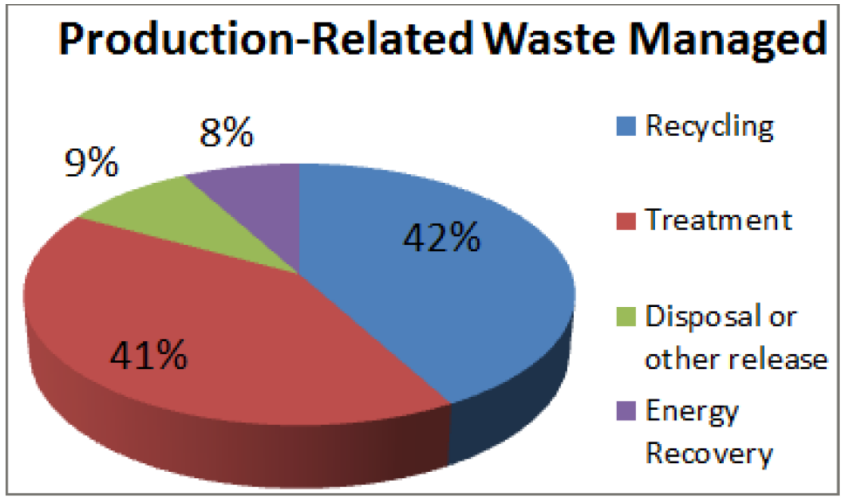
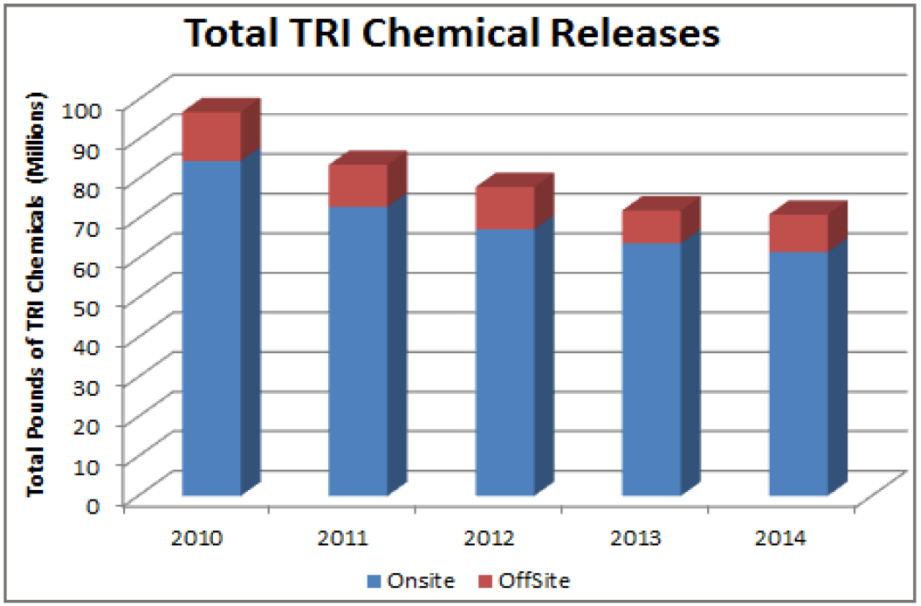
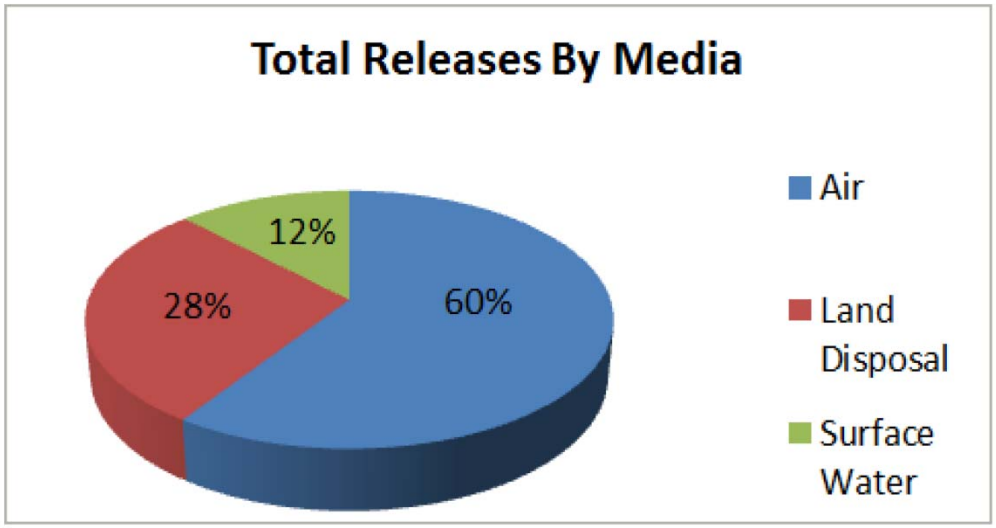
Results


Production-Related Waste Managed
8%
9%
42%
41%
Recycling
Treatment
Disposal or other release
Energy Recovery


Total TRI Chemical Releases
Total Pounds of TRI Chemicals (Millions)
100
90
80
70
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
Onsite
OffSite

Results

Top 10 Chemicals Released	
Chemical	**Pounds**
SULFURIC ACID	16,284,846
HYDROCHLORIC ACID	6,968,652
BARIUM COMPOUNDS	5,200,324
NITRATE COMPOUNDS	5,055,117
ZINC COMPOUNDS	4,852,829
METHANOL	4,237,965
MANGANESE COMPOUNDS	3,454,845
CHROMIUM COMPOUNDS	3,004,731
NICKEL COMPOUNDS	2,141,399
VANADIUM COMPOUNDS	1,904,403



Results

Which facilities released the most TRI chemicals in 2014?

Facility	Total Releases in Pounds
NORTH AMERICAN STAINLESS (CARROLL)	8,867,868
KENTUCKY UTILITIES CO GHENT STATION (CARROLL)	5,315,939
US TVA PARADISE FOSSIL PLANT (MUHLENBERG)	5,014,649
LOUISVILLE GAS & ELECTRIC CO - MILL CREEK STATION (JEFFERSON)	4,999,434
AMERICAN ELECTRIC POWER BIG SANDY PLANT (LAWRENCE)	4,979,136
BIG RIVERS ELECTRIC CORP REID/GREEN/HMP&L STATION II (HENDERSON)	4,348,444
US TVA SHAWNEE FOSSIL PLANT (MCCRACKEN)	2,807,661
SPURLOCK POWER STATION (MASON)	2,502,343
LOUISVILLE GAS & ELECTRIC CO - TRIMBLE COUNTY STATION (TRIMBLE)	2,408,668
WICKLIFFE PAPER CO (BALLARD)	2,301,743

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What counties release the most TRI-tracked chemicals?

County	Releases in Pounds
Carroll	14,393,001
Jefferson	9,597,242
Muhlenberg	5,773,673
Henderson	5,030,701
Hancock	2,777,409
Mason	2,961,160
McCracken	3,075,387
Lawrence	4,979,136
Marshall	3,324,902
Trimble	2,408,668

Counties that are home to electrical utilities tend to have higher levels of TRI chemicals present within their borders because of the nature of their processes. Despite being substantial TRI contributors, total air emissions air emissions from power plants have decreased since 2011.

Air Emissions– Electrical Utilities	
Year	Total Emissions (Pounds)
2011	31,080,277
2012	24,588,648
2013	24,608,297
2014	22,908,915

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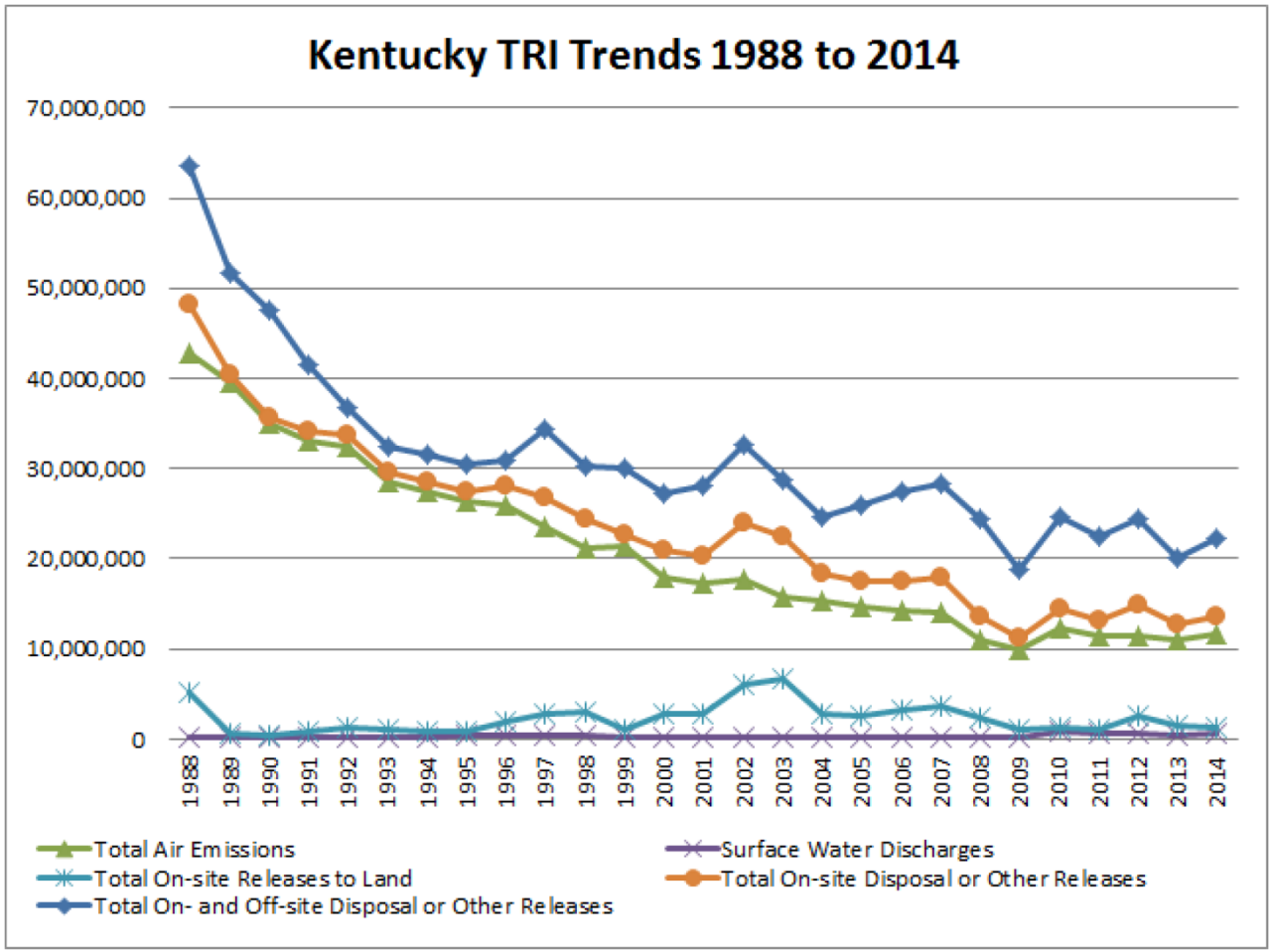
What is the trend for TRI chemicals in Kentucky?



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Communication

- Media
- Blogs
- Publish on website

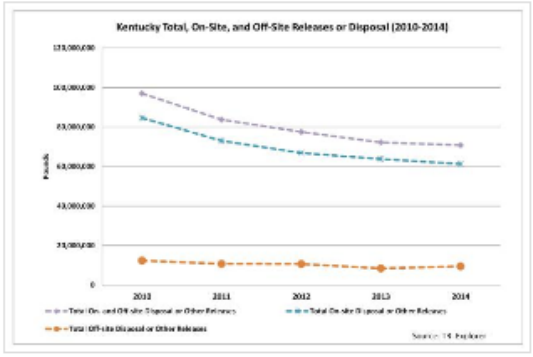
Toxic Release Totals Continue to Decline

ON FEBRUARY 8, 2016 / BY KYDEP

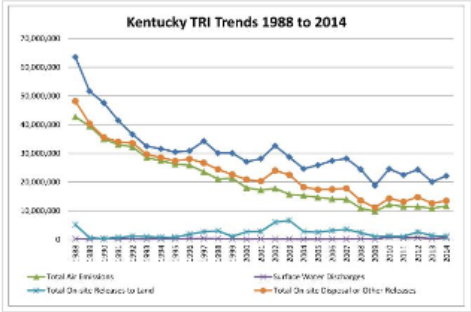
/ IN DIVISION FOR AIR QUALITY, DIVISION OF COMPLIANCE ASSISTANCE

Analysis of data from the Toxic Release Inventory (TRI) by the Kentucky Department of Environmental Protection (DEP) shows a continued downward statewide trend in toxic pollutants entering Kentucky's environment. With continued reduction in reported releases, the potential impact on communities that may be disproportionately impacted has also decreased.

The Kentucky DEP conducted an analysis of reporting data submitted by industries to the Environmental Protection Agency (EPA) for calendar year 2014. Within Kentucky, there were a total of 431 facilities and 167 chemicals reported for the 2014 calendar year. It is notable that more than 91 percent of the TRI chemical waste generated during 2014 was recycled, treated, or used for energy recovery, rather than released or disposed of in environmental media (air, water or land).



The reported releases are typically authorized by permits with regulatory limits. These limits protect human health and the environment. The decrease in releases to the environment can be attributed to production efficiencies, regulatory changes to permitting limits and pollution prevention activities conducted by Kentucky's facilities. Toxic releases have been on a steady downward trend since 1988. The pattern is indicative of efforts made by facilities and regulators to protect the environment.



According to the reported data:

- Total releases in six out of the top 10 Kentucky counties with the highest toxic release amounts in 2013, decreased in the 2014 reporting year. On-site releases in seven of the top 10 Kentucky counties decreased from 2013 to 2014.
- On-site releases in Kentucky for calendar year 2014 were 64,584,183 pounds. Off-site releases totaled 9,464,119 pounds. The combined total of on-site and off-site releases and disposal were reported as 71,048,302 pounds, according to the 2014 data.
- In 2014, on-site releases decreased 2,227,444 pounds (3.5 percent) from 2013 reports, while off-site releases increased 1,181,965 pounds (14.3 percent), and total reductions of 1,045,479 pounds were reported compared to the 2013 reporting year, which is a 1.5 percent decrease for total releases.
- Total releases or disposal in Kentucky decreased 6,938,017 pounds over the last two reporting cycles (2013 and 2014). Total releases since the 2010 reporting year have decreased 25,900,719 which is a 26.7 percent decrease from 2010 reports.
- On-site releases for the top ten chemicals in 2014 decreased to land (-5.6 percent), air(-5.2 percent) and surface water (-0.3 percent).
- Total releases for five out of the top 10 facilities in Kentucky decreased from 2013 to 2014. Those 10 facilities were also the top ten facilities in 2014, and comprise 61 percent of releases from all Kentucky facilities that reported.
- n 2014, air emissions from Kentucky electrical utilities decreased from 2013 values. Reported air emissions in 2014 are the lowest in 14 years of electrical utility reporting under the Toxic Release Inventory.
- When compared to 2013 data, national trends showed a 6.3 percent decrease in on-site releases, 0.8 percent increase in off-site releases, and 5.7 percent decrease in total releases.

For more information on the Toxic Release Inventory, visit http://dep.ky.gov/Pages/TRI.aspx.

For the 2014 DEP analysis, visit http://dca.ky.gov/Documents/KYTRIreportJan2016.pdf

For additional information on the Kentucky DEP Toxic Release Inventory Analysis for the 2014 Reporting Year, contact Larry Taylor at LarryC.Taylor@ky.gov or by phone at (502) 564-0323.

Lessons Learned

- Increased understanding
- Improved clarity
- Increased awareness could affect change
- Communication challenges
- Retooling to increase effectiveness