

# **The TRI P2 Search Tool: Industry Analysis to Identify Actions to Reduce Toxics**

Sandra Gaona, MS

Toxics Release Inventory Program  
US Environmental Protection Agency

Washington, DC

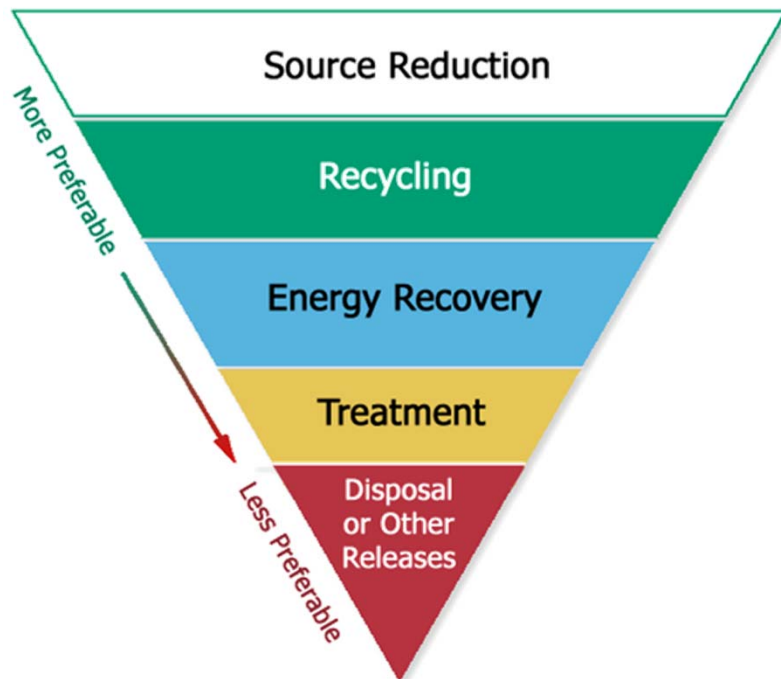
October 19, 2016





# TRI's Pollution Prevention Data

## Waste Management Hierarchy



**Pollution Prevention Act of 1990 – Expanded Authority**

## Information Reported to TRI

- Source reduction activities (codes)
- Optional P2 information (free-text)
- Waste management quantities:
  - **Recycling**
  - **Energy Recovery**
  - **Treatment**
  - **Disposal & Other Releases**

*..... TRI P2 Data – An Opportunity*

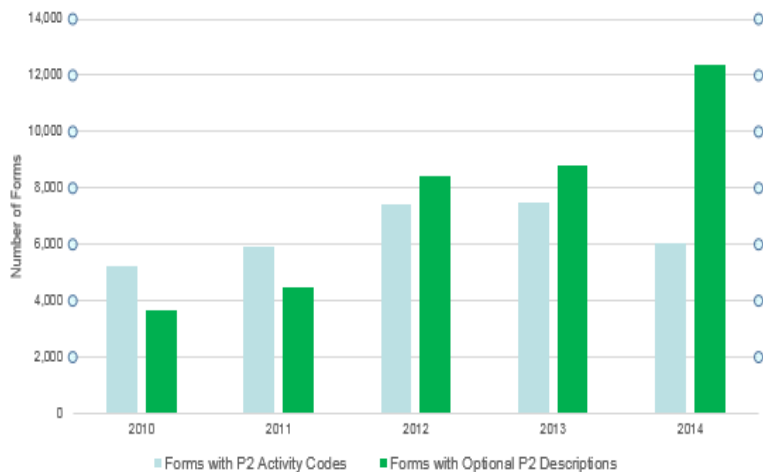


# P2 Data – Source Reduction Trends

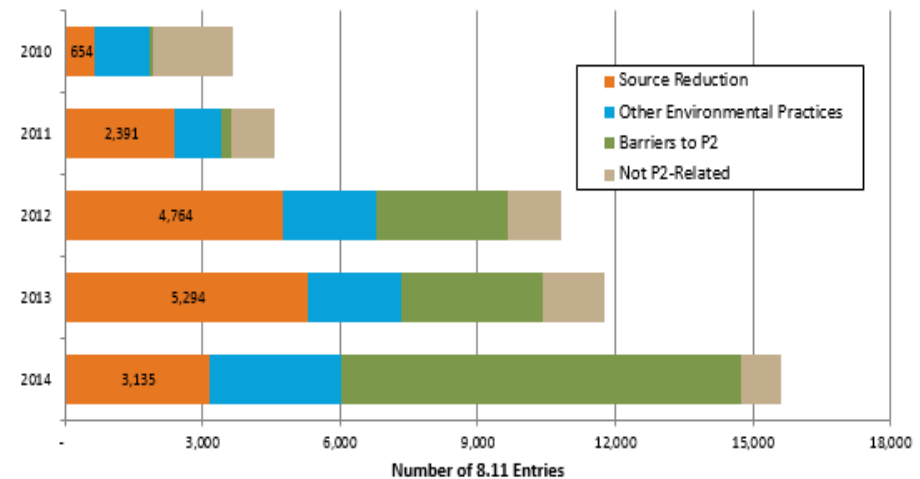
**Source Reduction Example:** Altered production schedule and number of CIP cleaning cycles to decrease nitric acid usage by 25% as production increased by 8%.

- Good Operating Practices - **W14**, Changed production schedule to minimize equipment and feedstock changeovers
- **T04**, Participative team management
- [Cheese Manufacturing Facility](#)

P2 Reporting Summary, 2010 - 2014



8.11 Entries by Category



**Over 16,000 source reduction text entries from 2010-2014**



## Accessing TRI P2 Data

### **TRI P2 Search Tool** <https://www.epa.gov/enviro/facts/tri/p2.html>

- Launched January 2013, helps to:
  - Identify P2 activities implemented
  - Identify Barriers to source reduction activities
  - View P2 trends
  - Compare P2 performance at the facility and corporate level for given industry/chemical combination



The screenshot shows the EPA's TRI Pollution Prevention (P2) Search interface. At the top, the EPA logo and navigation links are visible. The main heading is "TRI Pollution Prevention (P2) Search". Below this, there are navigation tabs for Home, Multisystem Search, Topic Searches, System Data Searches, About the Data, Data Downloads, Widgets, Services, Mobile, and Other Datasets. A red banner with the TRI logo is present. The main content area includes a brief description of the search tool, a list of instructions (1. Click 'Show P2 Activities' to view reported P2 activities and associated reductions in toxic chemical quantities. 2. Click 'Display Comparison' to visually compare facilities or parent companies' waste management practices and trends.), and a section for search criteria. The search criteria section includes radio buttons for "Show P2 info for facilities" (selected) and "Show P2 info for parent companies". There are three dropdown menus: "Select one or more Industry Sector(s):" (All Industry Sectors), "Select one or more Chemical(s) or Chemical Group(s):" (All Chemicals), and "Select one or more Year(s):" (2007-2015). There are also fields for "Select one or more State(s):" (All States) and "Enter a ZIP Code or City Name:". At the bottom, there are three buttons: "Show P2 Activities", "Display Facility Comparison", and "Clear".

# P2 TOOL DEMO

TRI P2 webpage:  
[www.epa.gov/tri/p2](http://www.epa.gov/tri/p2)

TRI P2 Search Tool:  
[www.epa.gov/enviro/facts/tri/p2.html](http://www.epa.gov/enviro/facts/tri/p2.html)



# How to Conduct an Industry Sector Analysis

- **Go to the P2 Search tool** <https://www.epa.gov/enviro/facts/tri/p2.html>
- **Enter selection criteria** – Industry and latest reporting year
- **Click Show P2 Activities**
- **Filter results** - Additional Filters box
  - Search box
- **Change Year-to-Year comparison** value to see Waste Managed or other waste quantities.
- **Export Results table** to easily analyze in other software like Excel.
- **Explore facility or parent company details** in the P2 tool. Click the P2 Details button
  - Check other chemical displays
  - See chart options below or above graphs
- **Compare performance** to other facilities or companies in the industrial sector. Click comparison report.
  - See chart options, data display options in table and map and export features.
  - **Click Display Comparison** from entry screen to jump to comparison info.



# Industry Profiles: Auto and Food Sectors

**Objective:** Track release trends and pollution prevention progress - To help identify P2 opportunities

**Help answer:**

- Where to target outreach?
- Who to target?
- What chemicals to focus on?
- What P2 practices are effective?
- What barriers is industry facing?
- Are there collaboration opportunities?

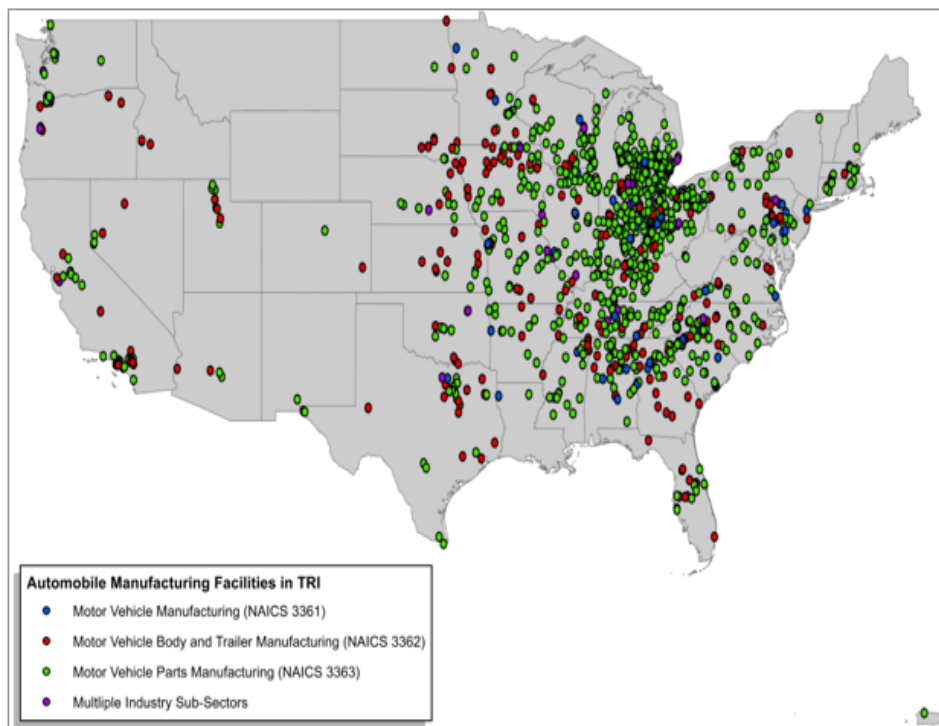




# Industry Profile: Facilities

## Auto

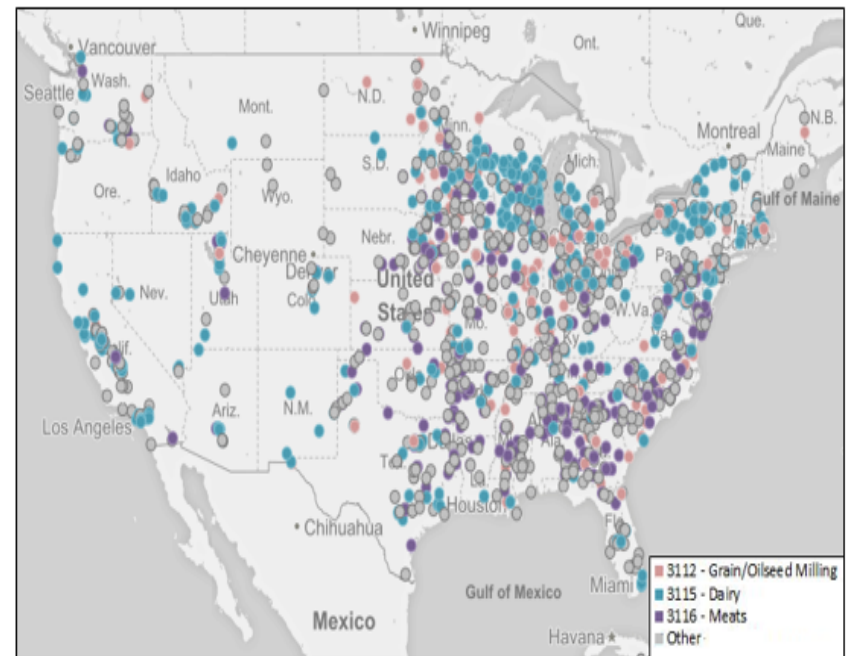
Auto Manufacturing Facilities Reporting to TRI



1,417 Auto Facilities since 2005

## Food

Food Manufacturing Facilities Reporting to TRI, 2014



1,558 Food Facilities in 2014

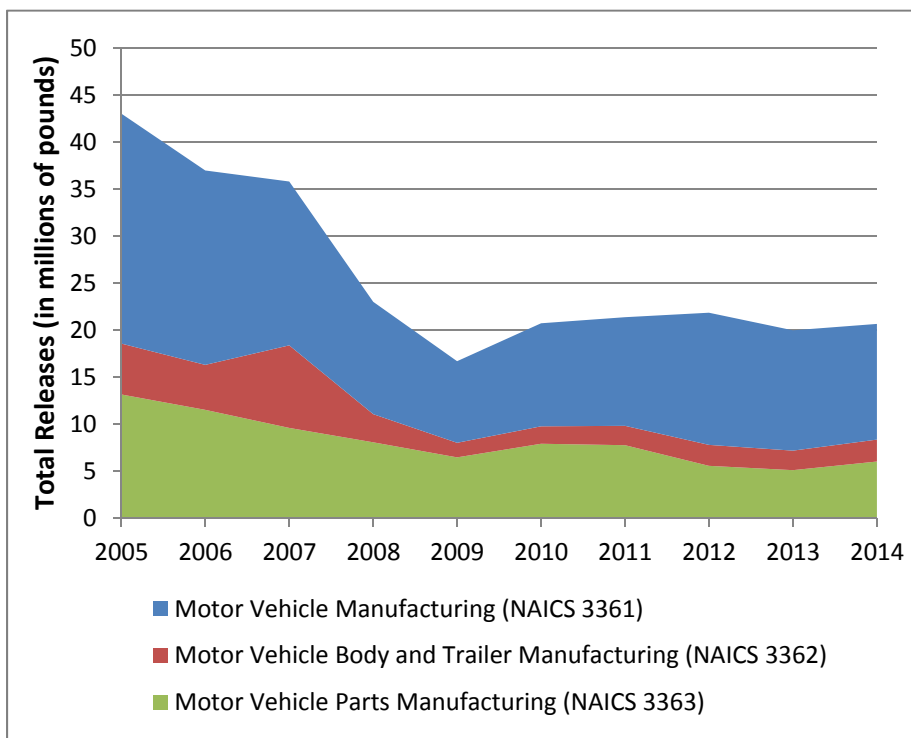




# Industry Profile: Releases by Subsector

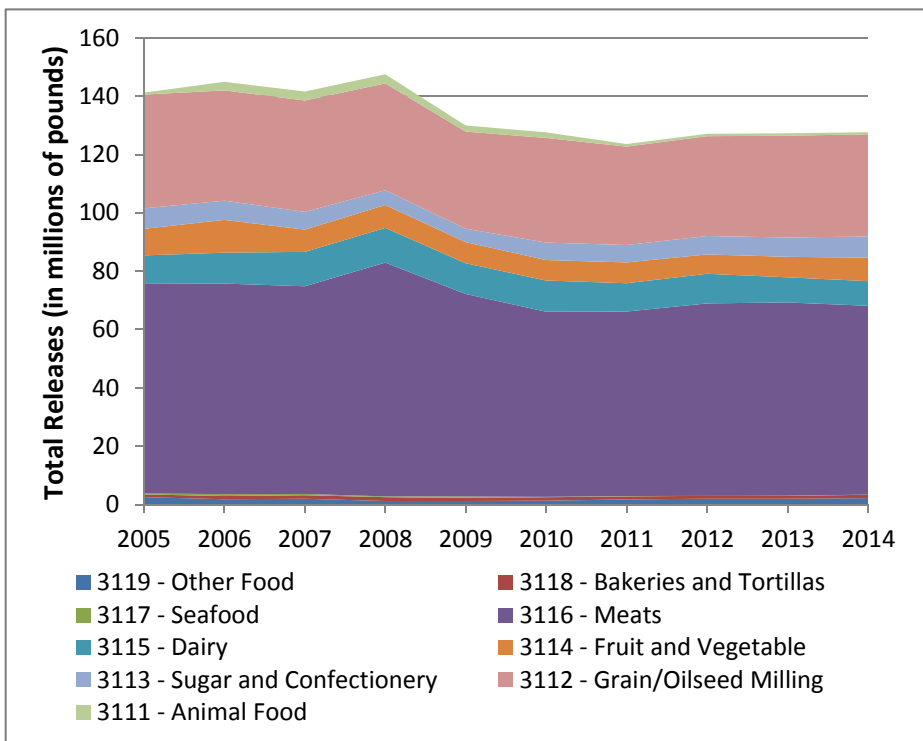
## Auto

Total Releases by Auto Industry Subsector



## Food

Total Releases by Food Industry Subsector



Source: U.S. EPA Toxics Release Inventory – 2014 National Analysis Dataset,

Source: U.S. EPA Toxics Release Inventory – 2014 National Analysis Dataset

Auto releases decreased 52%

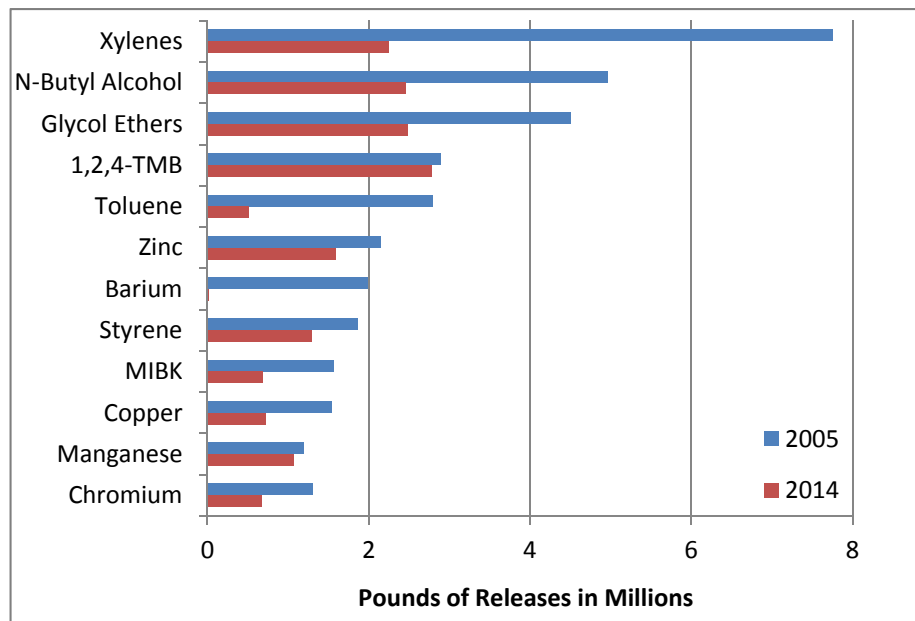
Food releases decreased 17%



# Industry Profile: Chemicals with Highest Releases

## Auto

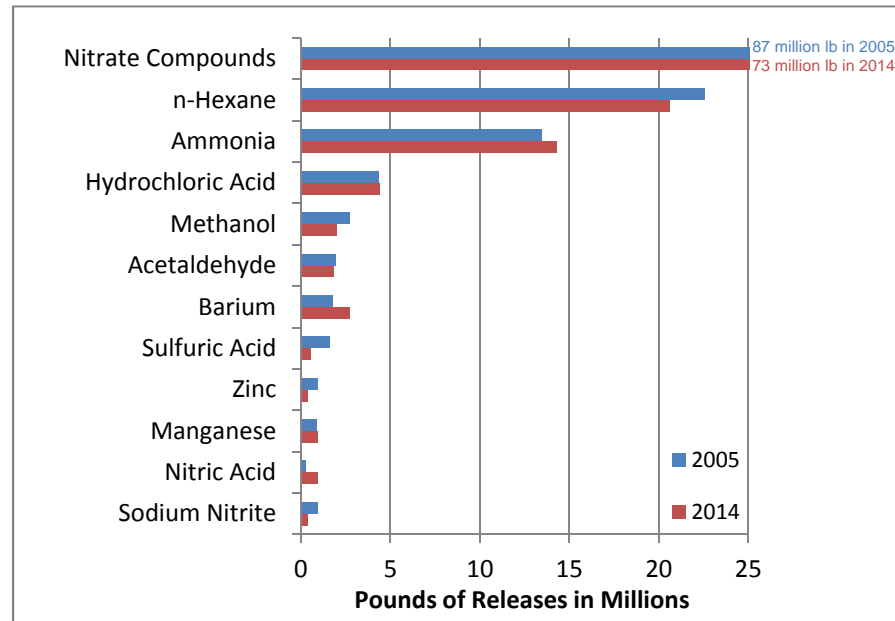
Chemicals with the Highest Releases in 2005 and 2014 – Automotive Industry



- Top chemicals released are xylenes, n-butyl alcohol, and glycol ethers.
- Releases decreased by more than half since 2005.

## Food

Chemicals with the Highest Releases in 2005 and 2014 – Food Manufacturing Industry



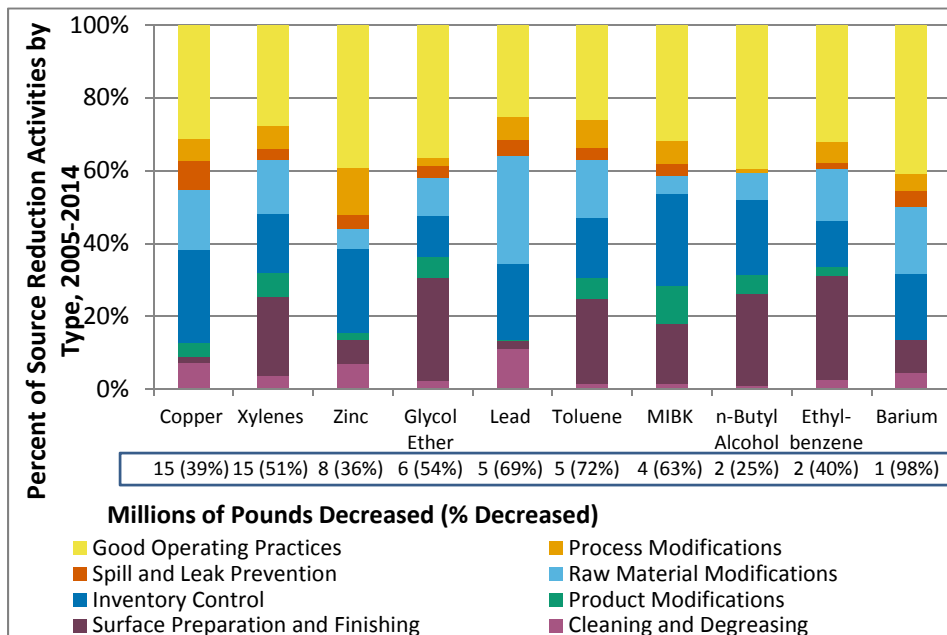
- Top chemicals released are nitrate compounds, n-hexane, and ammonia.
- Releases remained constant; nitrate compounds decreased 16% since 2005.



# Industry Profile: Source Reduction

## Auto

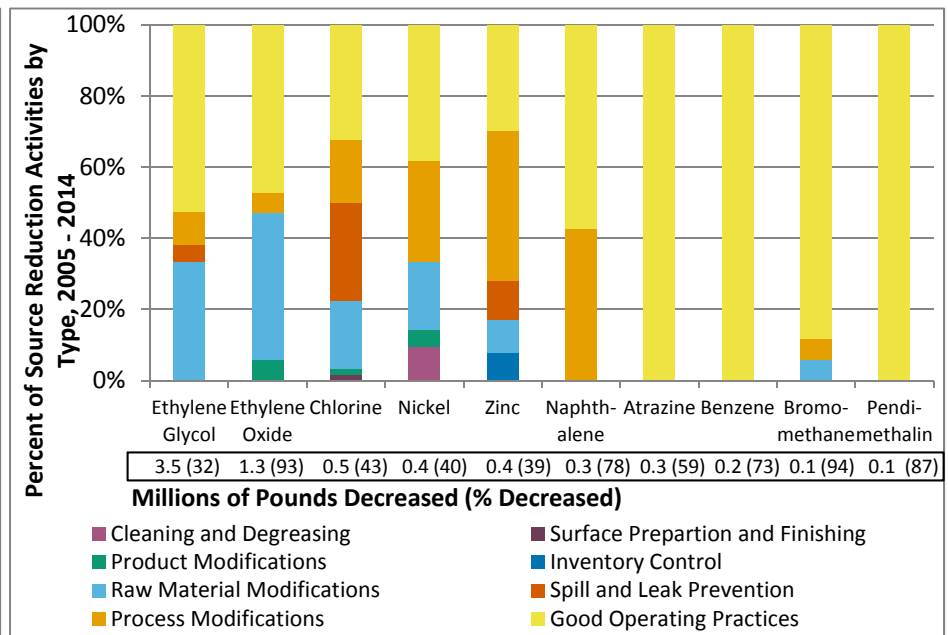
Source Reduction Activities for Chemicals Resulting in the Largest Decrease in Waste Managed – Automotive Manufacturing Industry, 2005-2014



- Surface Preparation and Finishing,
- Raw Material Modifications,
- Inventory Control.

## Food

Source Reduction Activities for Chemicals Resulting in the Largest Decrease in Waste Managed – Food Manufacturing Industry, 2005-2014



- Process Modifications,
- Raw Material Modifications,
- Good Operating Practices.



# Industry Profile: Barriers

## Auto

### Top Ten Chemicals with No Source Reduction Activities Reported - Automotive Manufacturing Industry

Rank	Chemical	Total Waste Managed 2005-2014
1	Aluminum Oxide (Fibrous Forms)	13,142,042
2	Cumene	957,091
3	Polychlorinated Alkanes	740,519
4	Sodium Dimethyldithiocarbamate	452,641
5	1,1-Dichloro-1-Fluoroethane	282,866
6	N,N-Dimethylformamide	219,376
7	3-Iodo-2-Propynyl Butylcarbamate	162,679
8	Chlorine Dioxide	147,516
9	Chlorine	141,804
10	Cyanide Compounds	105,662

- Challenges to Source Reduction;
- Metals present in raw materials and not easily substituted.

## Food

### Top Ten Chemicals with No Source Reduction Activities Reported - Food Manufacturing Industry

Rank	Chemical	Total Waste Managed 2005-2014
1	Hydrogen Fluoride	7,176,941
2	Formic Acid	7,084,806
3	Vanadium and Vanadium Compounds	3,288,034
4	Isobutyraldehyde	949,481
5	Chloroform	869,849
6	Acrolein	851,632
7	Phenol	359,663
8	Ethylene	231,760
9	Hydrogen Cyanide	214,297
10	Xylene (mixed isomers)	212,194

- Challenges to Source Reduction;
- Need for sanitation.



# Industry Profile: Top Chemicals by Health Risk

## Auto

**Top Ten Chemicals with the Highest Potential Human Health Risk - Automotive Manufacturing Industry**

Rank	Chemical	RSEI Score in 2014
1	Chromium	16,694,967
2	Nickel	337,891
3	Diisocyanates	279,363
4	Cobalt	89,197
5	1,2,4-Trimethylbenzene	75,403
6	Benzene	35,171
7	Formaldehyde	33,624
8	Naphthalene	28,240
9	Ethylbenzene	25,360
10	Glycol ethers	23,575

## Food

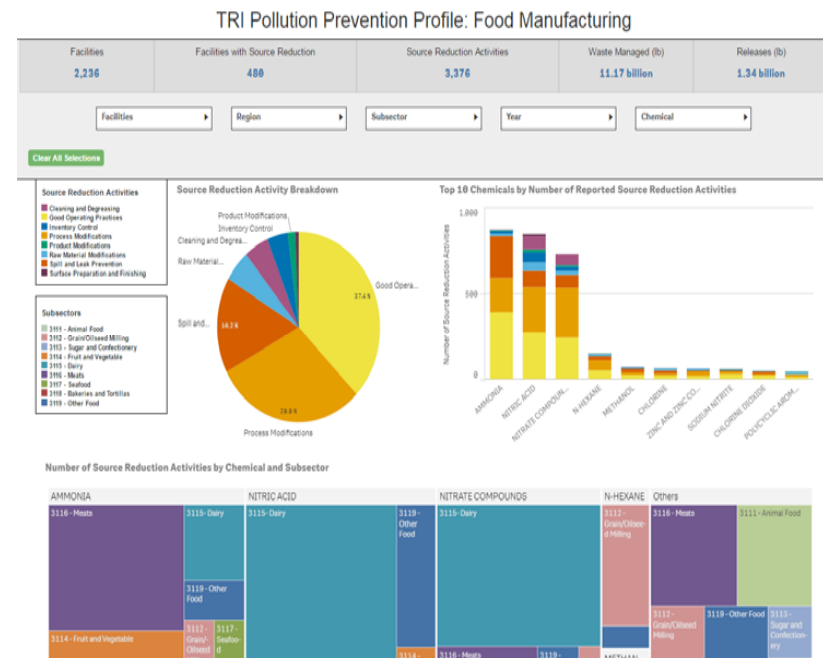
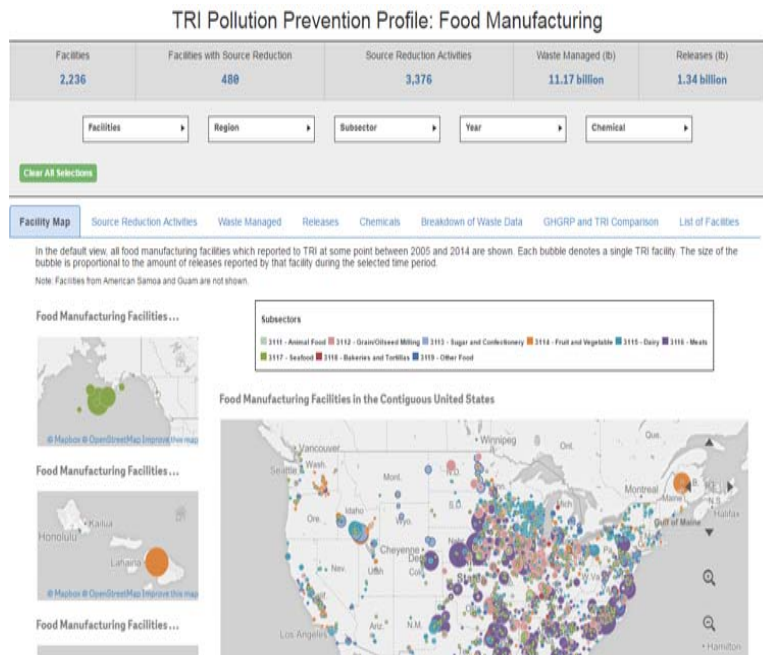
**Largest Contributing NAICS Code for the Top 10 Chemicals with the Highest Potential Human Health Risk for 2005 through 2014 – Food Manufacturing**

Rank	Chemical	RSEI Score 2005-2014	Top NAICS Code by RSEI Score
1	Acetaldehyde	3,707,147	311221 - Wet corn milling
2	Chloroform	3,449,047	311221 - Wet corn milling
3	Chromium and Chromium Compounds	2,397,452	311221 - Wet corn milling
4	Polycyclic aromatic compounds	2,365,521	311423 - Dried and dehydrated food manufacturing
5	Propylene oxide	1,785,265	311999 - All other miscellaneous food manufacturing
6	Ethylene oxide	1,576,724	311199 - Other animal food manufacturing
7	Potassium bromate	1,462,243	311999 - All other miscellaneous food manufacturing
8	Mercury and mercury compounds	1,340,908	311611 - Animal (except poultry) slaughtering
9	Sulfuric acid	915,429	311221 - Wet corn milling
10	Formaldehyde	595,844	311221 - Wet corn milling



# Coming Soon

- Final profile reports for Auto and Food Industry Sectors
- Interactive, Data visualization QlikSense tool for the Food Industry





## Your Challenge

- Provide P2 information in TRI reports
- Explore P2 data
  - Learn who is leading and lagging
  - Identify effective measures to mitigate toxic chemical use
  - Research suppliers and other companies to promote greater sustainability in business chain
  - Assess how neighboring facilities are performing
- Recognize or conduct case studies of a company/facility
- Promote “tech transfer” of P2 best practices
- Adopt similar P2 practices
- Use TRI P2 data in your analysis



# Thank You!

## TRI P2 Resources

- Sandra Gaona, Director of TRI P2 Activities:  
[Gaona.Sandra@epa.gov](mailto:Gaona.Sandra@epa.gov)
- Visit the **TRI Program's website**: [www.epa.gov/tri/p2](http://www.epa.gov/tri/p2)
  - **TRI P2 webpage**: [www.epa.gov/tri/p2](http://www.epa.gov/tri/p2)
  - **TRI National Analysis**: [www.epa.gov/trinationalanalysis](http://www.epa.gov/trinationalanalysis)
- Check out the **TRI Pollution Prevention (P2) Search Tool**:  
[www.epa.gov/enviro/facts/tri/p2.html](http://www.epa.gov/enviro/facts/tri/p2.html)





# **APPENDIX**

## **Screenshots for How to Conduct an Industry Analysis**



# Industry Analysis

**Scenario:** What's the latest P2 information reported by facilities in the Electrical Equipment sector?

## Search Criteria

Show P2 info for facilities  Show P2 info for parent companies

Select one or more Industry Sector(s):

Electrical Equipment (335) x

Select one or more Chemical(s) or Chemical Group(s) :

All Chemicals

Select one or more Year(s):

2014 x

Select one or more State(s):

All States

Enter a ZIP Code or City Name:

Show P2 Activities

Display Facility Comparison

Clear

**Enter selection criteria – Industry and latest reporting year**

**Click Show P2 Activities**



# P2 Search Results – List of Facilities

## Search Parameters and Results

List of Facilities in TRI submitting Pollution Prevention Information for Selected Criteria:

Industry: Electrical Equipment  
Year: 2014

P2 Text Filters: [i](#)

Show information about source reduction AND other environmental practices ▼

Year-to-Year Comparison: Total Release [displayed currently] ▼

Default selections.  
Click to change

Filter Results

Export Results

Copy CSV Excel PDF Print

Show 10 entries

Showing 1 to 10 of 244 entries

Search Results

Facility Name	Address	Chemical Name	Prior Year Release *	Current Year Release *	Percent Change	Pollution Prevention Information (Activity Codes/Text/[Reduction])	P2 Report
HOFFMAN ENCLOSURES INC D/B/A PENTAIR EQUIPMENT PROTECTION (PENTAIR INC)	1000 N ST, ANOKA, MN 55303	Chromium	979.00	0	-100%	Recycling: Starting July 1st, 2013 Hoffman Enclosures, Inc. d/b/a Pentair Equipment Protection began recycling Stainless Steel dusts at Alter Metal Recycling in Anoka, MN.	P2 Details
HOFFMAN ENCLOSURES INC D/B/A PENTAIR EQUIPMENT PROTECTION (PENTAIR INC)	1000 N ST, ANOKA, MN 55303	Nickel	705.00	0	-100%	Starting on July 1st, 2013 Hoffman Enclosures, Inc d/b/a Pentair Equipment Protection began recycling all stainless steel dust at Alter Metal Recycling in Anoka, MN.	P2 Details
SUMITOMO ELECTRIC WIRING SYSTEMS INC (SUMITOMO ELECTRIC WIRING SYSTEMS INC)	796 SMITHS GROVE RD, SCOTTSVILLE, KY 42164	Copper	5.00	0	-100%	W15: Introduced an in-line product quality monitoring or other process analysis system [-0-4%]	P2 Details



# P2 Search Results – Refined List of Facilities

Filtered for Source Reduction Only

Filtered for Chemical of interest

List of Facilities in TRI submitting Pollution Prevention Information for Selected Criteria:

Industry: Electrical Equipment

Year: 2014

P2 Text Filters: [i](#)

Only show information about source reduction activities

Year-to-Year Comparison: Total Release [displayed currently]

Copy CSV Excel PDF Print

Show 10 entries

Showing 1 to 10 of 17 entries (filtered from 201 total entries)

Search Results **antimony**

Facility Name	Address	Chemical Name	Prior Year Release	Current Year Release	Percent Change	Pollution Prevention Information (Activity Codes/Text/Reduction)	P2 Report
CHAMPLAIN CABLE TEXAS (CHAMPLAIN CABLE CORP)	9560 PLAZA CIRCLE, EL PASO, TX 79927	Antimony Compounds	4,076.00	488.00	-88.03%	<p><i>W19: Other changes in operating practices[-0-4%] - Improved production controls to reduce scrap rate.</i></p> <p><i>Source Reduction: Improved operator controls and instituted an employee bonus program to reduce scrap rate on manufactured items.</i></p>	P2 Details
DEKORON WIRE & CABLE LLC (BERKSHIRE HATHAWAY INC)	1300 IND US TRIAL RD, MOUNT PLEASANT, TX 75455	Antimony Compounds	8,521.00	3,719.00	-56.35%	<p><i>W14: Changed production schedule to minimize equipment and feedstock changeovers</i></p> <p><i>W15: Introduced an in-line product quality monitoring or other process analysis system - We continue to use the ODEX monitoring systems in an effort to eliminate waste and scrap.</i></p> <p><i>W22: Began to test outdated material - continue to use if still effective</i></p> <p>Method(s) to Identify P2 Activities: <i>T10 [Vendor Assistance] - Material close to reaching shelf life was returned to the compounder so it could be reworked which extended the shelf life, eliminating the need to scrap.</i></p>	P2 Details

Click on P2 Details for a facility level report



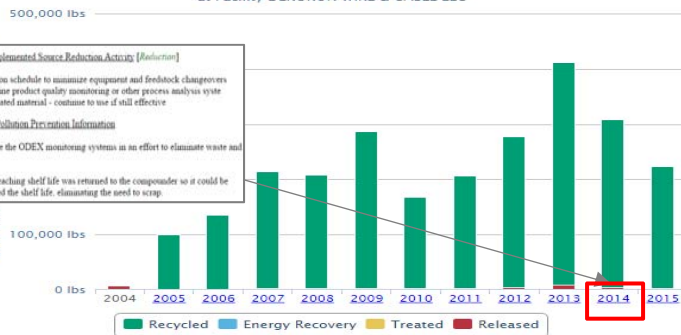
# P2 Facility-level Report for an Individual Chemical

## Production Related Waste Management for Selected Chemical

Show P2 data for other chemicals at this facility:

View data for other or all chemicals

Management of Antimony Compounds at Facility DEKORON WIRE & CABLE LLC



**Section 8.10: Newly Implemented Source Reduction Activity [Production]**  
 W14: Changed production schedule to minimize equipment and feedstock changeovers  
 W15: Introduced an in-line product quality monitoring or other process analysis system  
 W22: Began to test outdated material - continue to use if still effective

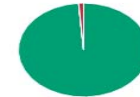
**Section 8.11: Optional Pollution Prevention Information**  
 W15: We continue to use the ODEX monitoring systems in an effort to eliminate waste and scrap.  
 T10: Material close to reaching shelf life was returned to the compounder so it could be reworked which extended the shelf life, eliminating the need to scrap.

Click year to see P2 info

- Chart Options:**
- Display waste quantities only
  - Display production index
  - Normalize waste quantities relative to production
  - Display waste quantities as a percentage of total waste

Waste Management Comparison - Select Year: 2014

DEKORON WIRE & CABLE LLC  
Total for Antimony Compounds: 307,211 lbs



Recycled  
Energy Recovery  
Treated  
Released

All Other Other Communication and Energy Wire Manufacturing  
54 other TRI reporters, 31 reporting Antimony Compounds  
Total for Antimony Compounds: 517,100 lbs



Recycled  
Energy Recovery  
Treated  
Released

Find **more P2 activities** for this industry and chemical  
 Display **facility comparison report** for this industry and chemical  
 Display **facility comparison report** for this parent\_company

View comparison report

## Pollution Prevention Activities for Selected Chemical

Reporting Year	Section 8.10: Newly Implemented Source Reduction Activity	Section 8.10: Methods to Identify Activity	Section 8.11: Optional Pollution Prevention Information*
2015	W14: Changed production schedule to minimize equipment and feedstock changeovers W22: Began to test outdated material - continue to use if still effective W15: Introduced an in-line product quality monitoring	T04: Participative team management T05: Employee recommendation (independent of a formal company program) T10: Vendor assistance T10: Vendor assistance	Source Reduction: Dekoron continues to maintain and utilize the ODEX monitoring systems on our manufacturing lines in an effort to help eliminate waste and scrap. We continue the practice of returning materials close to their expiring shelf life, to the compounder so material can be reworked and extending the shelf life.



Facility Comparison Report for TRI Facilities Meeting Selected Criteria:

# Facility Comparison Report

**Industry:** Other Communication and Energy Wire Manufacturing  
**Chemical:** Antimony Compounds  
**Year:** 2014

32 facilities meet these criteria and are displayed below. 8 of them reported P2 in 2014. [Show P2 Activities](#)

Select one of the (other) top chemicals reported by this sector(s):

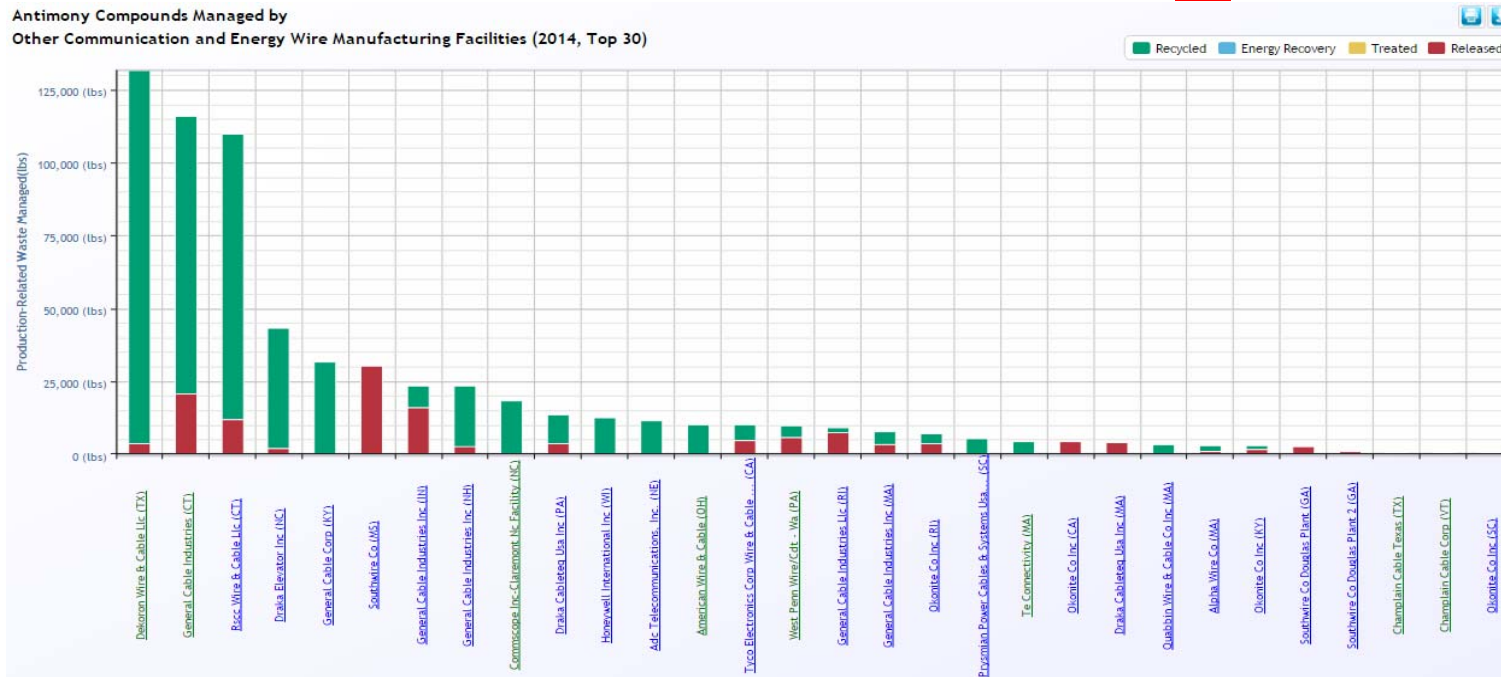
Display Data In:  Chart  Table  Map

Chart Options:  Facilities to Display:

Change display options

Use the slider bar to adjust the Y-axis (zoom in):

Antimony Compounds Managed by  
Other Communication and Energy Wire Manufacturing Facilities (2014, Top 30)



Quantities and management of chemical waste

P2 implementation



# Facility Comparison Report

Showing waste managed and 5-year normalized waste trend\*

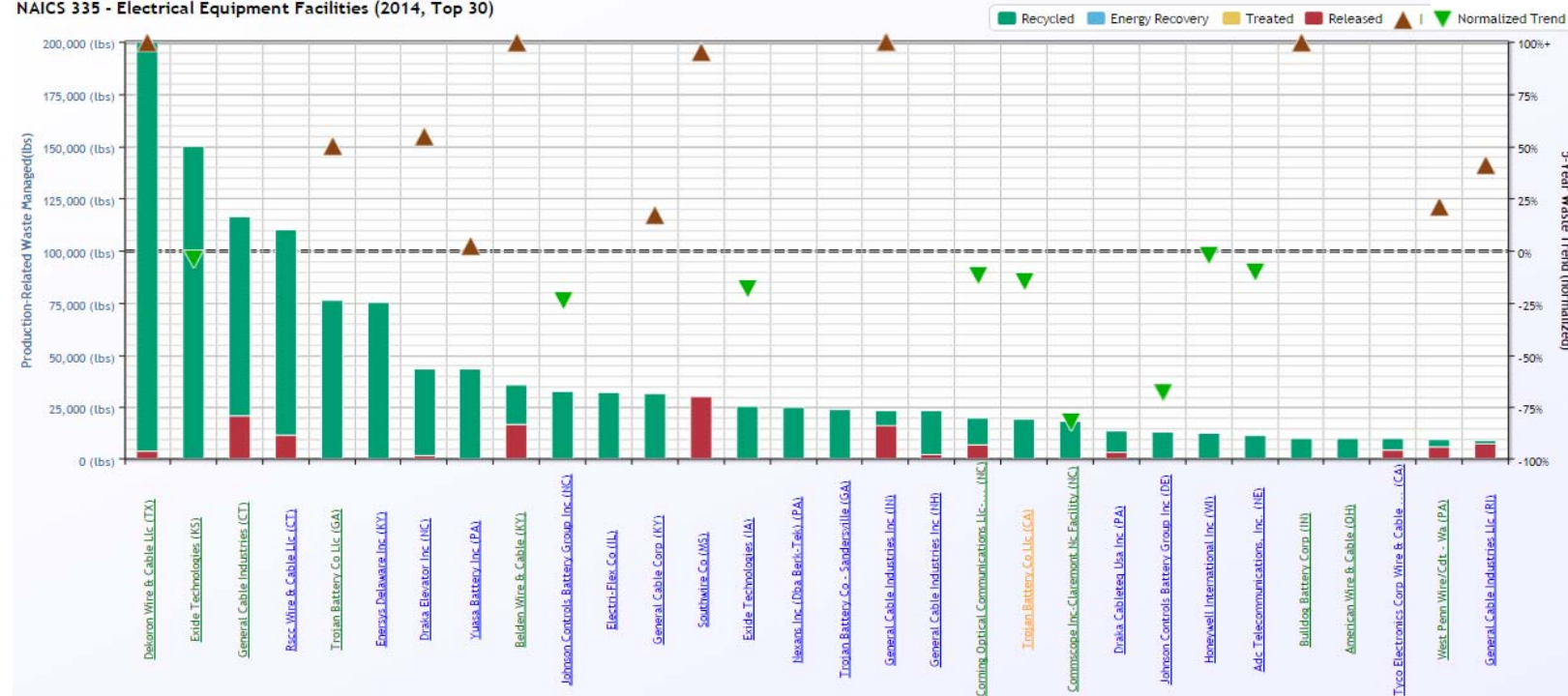
Display Data In:  Chart  Table  Map

Chart Options:  Facilities to Display:

The normalized 5-year waste trend represents the change in production-related waste over the past 5 years after normalizing for changes in production.

Use the slider bar to adjust the Y-axis (zoom in):

Antimony Compounds Managed by  
NAICS 335 - Electrical Equipment Facilities (2014, Top 30)



\*See other chart options and features



# P2 Facility-level Report for all Chemicals

## Production Related Waste Management for Selected Facility

Show P2 data for specific chemicals at this facility:

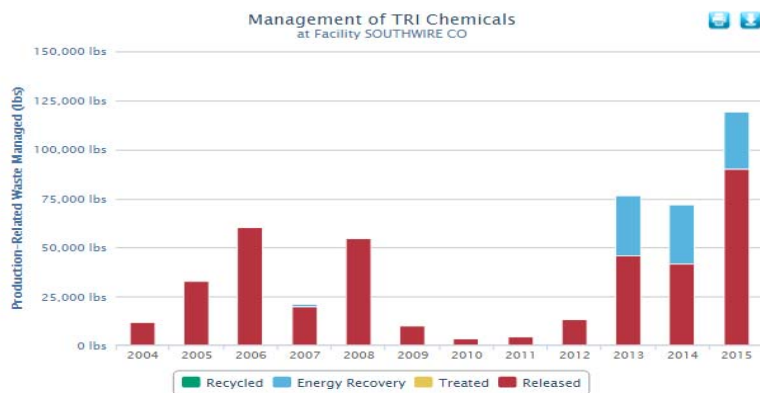


Chart Options:  
 Display waste quantities only  
 Display waste quantities as a percentage of total waste

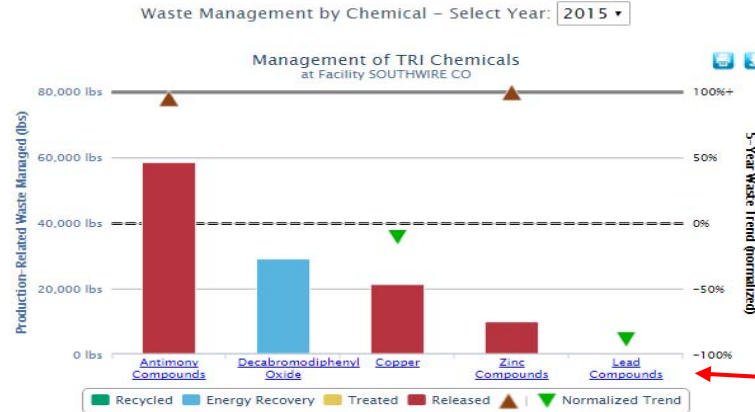


Chart Options:  
 Display waste quantities only  
 Display waste quantities as a percentage of total waste  
 Display 5-Year Waste Trend  
 Display 5-Year Waste Trend Normalized

All chemicals reported by the facility

## Pollution Prevention Activities for Selected Facility

List all P2 activities for this facility

Chemical Name	P2 Report	5-Year Waste Trend	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
ANTIMONY COMPOUNDS	P2 Details	31%	P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	P2	P2
COPPER	P2 Details	-24%	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	P2
DECABROMODIPHENYL OXIDE	P2 Details	100+%	P2	No P2	No P2	No P2	No P2	No P2	-	No P2	No P2	No P2	-	-	-	-	-	-	-	-
LEAD COMPOUNDS	P2 Details	-95%	P2	P2	No P2	P2	P2	P2	P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	P2	P2
ZINC COMPOUNDS	P2 Details	33%	P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2	No P2

- P2: P2 information provided on Form R
- No P2: No P2 information provided on Form R
- P2: Barriers reported
- -: Form R not submitted

View P2 text entries





# Industry Analysis

Scenario: How did facilities in the Electrical Equipment sector perform?

## Search Criteria

Show P2 info for facilities  Show P2 info for parent companies

Select one or more Industry Sector(s):

Electrical Equipment (335) x

Select one or more Chemical(s) or Chemical Group(s) :

All Chemicals

Select one or more Year(s):

2014 x

Select one or more State(s):

All States

Enter a ZIP Code or City Name:

Show P2 Activities

Display Facility Comparison

Clear

View facility comparison for all chemicals or specify one.

Click Display Facility Comparison