



The Toxics Release Inventory and Emissions Reduction Measures

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Review: What is TRI?

- TRI tracks the management of certain toxic chemicals
- U.S. facilities in certain sectors report how much of each chemical is released and/or managed as waste



Releases



Waste transfers



Recycling



Pollution prevention



- TRI includes data about approximately **20,000 facilities** across the country and covers more than **675 toxic chemicals**.

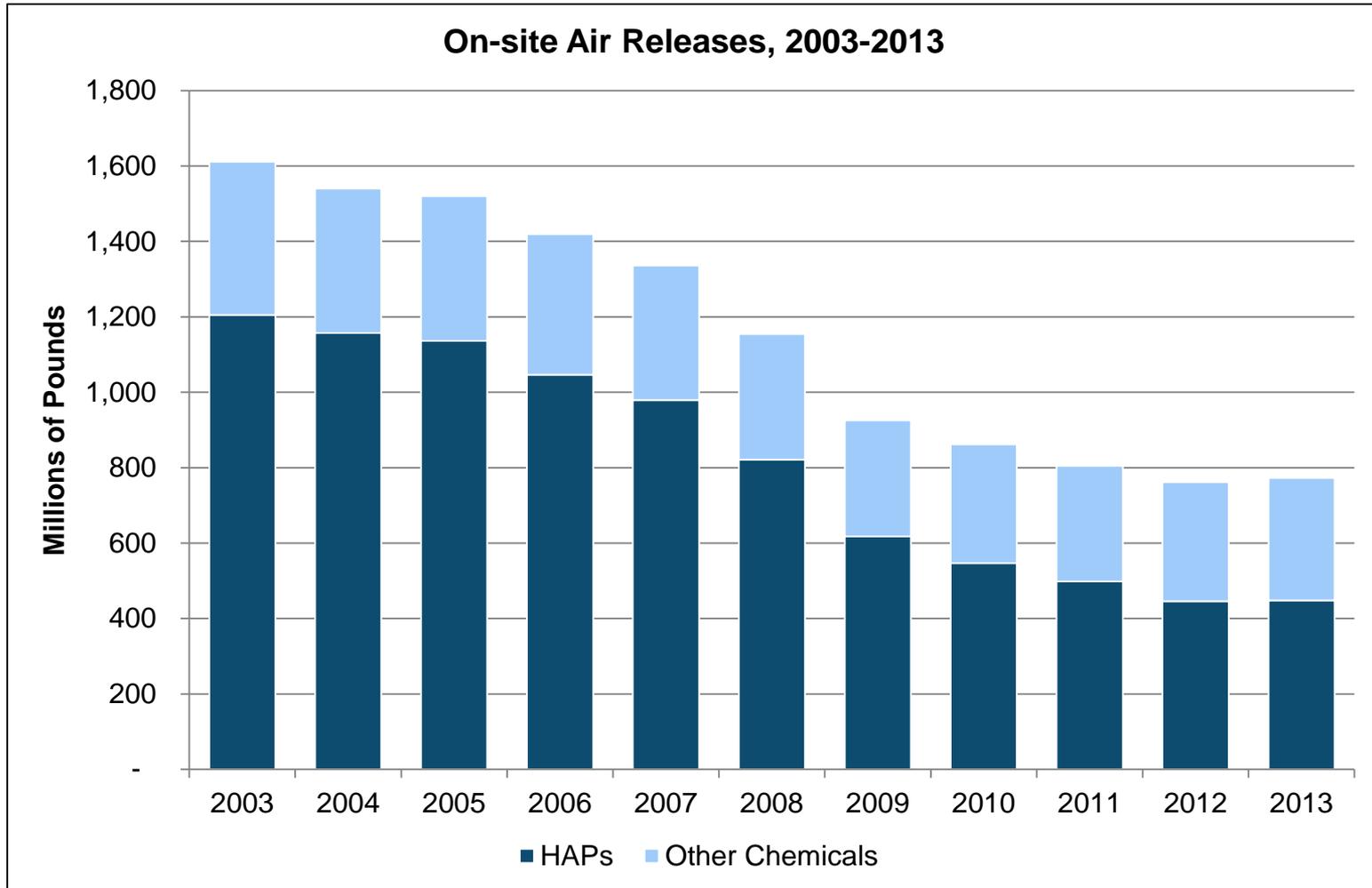


What Emissions Data Does TRI Collect?

- Total chemical fugitive (non-point) air emissions and total chemical stack (point) air emissions
- Basis of estimate for air emissions (e.g., published emission factors, monitoring)
- On-site treatment methods and associated destruction or removal efficiency
 - Treatment methods are reported using 25 codes that correspond to treatment activities
 - Treatment efficiencies are reported using six codes that correspond to six efficiency ranges

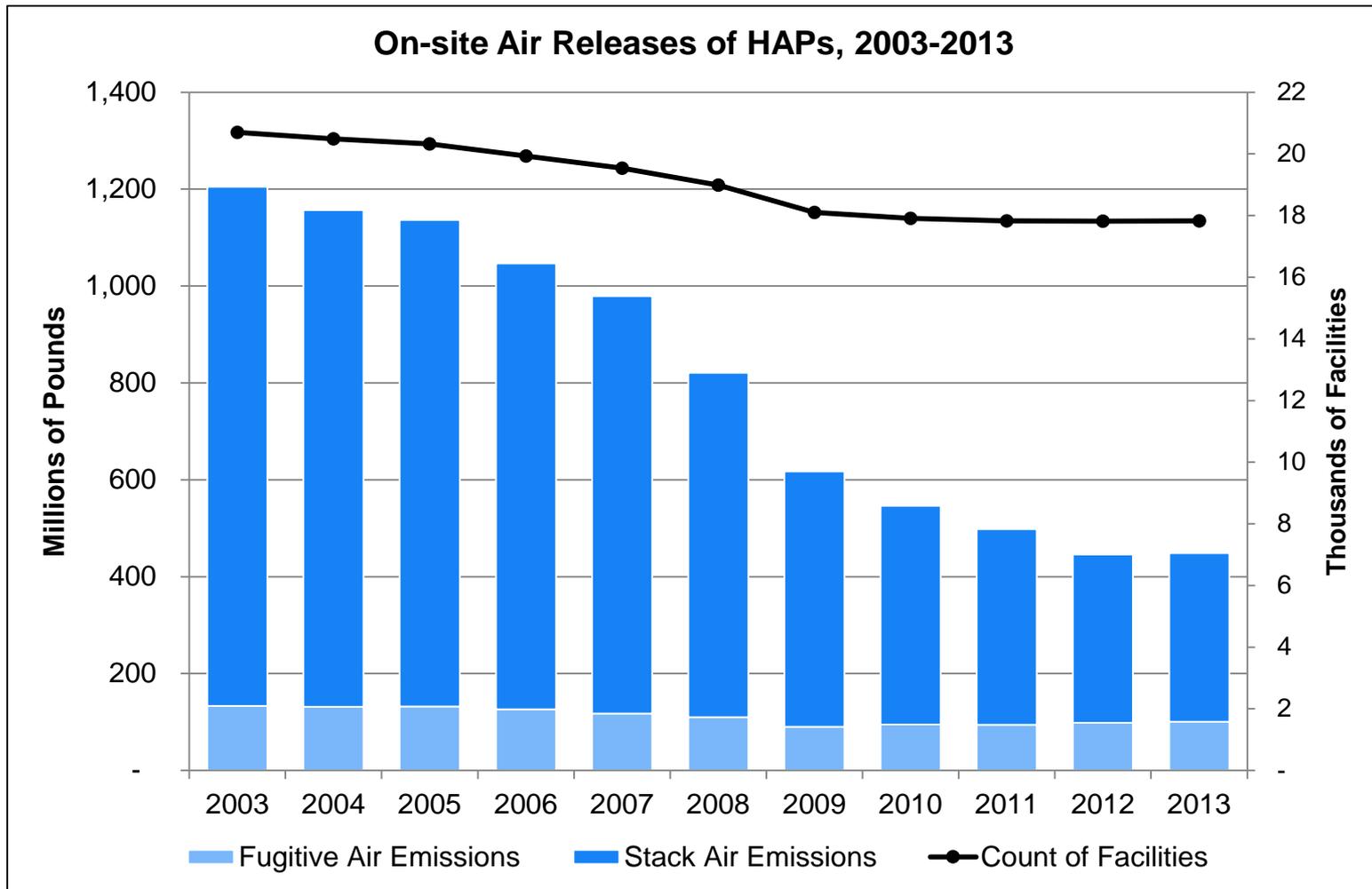


TRI Emissions Trend, 2003-2013



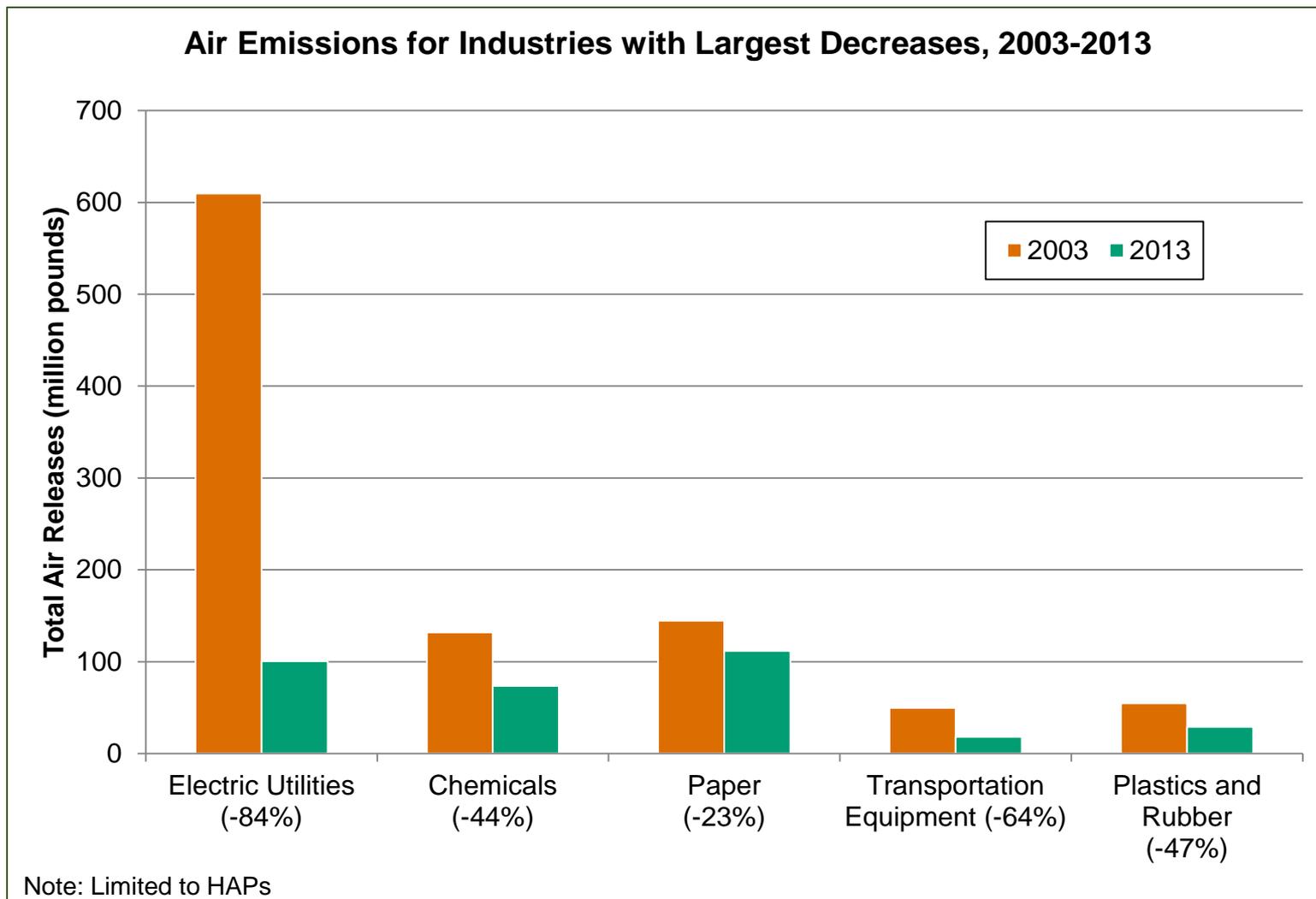


Fugitive and Stack Emissions



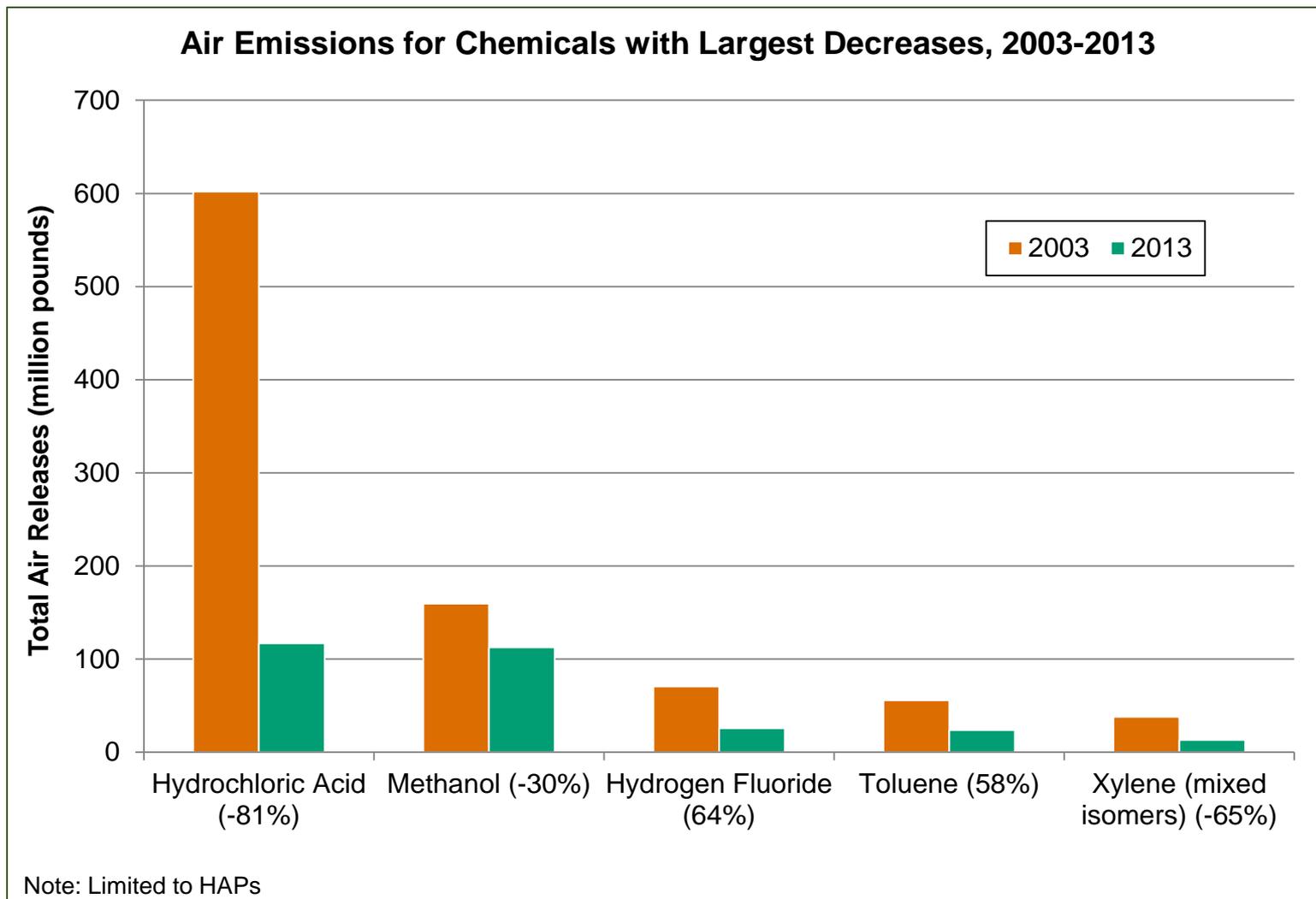


Largest Decreases by Sector





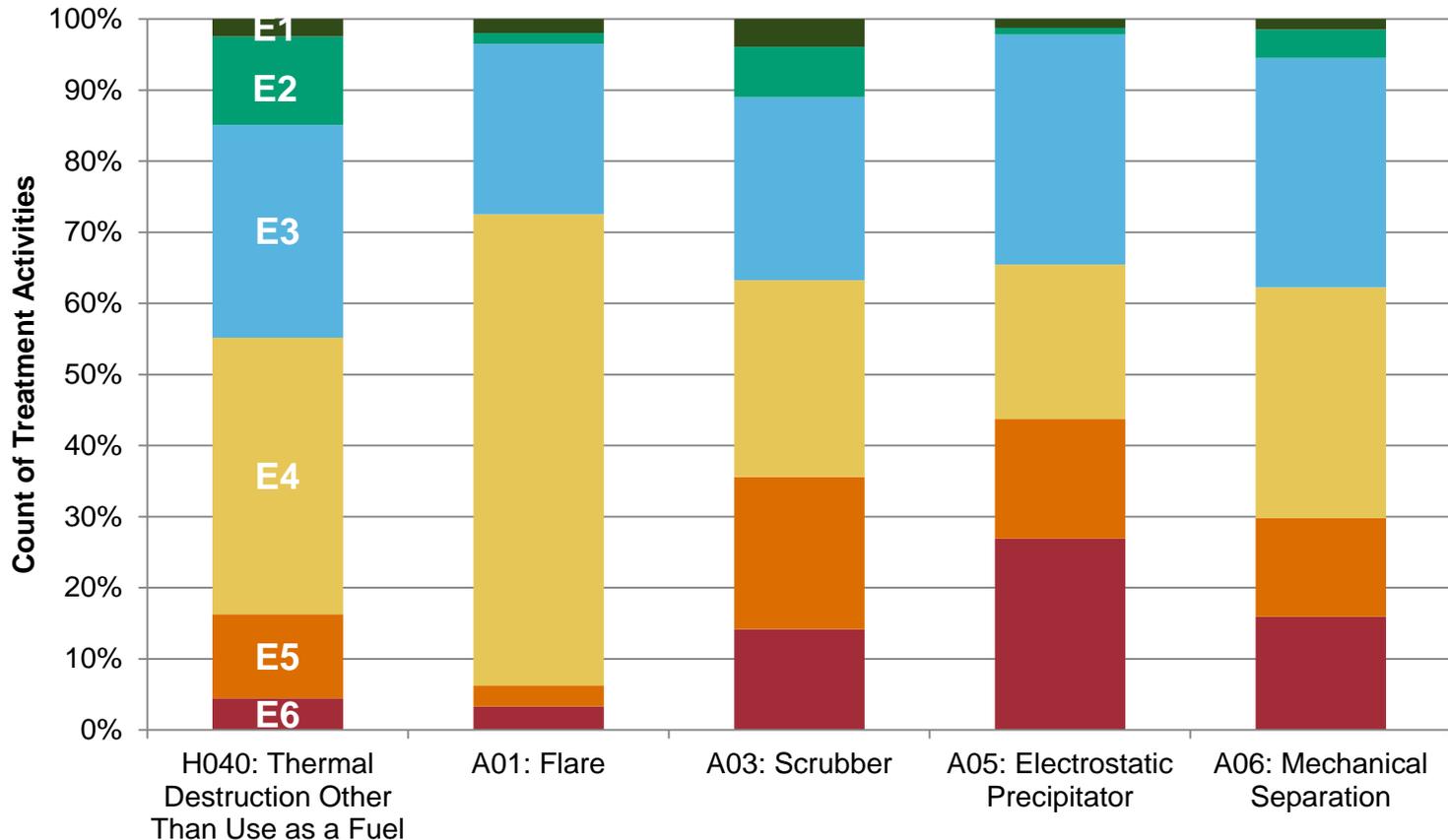
Largest Decreases by Chemical





Treatment Efficiencies for HAPs

Reported Efficiency Codes for Top Treatment Methods, 2013

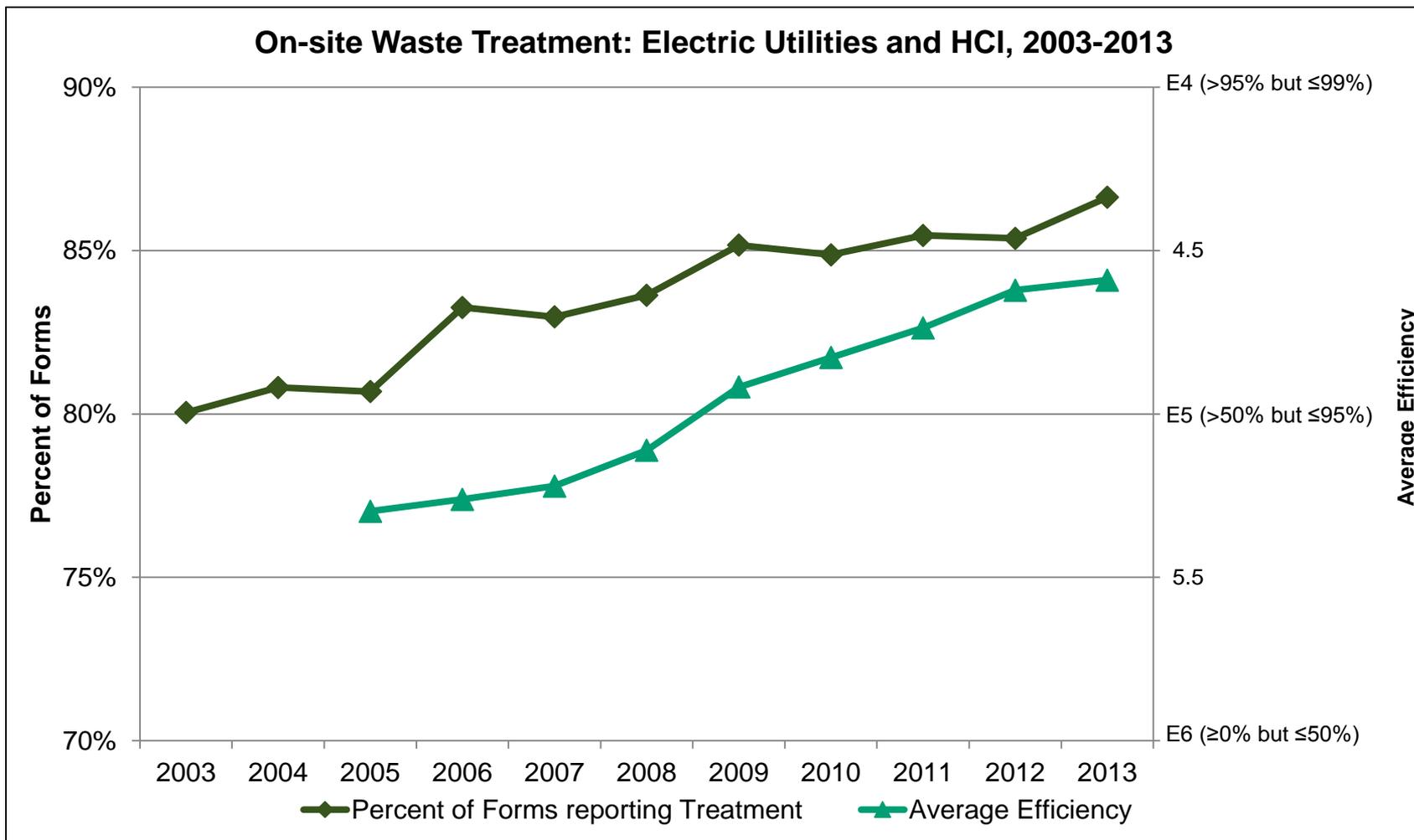


Efficiency Categories

E1: >99.9999%	E4: >95% but ≤ 99%
E2: >99.99% but ≤ 99.9999%	E5: >50% but ≤ 95%
E3: >99% but ≤ 99.99%	E6: ≥0% but ≤ 50%



Treatment of HCl at Electric Utilities

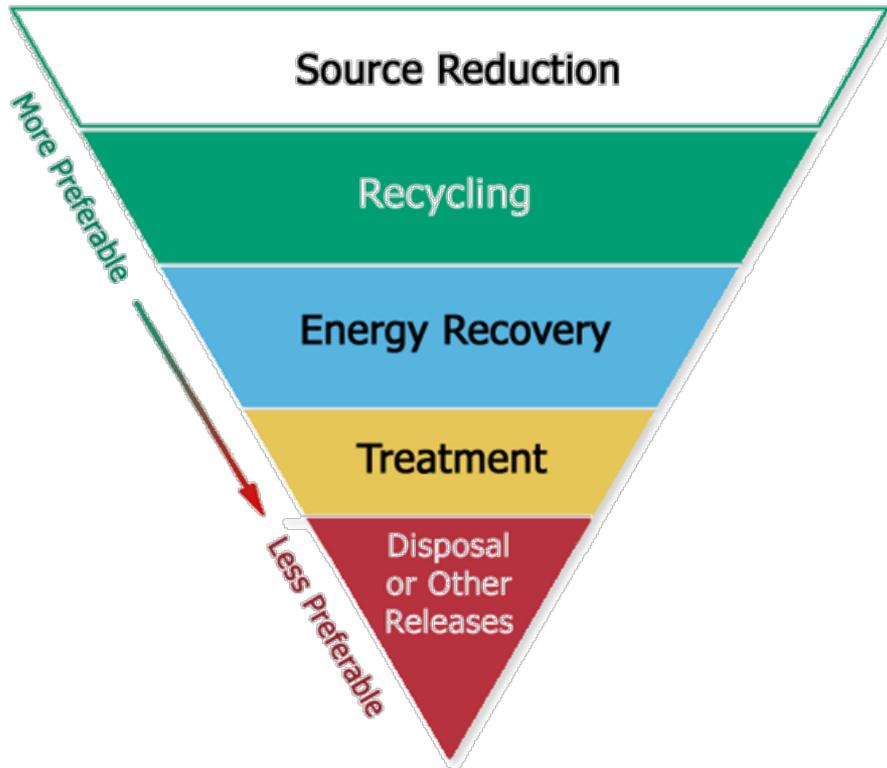


Frequency with which scrubber use was reported increased 64% from 2005-13.



TRI's Pollution Prevention (P2) Data

Waste Management Hierarchy



The Pollution Prevention Act

- Sets out hierarchy of preferred waste management techniques
- Tracks each TRI facility's progress up the hierarchy
- Provides an opportunity to publicly highlight steps a facility takes to reduce toxic chemical releases to the environment



What P2 Data Does TRI Collect?

- **Waste Management Quantities**
 - Prior Year, Current Year, and Future Years (projections)
- **Production Ratio**
 - Ratio of current year production or activity to previous year
 - Puts changes in releases into context of production
- **Source Reduction Activities**
 - Codes corresponding to specific types of activities (required if any P2 activities were newly implemented during the reporting year)
- **Optional Pollution Prevention Information**
 - Additional detail about P2, recycling, or pollution control (free-text)

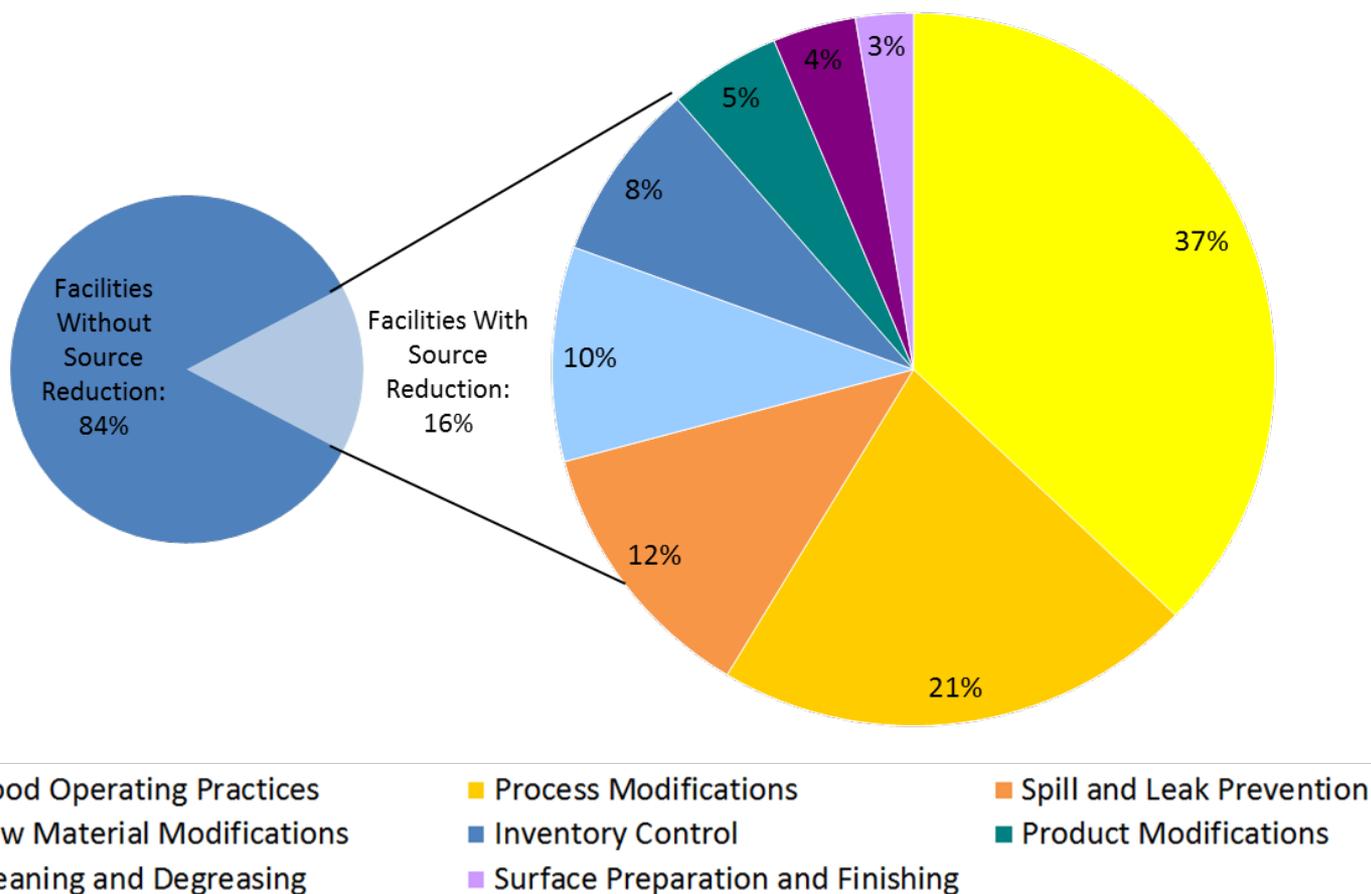


Source Reduction Reporting: 2013

Newly Implemented Source Reduction Practices, 2013

Facilities Reporting to TRI

Source Reduction Activities Reported





Optional P2 Descriptions from 2013

Process Modifications

- A [rubber product manufacturer](#) installed three natural gas boilers and decommissioned two #6 fuel oil boilers to reduce emissions. The change was made in September 2013 and resulted in a 36% reduction in benzo(g,h,i)perylene emissions from the previous year.

Surface Preparation and Finishing

- By changing to an immersion acid process instead of using spray acid equipment, a [semiconductor manufacturer](#) reduced emissions of aerosolized hydrochloric acid.

Waste Treatment and Leak Detection

- A [chemicals manufacturer](#) installed a new emissions scrubber system for capturing methanol emissions for re-use in their process. Testing shows emission control efficiency of >95%. The facility also implemented an LDAR program to identify VOC leaks.

TRI National Analysis

- Presents national trends in P2 reporting
- Highlights industries and chemicals with significant decreases in releases
- Presents air release trends

TRI P2 Tool

- Identify P2 activities
- Visually compare P2 performance at the facility and corporate level

You are here: [EPA Home](#) » [Toxics Release Inventory \(TRI\) Program](#) » [2013 TRI National Analysis: Introduction](#)

2013 TRI National Analysis: Introduction

[español](#) >

Introduction & Summary

[Pollution Prevention & Waste Management](#)

[Releases of Chemicals](#)

[Industry Sectors](#)

[Where You Live](#)

[TRI & Beyond](#)

Tens of thousands of chemicals are used by industries and businesses in the United States to make the products on which our society depends, such as pharmaceuticals, clothing, and automobiles. Many of the chemicals needed to create these products are toxic, and while the majority of toxic chemicals are managed so that they are not released into the environment, some releases of toxic chemicals are inevitable.

It is your right to know what toxic chemicals are being used in your community, how they are being disposed of or otherwise managed, and whether their releases to the environment are increasing or decreasing over time. The Toxics Release Inventory (TRI) is an EPA program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. This information is submitted by thousands of U.S. facilities on over [650 chemicals and chemical categories](#) under the [Emergency Planning and Community Right-to-Know Act \(EPCRA\)](#) and the [Pollution Prevention Act \(PPA\)](#).

What is the TRI National Analysis?



Download the Report

- [Full 2013 TRI National Analysis](#)
- [Executive Summary](#)

Other Resources

- [Supporting data files for the National Analysis](#)
- [TRI National Analysis Briefing Slides](#)
- [TRI National Analysis Questions and Answers](#)
- [National Analysis Archive](#)



Questions That TRI's P2 Tool Can Address

Industry or Chemical-Specific

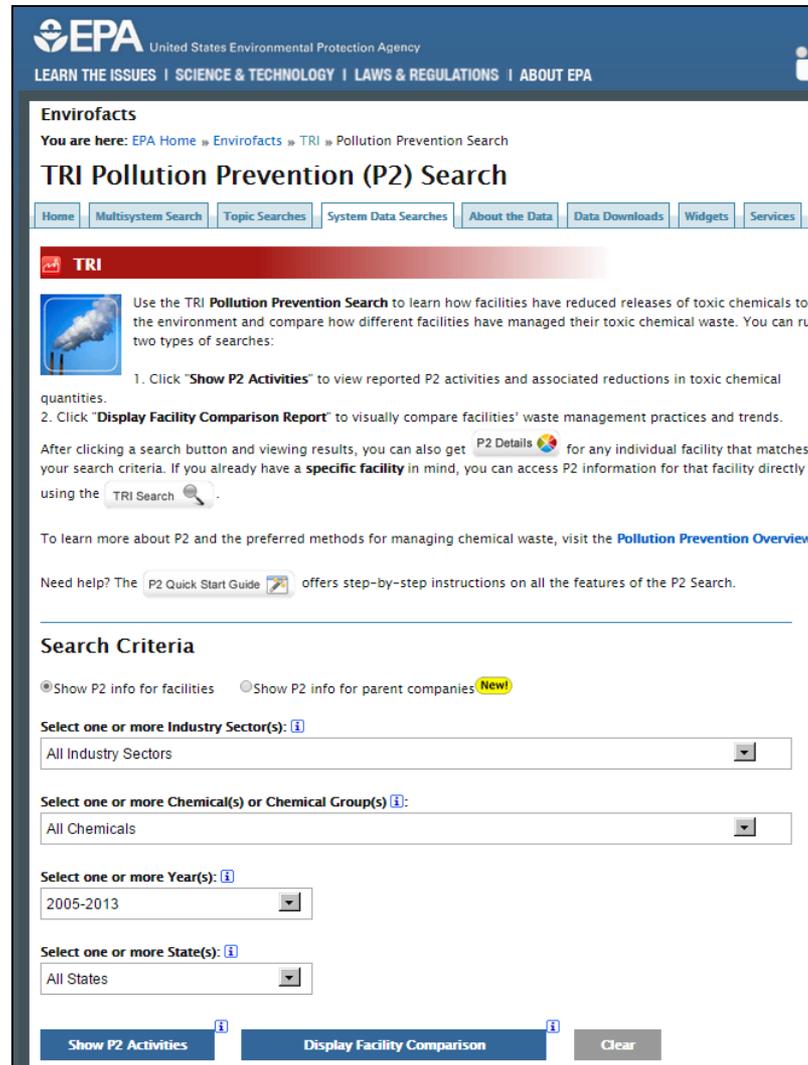
- How have toxic chemical releases for a specific industry or chemical changed over time?
- How do different facilities or companies compare in terms of waste generation and waste management practices?
- What P2 activities have contributed to the biggest reductions?

Facility-Specific

- Have toxic chemical releases at a particular facility gone up or down over time?
- Were changes in releases driven by changes in production? Did P2 practices play a role?
- How do the facility's TRI and GHGRP trends compare?



TRI P2 Search Tool



The screenshot shows the EPA website's TRI P2 Search Tool. 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, and Services. A red banner with the TRI logo is present. The main content area includes a description of the search tool, a list of two steps for using it, and a section for search criteria. The search criteria section has radio buttons for "Show P2 info for facilities" (selected) and "Show P2 info for parent companies" (marked as "New!"). There are four dropdown menus: "Select one or more Industry Sector(s)" (All Industry Sectors), "Select one or more Chemical(s) or Chemical Group(s)" (All Chemicals), "Select one or more Year(s)" (2005-2013), and "Select one or more State(s)" (All States). At the bottom, there are three buttons: "Show P2 Activities", "Display Facility Comparison", and "Clear".

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TRI

TRI Pollution Prevention (P2) Search

Home | Multisystem Search | Topic Searches | System Data Searches | About the Data | Data Downloads | Widgets | Services

Use the **TRI Pollution Prevention Search** to learn how facilities have reduced releases of toxic chemicals to the environment and compare how different facilities have managed their toxic chemical waste. You can run two types of searches:

1. Click "**Show P2 Activities**" to view reported P2 activities and associated reductions in toxic chemical quantities.
2. Click "**Display Facility Comparison Report**" to visually compare facilities' waste management practices and trends.

After clicking a search button and viewing results, you can also get **P2 Details** for any individual facility that matches your search criteria. If you already have a **specific facility** in mind, you can access P2 information for that facility directly using the **TRI Search**.

To learn more about P2 and the preferred methods for managing chemical waste, visit the **Pollution Prevention Overview**.

Need help? The **P2 Quick Start Guide** offers step-by-step instructions on all the features of the P2 Search.

Search Criteria

Show P2 info for facilities Show P2 info for parent companies **New!**

Select one or more **Industry Sector(s)**:
All Industry Sectors

Select one or more **Chemical(s) or Chemical Group(s)**:
All Chemicals

Select one or more **Year(s)**:
2005-2013

Select one or more **State(s)**:
All States

Show P2 Activities | Display Facility Comparison | Clear

www.epa.gov/enviro/facts/tri/p2.html



Facility Comparison Example: Electric Utilities and HCl

Search Criteria

Show P2 info for facilities Show P2 info for parent companies **New!**

Select one or more Industry Sector(s): [i](#)

Electric Utilities (2211) x



Select one or more Chemical(s) or Chemical Group(s) [i](#):

Hydrochloric Acid (1995 And After "Acid Aerosols" Only) x



Select one or more Year(s): [i](#)

2005-2013



Select one or more State(s): [i](#)

All States



[i](#) Show P2 Activities

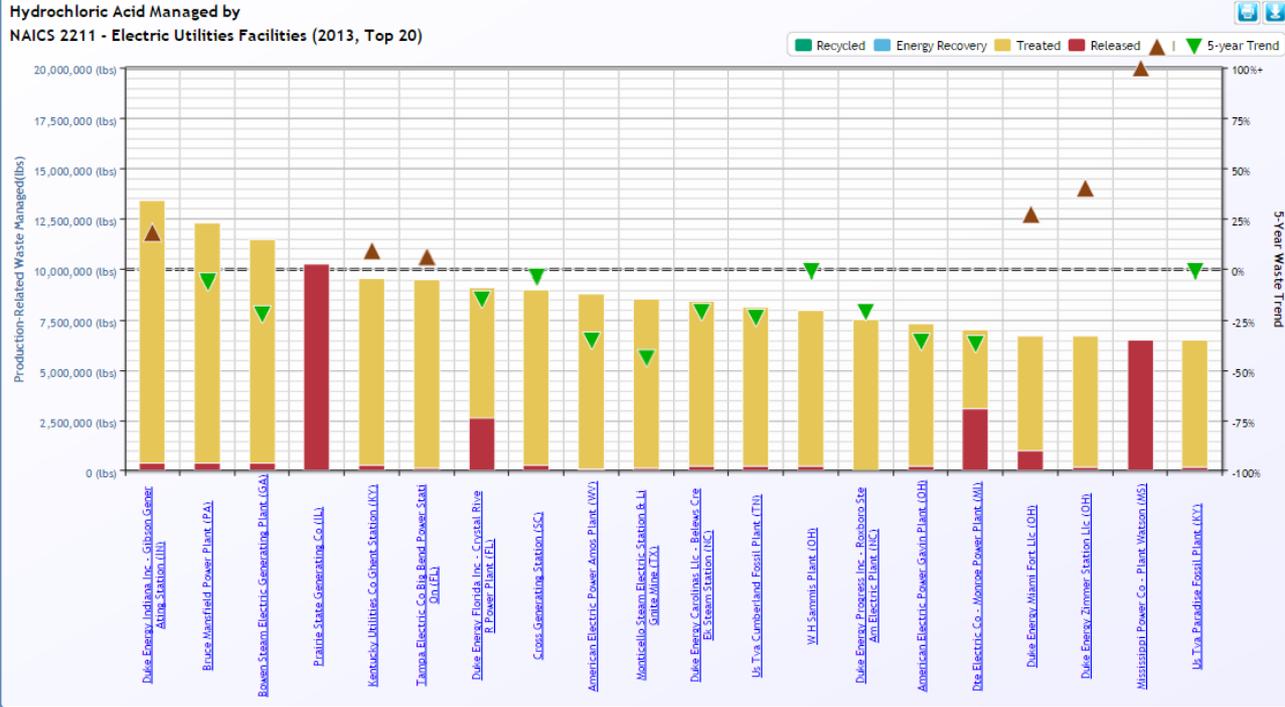
[i](#) Display Facility Comparison

Clear



The 5-year waste trend represents the change in each facility's production-related waste over the past 5 years

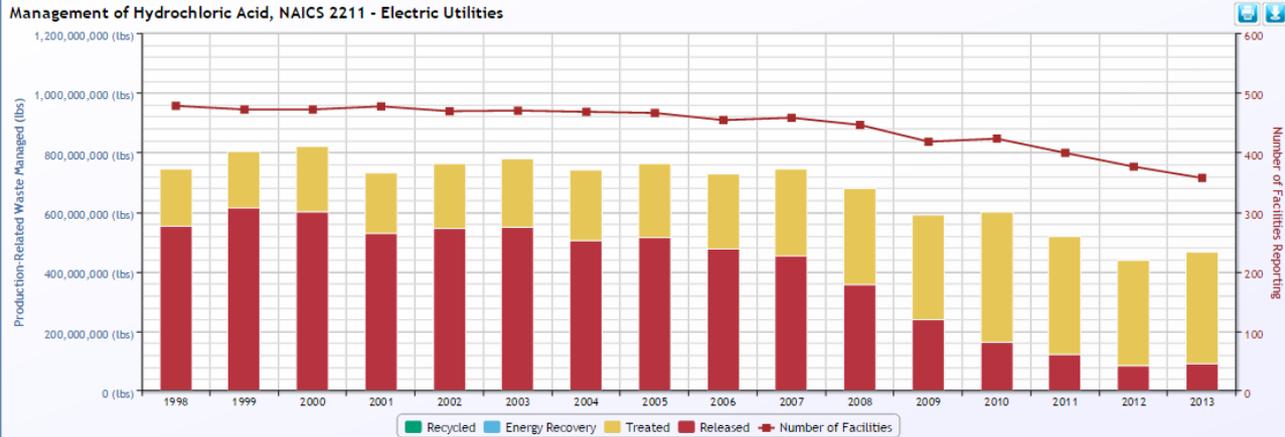
Use the slider bar to adjust the Y-axis (zoom in): 0 - 13,390,000 lbs



Click on [facility name](#) to view [P2 Details](#) for the selected chemical and year. [Green links](#) indicate the facility reported P2 activities for the selected chemical and year; [orange links](#) indicate the facility reported barriers to P2. Use [Chart Options](#) to add data to the chart (e.g., [waste trends](#), [GHG emissions](#)).

Use the slider bar to adjust the Y-axis (zoom in): 0 - 821,169,254 lbs

Hide Facility Count





P2 Activities Example: Chemical Manufacturing and Ethanol

Search Criteria

Show P2 info for facilities Show P2 info for parent companies **New!**

Select one or more Industry Sector(s): [i](#)

Chemicals (325) ✕

Select one or more Chemical(s) or Chemical Group(s) [i](#):

Methanol ✕

Select one or more Year(s): [i](#)

2013 ✕

Select one or more State(s): [i](#)

All States

Show P2 Activities **Display Facility Comparison** [i](#) **Clear**



P2 Activities Example: Chemical Manufacturing and Ethanol

Report an Error

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

Industry: NAICS 325 - Chemicals

Chemical: Methanol

Year: 2013

Additional Filters:

Exclude facilities that reported activity codes but no text descriptions

Value for Year-to-Year Comparison: Air Release [displayed currently]

- Total Waste
- Total Release
- Air Release [displayed currently]
- Land Release
- Water Release

Copy CSV Excel PDF Print

Show 10 entries

Showing 1 to 10 of 7

Search:

FACILITY NAME	ADDRESS	PRIOR YEAR AIR RELEASE *	CURRENT YEAR AIR RELEASE *	PERCENTAGE CHANGE	ADDITIONAL INFORMATION (ACTIVITY CODES/TEXT)
VANDEMARK CHEMICAL INC 	1 N TRANSIT RD, LOCKPORT, NY 14094	32.89	0	-100%	<p><i>W58: Other process modifications</i> - Methanol is not used in the manufacture of any products. It is only used to clean/dry vessels during transitions. Methanol can be used multiple times for this purpose.</p> <p>Method(s) to Identify P2 Activities: <i>T11 [Other]</i> - We have become much more efficient in re-using the methanol during transitions which has generated much less waste</p> <p>We have become much more efficient in re-using the methanol during transitions which has generated much less waste</p> <p>Methanol is not used in the manufacture of any products. It is only used to clean/dry vessels during transitions. Methanol can be used multiple times for this purpose.</p>
MONTGOMERY CHEMICALS 	901 CONSHOHOCKEN RD, CONSHOHOCKEN, PA 19428	97,077.00	10,496.00	-89.19%	<p>The facility completed the installation of a new emissions scrubber system for capturing methanol emissions for re-use in the process. Emissions control system includes venturi eductors and a packed column in series. A certified compliance test was performed in late spring of 2013 showing the scrubber with an emission control efficiency of greater than 95%.The facility also continues to monitor all regulated equipment for VOC leaks on a regular schedule according to the facility LDAR program schedule.</p>
PENRAY COS INC 	1801 ESTES AVE, ELK GROVE VILLAGE,	500.00	67.70	-86.46%	<p><i>W13: Improved maintenance scheduling, recordkeeping, or procedures</i> - N/A</p>

Pollution Prevention
Print View
P2 Quick Start Guide

Facility ID: 19428MNTGM91CNS

Facility Name and Address:
MONTGOMERY CHEMICALS
901 CONSHOHOCKEN RD
CONSHOHOCKEN, PA 19428

Parent Company: MONTGOMERY CHEMICALS

Industry: Other Basic Inorganic Chemical Manufacturing (325180)

Chemical: Methanol

Find more P2 activities for this industry and chemical
View TRI Form R submissions by this facility

*You can navigate within the map with your mouse.

Production Related Waste Management for Selected Chemical

For more on the Waste Management Hierarchy, see the [Pollution Prevention Overview](#) page

Management of Methanol at Facility MONTGOMERY CHEMICALS

Year	Recycled (lbs)	Energy Recovery (lbs)	Treated (lbs)	Released (lbs)	Production Index
2006	0	0	0	20,000	50
2007	0	0	0	30,000	80
2008	0	0	10,000	80,000	130
2009	0	0	20,000	60,000	190
2010	0	0	50,000	100,000	580
2011	0	0	60,000	120,000	420
2012	0	0	80,000	90,000	380
2013	0	0	50,000	20,000	450

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: 2013

MONTGOMERY CHEMICALS

Total for Methanol: 75,041 lbs

All other Other Basic Inorganic Chemical Manufacturing
304 other TRI reporters, 23 reporting Methanol

Total for Methanol: 12 million lbs

Find [more P2 activities](#) for this industry and chemical
Display [Facility comparison report](#) for this industry and chemical



Quantifying Impacts of P2 Activities

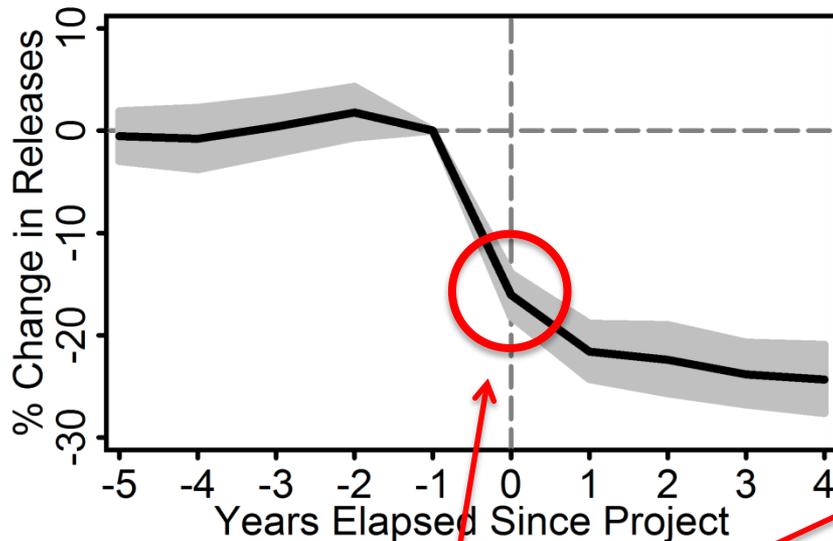
Research Project: “The Cumulative Impact of Source Reduction on U.S. Toxic Releases”

- Goal: to understand how source reduction affects facilities’ releases of toxic chemicals
 - How do the average facility’s TRI releases change when it implements a source reduction project?
 - How has source reduction affected U.S. aggregate TRI releases over the last 20 years?
- Methodology: “Differences-in-differences” approach
 - Estimates how toxic releases at each facility-chemical changed in the year before and after implementing a source reduction project
 - Controls for other facility- and industry-level factors

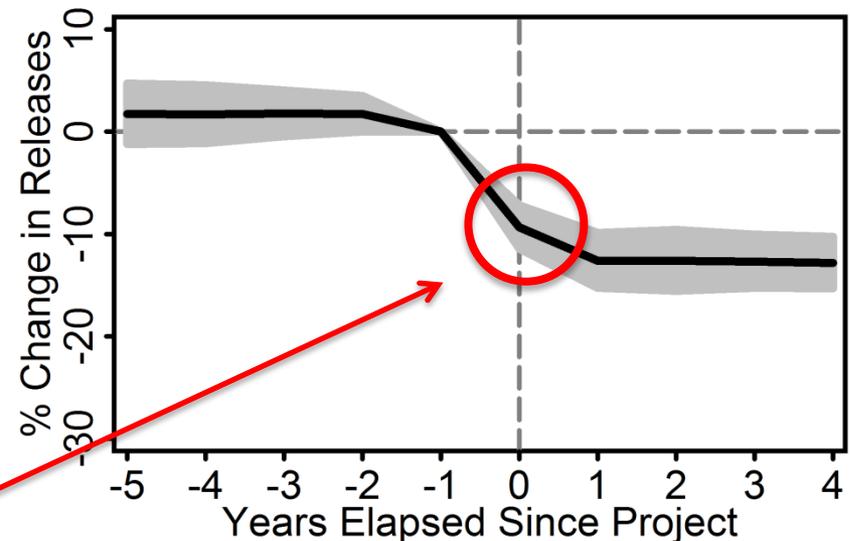


Average Impact on Facility TRI Releases

**Method 1:
Facility-Year Comparison**



**Method 2:
Industry-Chemical-Year Comparison**

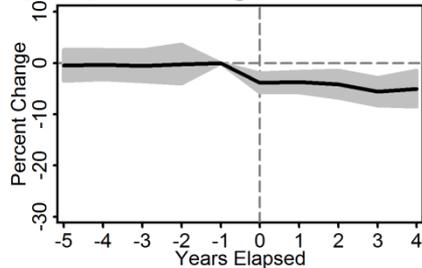


Main result: In the year a facility implements a source reduction project, its TRI releases of targeted chemicals decrease by an average of 9% to 16%

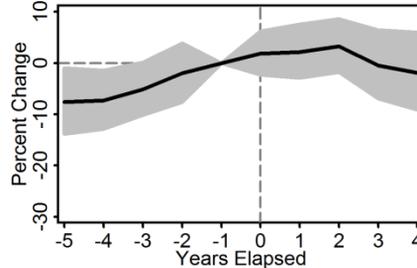


Average Impact on Air Releases, by Approach

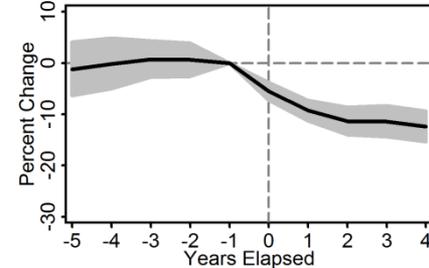
(a) Operating Practices



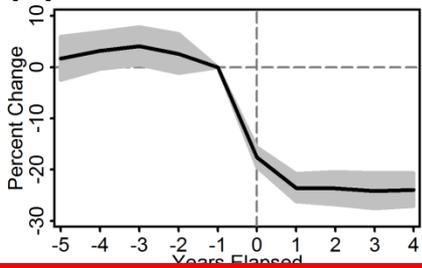
(b) Inventory Control



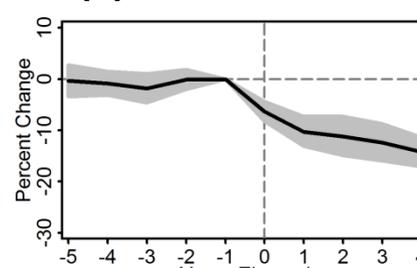
(c) Spill/Leak Prevention



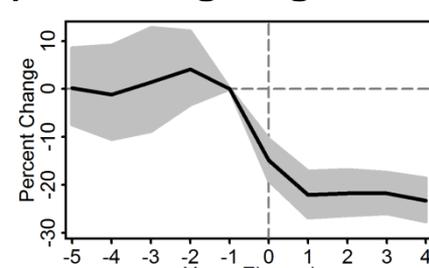
(d) Raw Material Mod.



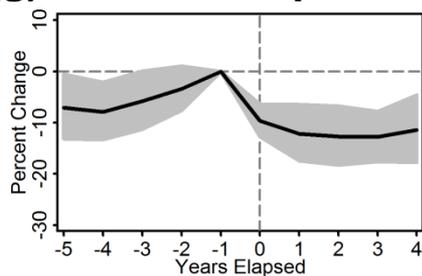
(e) Process Mod.



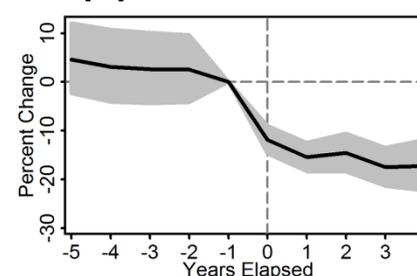
(f) Cleaning/Degreasing



(g) Surface Preparation



(h) Product Mod.

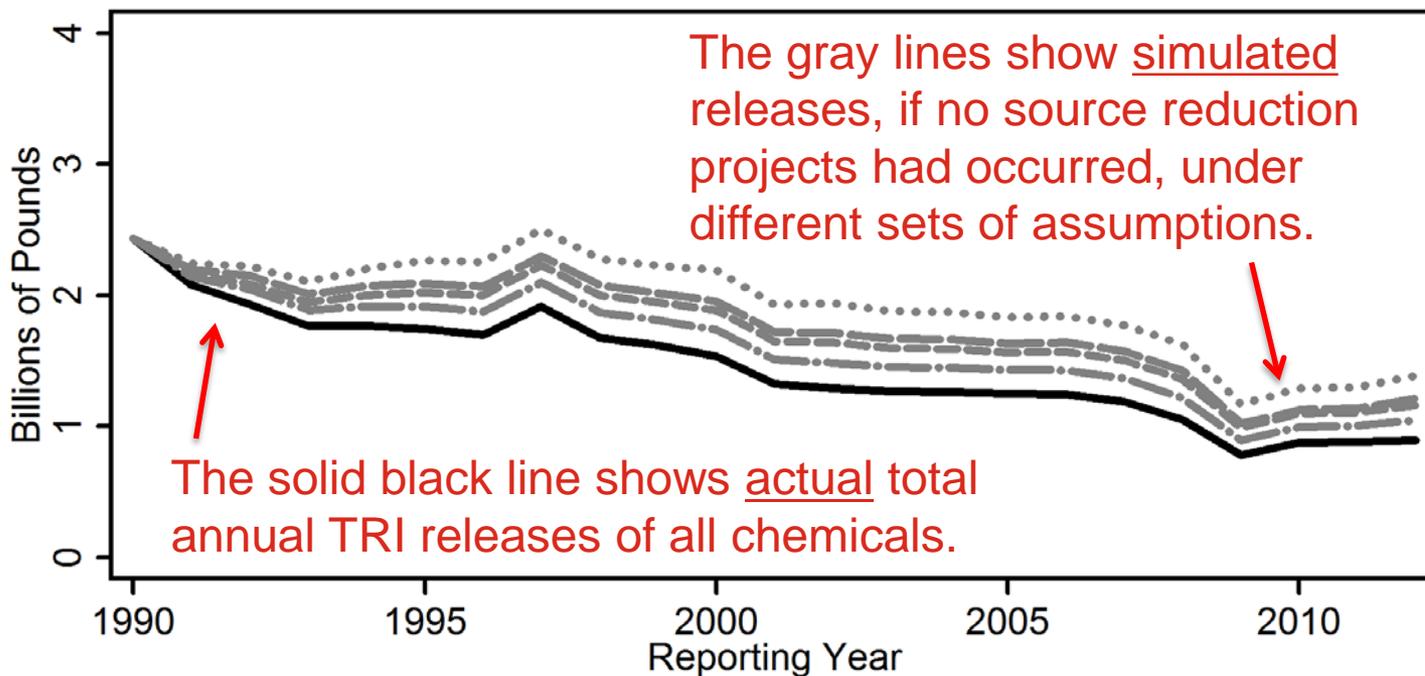


Projects vary in effectiveness. Raw material modification has the largest effect.



Cumulative Impact on U.S. Total Releases

Simulated U.S. Total Releases without Source Reduction

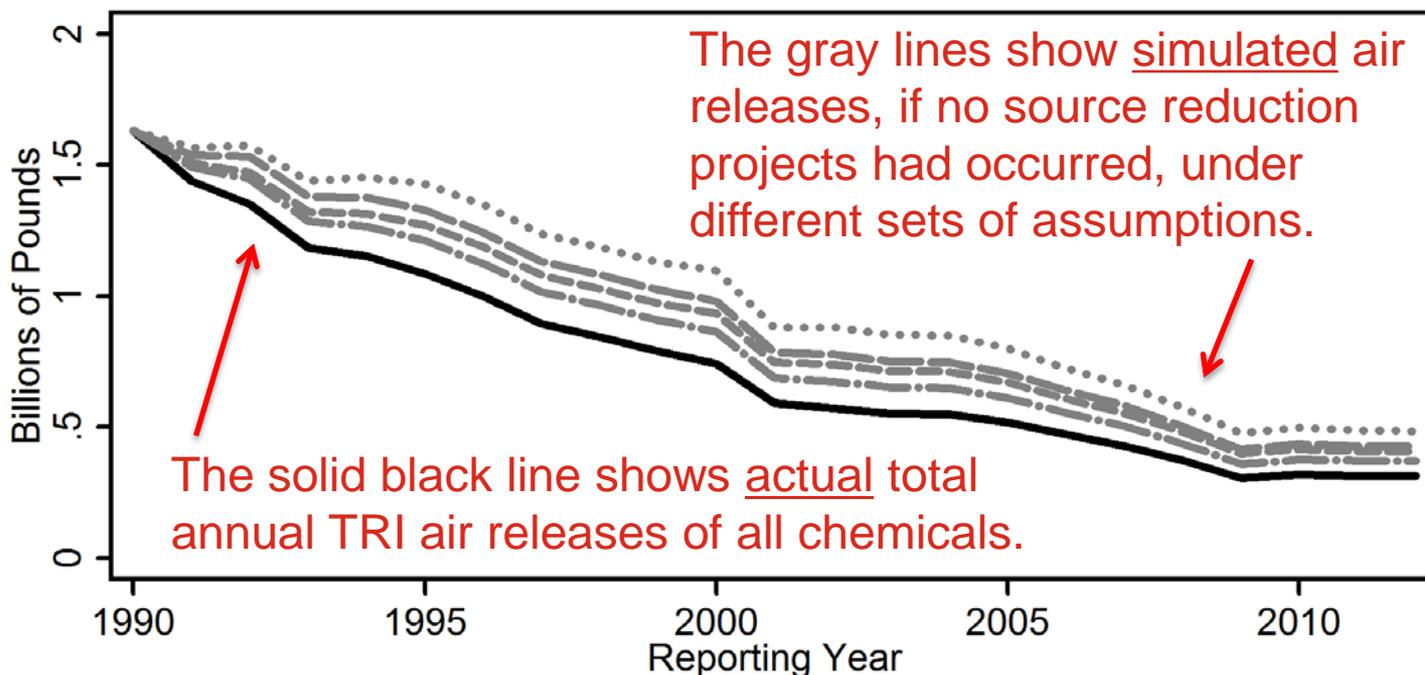


- Without source reduction, actual cumulative U.S. toxic releases (49.9 billion lb) would have been 8 to 23% higher between 1990 and 2012
- It is estimated that source reduction prevented between 4.3 and 14.4 billion pounds of releases



Cumulative Impact on U.S. Air Releases

Simulated U.S. Air Releases without Source Reduction



- Without source reduction, actual cumulative U.S. air releases (24.9 billion lb) would have been 9 to 23% higher between 1990 and 2012
- It is estimated that source reduction prevented between 2.5 and 7.4 billion pounds of air releases



Additional TRI Resources

- Daniel Teitelbaum, **TRI P2 Staff Lead**:
Teitelbaum.Daniel@epa.gov
- Check out the **TRI Pollution Prevention (P2) Search Tool**:
www.epa.gov/enviro/facts/tri/p2.html
- Visit the **TRI Program's website**: www.epa.gov/tri
 - TRI P2 webpage: www.epa.gov/tri/p2
 - 2013 TRI National Analysis: www.epa.gov/tri/nationalanalysis