



# **New Ways to Showcase Sustainability in Your 2012 TRI Report**

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Toxics Release Inventory Program  
Office of Environmental Information**

**June 2013**

# OVERVIEW OF TRI AND TRI'S P2 DATA



# What is the Toxics Release Inventory (TRI)?

- TRI compiles data submitted by industry on the releases and management of toxic chemicals from certain facilities
- TRI collects information on:



Releases



Waste transfers



Recycling



Pollution prevention



# Who Reports to TRI?

- Facility must be in a TRI-covered industry sector or category, including:



**Manufacturing**



**Coal/Oil  
electricity  
generation**



**Certain Mining  
Facilities**



**Hazardous  
Waste  
Management**



**Federal Facilities**

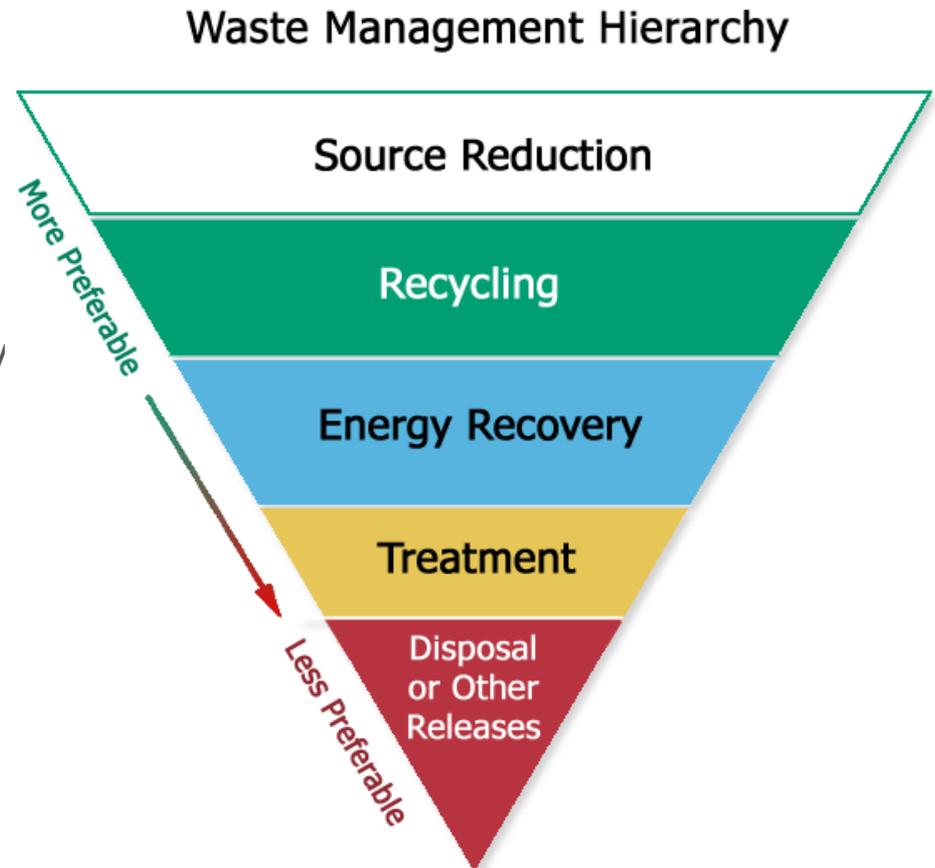
- Facility must have the equivalent of at least 10 full-time employees
- Facility must manufacture, process or use more than a threshold amount of a TRI toxic chemical per year



# What Does TRI Have to Do with P2?

- The Pollution Prevention Act (PPA):

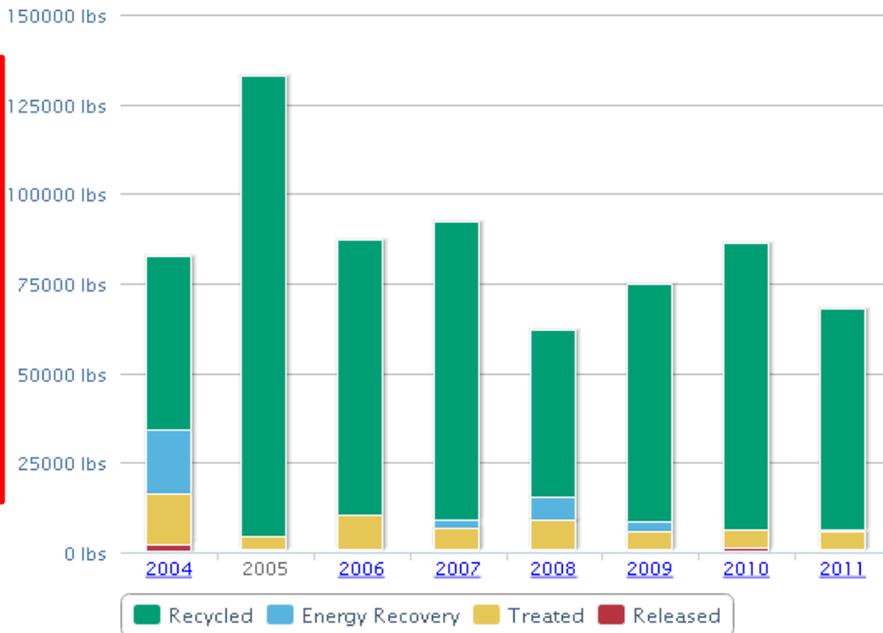
- Set out hierarchy of waste management techniques
- Goal is for facilities to shift away from releases towards more preferable waste management techniques
  - *Or, ideally, eliminate waste at source*
- As required by the PPA, TRI tracks each facility's progress towards this goal and collects info on effective practices



## Production Related Waste Management for Selected Chemical

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

Management of N-Methyl-2-Pyrrolidone at Facility



**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: 2011

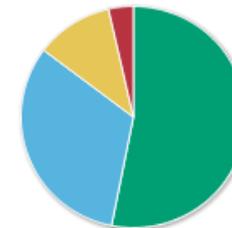
### This Facility



- Recycled
- Energy Recovery
- Treated
- Released

Total for N-Methyl-2-Pyrrolidone: 68112 lbs

All Semiconductor and Related Device Manufacturing  
115 total TRI reporters, 36 reporting N-Methyl-2-Pyrrolidone



- Recycled
- Energy Recovery
- Treated
- Released

Total for N-Methyl-2-Pyrrolidone: 4.95 million lbs

Find additional P2 activities for this [industry](#) and [chemical](#).



# TRI's P2 Data – Production Index

## Production Related Waste Management for Selected Chemical

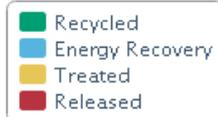
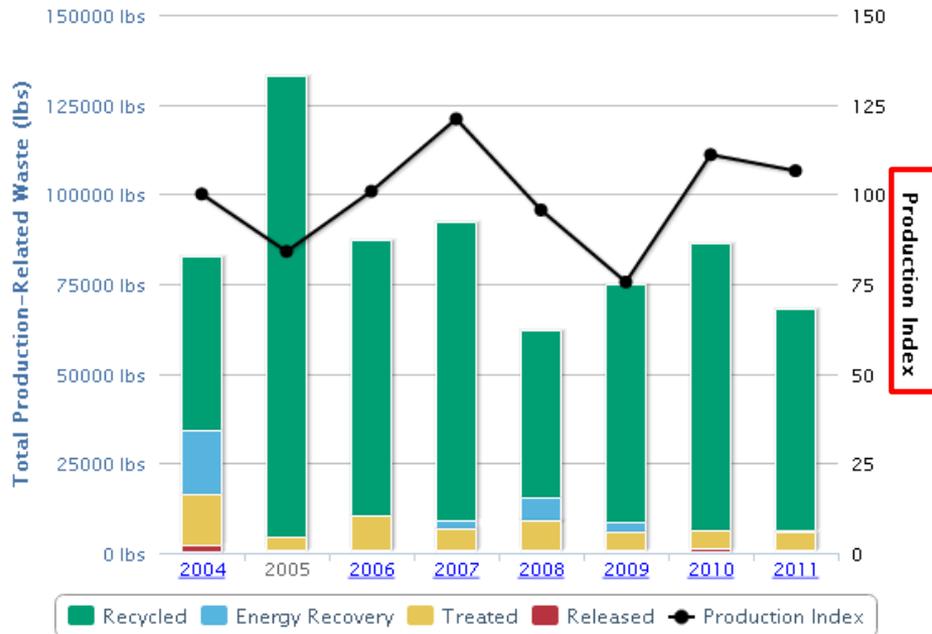
For more on the Waste Management Hierarchy, see the Pollution Prevention [Overview](#) page

Management of N-Methyl-2-Pyrrolidone at Facility



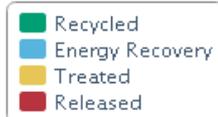
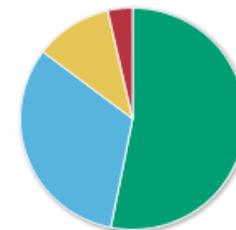
Waste Management Comparison – Select Year: 2011

### This Facility



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Find additional P2 activities for this [industry and chemical](#).

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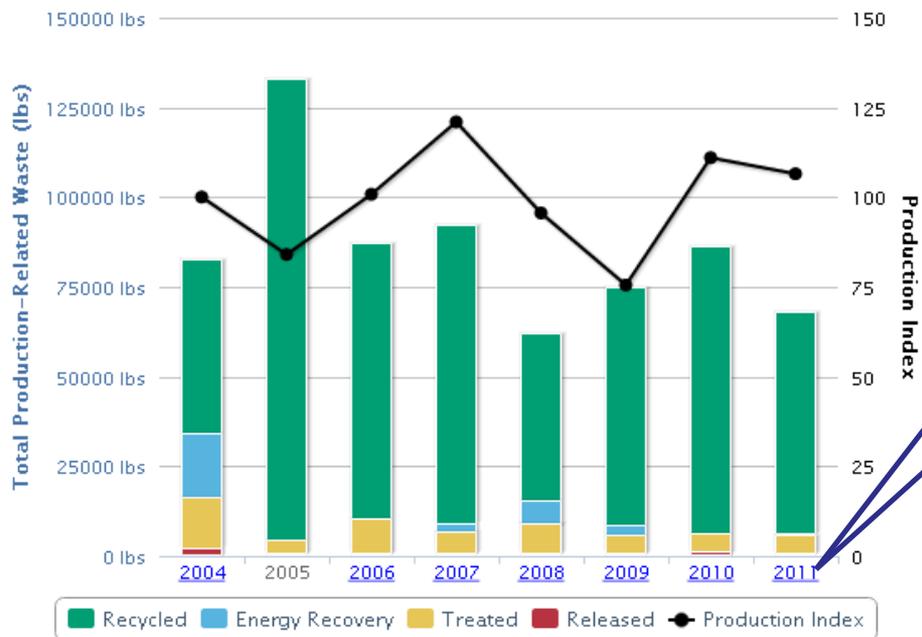
## Production Related Waste Management for Selected Chemical

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

Management of N-Methyl-2-Pyrrolidone at Facility



Waste Management Comparison – Select Year: 2011



**New Source Reduction Activities & P2 Text**

**W58 Other Process Modifications:**  
A process change made to certain wafer technologies in 2011 resulted in a NMP and polyimide use reduction.

**W51 Instituted re-circulation within a process:** [This practice was] utilized at the tool chemical recycle on certain semiconductor manufacturing equipment.

**Chart Options:**

- Display waste quantities only
- Display production index
- Normalize waste quantities relative to production
- Display waste quantities as a percentage of total waste

Total for N-Methyl-2-Pyrrolidone: 4.95 million lbs

Find additional P2 activities for this [industry](#) and [chemical](#).

# HOW TRI P2 DATA ARE DISPLAYED AND ACCESSED

United States Environmental Protection Agency

[Advanced Search](#)
[A-Z Index](#)

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SEARCH

## Toxics Release Inventory (TRI) Program

You are here: [EPA Home](#) » [TRI Homepage](#) » [Pollution Prevention \(P2\) and TRI](#)

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[Frequent Questions](#)

[TRI Data and Tools](#)

[National Analysis](#)

[Laws, Regulations, and Notices](#)

[Enforcement](#)

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[TRI-Meet Resources](#)

[TRI-Covered Industries](#)

[TRI-Listed Chemicals](#)

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[TRI Data Exchange](#)

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### Pollution Prevention (P2) and TRI

Under the **Pollution Prevention Act of 1990 (PPA)**, TRI collects information to track industry progress in reducing waste generation and moving towards safer waste management alternatives.

Launch P2 Search Tool

When providing this information, many facilities choose to describe the measures they have taken to prevent pollution and reduce the amount of toxic chemicals entering the environment. As a result, TRI serves as a tool for identifying effective environmental practices and highlighting pollution prevention successes.

#### Access TRI's P2 Data

- Use the [TRI Search](#) to find P2 data for a specific facility
- Use the [P2 Search](#) to view all reported P2 activities for an industry, chemical or state
- Use [TRI.NET](#) for more complex P2 queries

#### Other TRI P2 Resources

- Learn about [TRI P2 data and how to use it \(PDF\)](#) (2pp, 175K)
- View the TRI P2 training webinar, [Showcasing Sustainability in Your TRI Report](#)
- Check out presentations on TRI, P2, and sustainability from the [2012 TRI Conference](#)
- [EXIT Disclaimer](#)
- See [how P2 reporting is featured in the 2011 TRI National Analysis](#)
- Learn more about EPA's [P2 and sustainability programs](#)

You will need Adobe Reader to view the (PDF) files on this page. See EPA's [PDF webpage](#) to learn more.

#### Source Reduction Activities Reported to TRI

For 2010, a total of 2,302 facilities (11% of all TRI facilities) reported initiating 7,976 source reduction activities. Good operating practices, process modifications, and spill and leak prevention were the activities reported most frequently. To see examples of source reduction activities reported by TRI facilities, click on the pieces of the pie chart.

Number of Activities Reported, 2010

Activity Category	Number of Activities
Good Operating Practices	2,780
Process Modifications	1,637
Spill and Leak Prevention	1,114
Raw Material Modifications	823
Product Modifications	393
Inventory Control	615
Cleaning and Degreasing	308
Surface Preparation and Finishing	206

- Good Operating Practices
- Process Modifications
- Spill and Leak Prevention
- Raw Material Modifications
- Product Modifications
- Inventory Control
- Cleaning and Degreasing
- Surface Preparation and Finishing

Show all descriptions  
Hide all descriptions

#### The Waste Management Hierarchy

The PPA calls for pollution to be prevented or reduced at the source whenever feasible and released to the environment only as a last resort. Click the sections in the triangles to learn more.

Show all descriptions  
Hide all descriptions

For more information, please see [Interpretations of Waste Management Activities \(PDF\)](#) (12 pp, 47K).



# P2 in TRI's National Analysis



## 2011 Toxics Release Inventory National Analysis Overview



January 2013

## Management of TRI Chemicals

In addition to collecting information on the disposal or other releases of chemicals to the environment, TRI collects information on the quantities of toxic chemicals recycled, combusted for energy recovery, and treated both on- and off-site. This production-related waste includes the total amounts of toxic chemicals in waste managed by facilities, giving a more complete picture of what happens to chemicals at facilities, rather than focusing only on their final deposition.

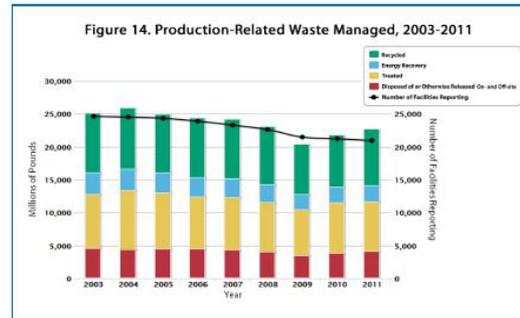
Looking at production-related waste over time helps track industry progress in reducing waste generation and in moving towards safer waste management methods. For example, EPA encourages facilities to first eliminate waste at its source but, for waste that is generated, the preferred management methods are recycling, followed by burning for energy recovery, treating, and, as a last resort, disposing of or otherwise releasing the waste. The goal is that, when possible, waste management techniques will shift over time from disposal or other releases toward the preferred techniques in the waste management hierarchy. These waste management priorities are illustrated in the waste management hierarchy (Figure 13) established by the Pollution Prevention Act of 1990.



As shown in Figure 14, from 2003 to 2011, total production-related waste managed by TRI facilities declined by 9% (more than 2 billion pounds). However, from 2010 to 2011, the total production-related waste managed increased 4%. The quantities of TRI chemicals in waste that were recycled, combusted for energy recovery, and disposed of or otherwise released increased from 2010 to 2011, while the amount treated decreased:

- recycling increased by 8%
- combustion for energy recovery increased by 2%
- treatment decreased by 1% and
- disposal and other releases increased by 8%.

Figure 14. Production-Related Waste Managed, 2003-2011





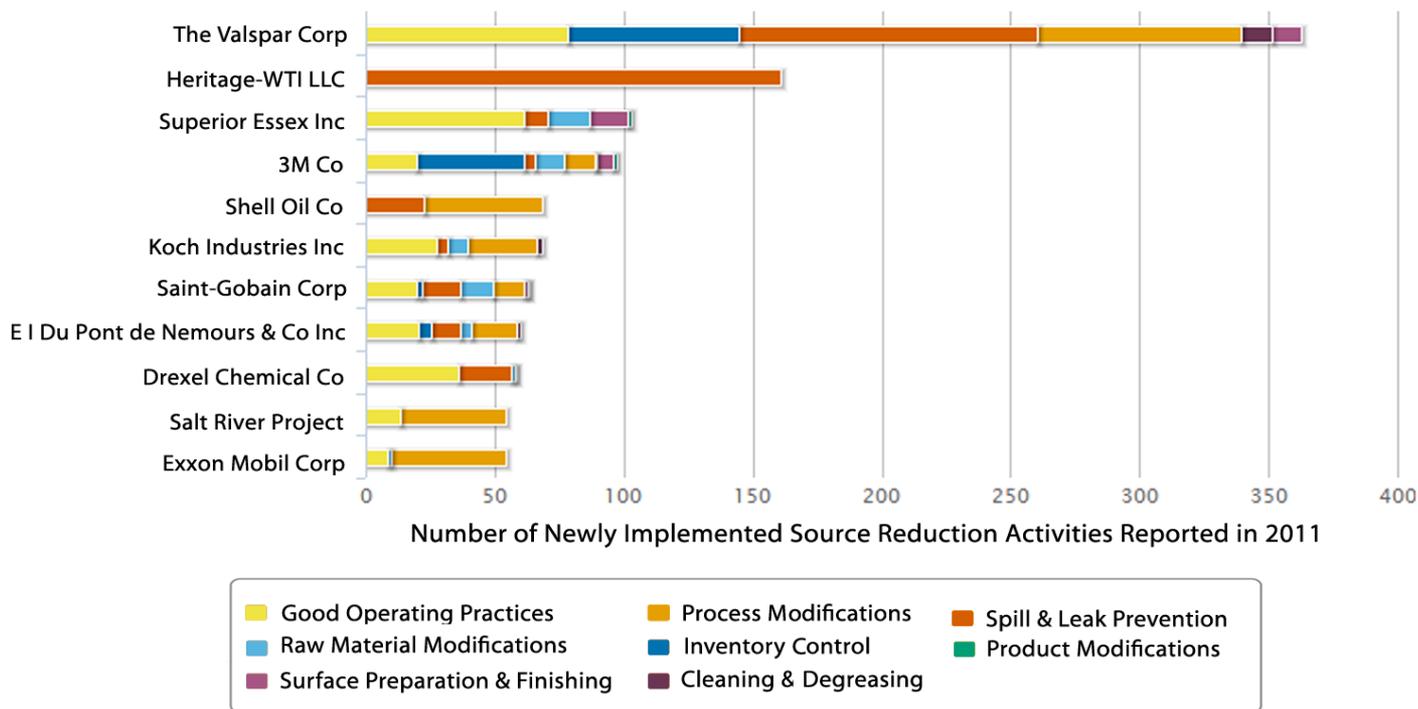
# P2 in TRI's National Analysis

## Newly Implemented Source Reduction Activities at the Top Parent Companies for Production-Related Waste Managed, 2011

Parent Company	Facilities Reporting for 2011	Percent of Facilities Reporting Source Reduction Activities for 2011	Percent of Facilities Reporting Source Reduction Activities at Least One Year, 2007-2011
TECK AMERICAN INC	1	100%	100%
INCOBRASA INDUSTRIES LTD	1	0%	0%
THE DOW CHEMICAL CO	49	8%	35%
KOCH INDUSTRIES INC	110	19%	22%
HONEYWELL INTERNATIONAL INC	63	19%	29%
E I DU PONT DE NEMOURS & CO	64	25%	38%
SYNGENTA CORP	1	100%	100%
THE RENCO GROUP INC	10	10%	10%
BASF CORP	57	19%	33%
MOMENTIVE PERFORMANCE MATERIALS HOLDINGS LLC	31	19%	32%

# P2 in TRI's National Analysis

**Figure 34. Top Parent Companies based on Newly Implemented Source Reduction Activities, 2011**





## Accessing the TRI P2 Data in Excel Format

- P2 information from the TRI National Analysis is available for download from the National Analysis webpage
  - Source Reduction activity totals by chemical, industry and parent company
  - All Optional Pollution Prevention Information (§8.11) entries

**Additional Information**

Briefing Slides (PDF) (18pp, 511K)	TRI National Analysis Tables & Charts Pollution Prevention (Excel) (2.1MB) <input type="button" value="Go"/>	Q's and A's (PDF) (9pp, 372K)
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[www.epa.gov/tri/tridata/tri11/nationalanalysis/](http://www.epa.gov/tri/tridata/tri11/nationalanalysis/)



# TRI P2 Search Tool

## TRI Pollution Prevention Search

[Home](#) [Multisystem Search](#) [Topic Searches](#) [System Data Searches](#) [About the Data](#) [Data Downloads](#) [Widgets](#) [Services](#) [Mobile](#) [Other Datasets](#)



Under the Pollution Prevention Act of 1990 (PPA), the Toxics Release Inventory (TRI) collects information to track industry progress in reducing waste generation and moving towards safer waste management alternatives. When providing this information, many facilities choose to describe the measures they have taken to prevent pollution and reduce the amount of toxic chemicals entering the environment. As a result, TRI serves as a tool for identifying effective environmental practices and highlighting pollution prevention successes.

For additional information, visit the [Pollution Prevention Overview](#) page. To view P2 data for an individual facility or locality, use the [TRI Search](#).

Select from one or more of the dropdowns below to view pollution prevention activities and associated reductions in toxic chemical release quantities.

### Search Criteria

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

All Industries

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

All Chemicals

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

2005-2011

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

All States

Search

Clear

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



# Displaying P2 Successes

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

Chemical: Hazardous Air Pollutants

State: IL

Year: 2011

### Additional Filters:

Show all facilities providing pollution prevention information

### Value for Year-to-Year Comparison:

Air Release [displayed currently]

Showing 1 to 10 of 190 entries Search:

FACILITY NAME	ADDRESS	CHEMICAL	INDUSTRY	PRIOR YEAR AIR RELEASE	CURRENT YEAR AIR RELEASE	PERCENT CHANGE	POLLUTION PREVENTION INFORMATION (ACTIVITY CODES/TEXT)
STERLING STEEL CO LLC 	101 AVE K, STERLING, IL 610813229	Lead Compounds	Iron and Steel Mills	2,910.00	171.00	-94.12%	A waste stream consisting of steel scale (millscale) that had been sent to a local landfill is now being sent to a local cement company for recycling. This material has a high iron content and some grades of cement require those iron units.
MECO INC 	2121 S MAIN ST, PARIS, IL 61944	Chromium Compounds(Except Chromite Ore Mined In The Transvaal Region)	Turbine and Turbine Generator Set Units Manufacturing	288.00	32.00	-88.89%	Our product is made from nickel and chromium based metal. We get money for the metals recycled, so we already take every effort to recycle the metal not used in final product.
IMTT ILLINOIS JOLIET FACILITY 	24420 W DURKEE RD, CHANNAHON, IL 60410	Ethylbenzene	Petroleum Bulk Stations and Terminals	99.40	11.60	-88.33%	W13: Improved maintenance scheduling, recordkeeping, or procedures W36: Implemented inspection or monitoring program of potential spill or leak sources  Significant decrease due to substituting previous paint for a less toxic paint. IMTT purchased a new PID meter to monitor, detect and control pipelines, valves, etc. for fugitive leaks. Also implemented a formal Risk Assessment Management Program to identify any risk findings- T04:Implemented a RAMP (Risk Assessment Management Program);T06:Safety Incentive Program
NTN-BOWER CORP	711 N BOWER RD,	Manganese	Ball and Roller Bearing	30.00	5.00	-83.33%	A recycler was found for the industrial grindings for 2012.



# Example P2 Details Report

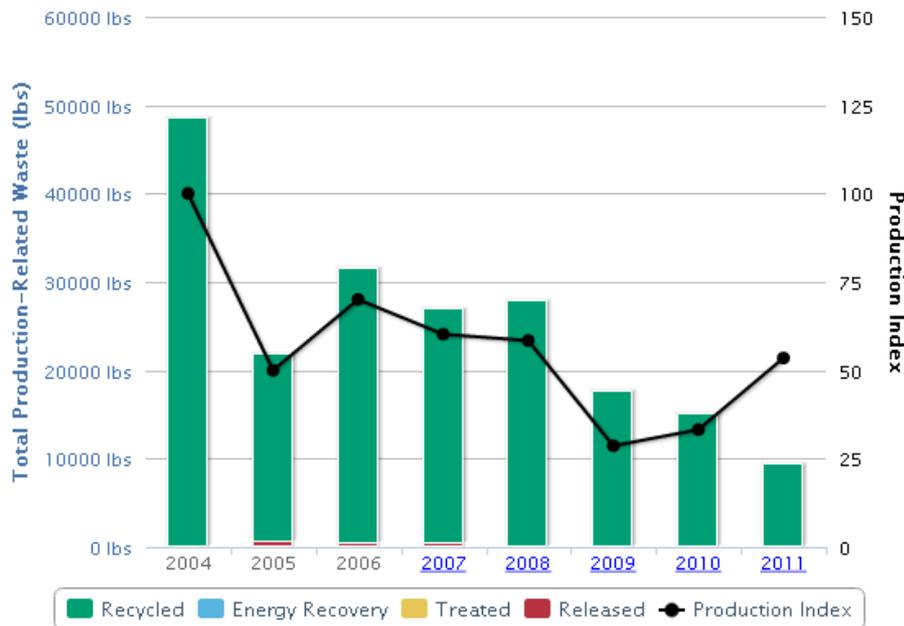
## Production Related Waste Management for Selected Chemical

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

Management of Chromium Compounds at Facility



Waste Management Comparison - Select Year: **2011**



### Chart Options:

- Display waste quantities only
- Display [production index](#)
- [Normalize waste quantities relative to production](#)
- Display waste quantities as a percentage of total waste

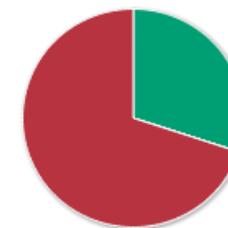
### This Facility



Total for Chromium Compounds: 9401 lbs

### All Facilities in NAICS 332812

283 total TRI reporters, 33 reporting Chromium Compounds



Total for Chromium Compounds: 343066.14lbs

Find additional P2 activities for this [industry and chemical](#).



# Integrating P2 into TRI Searches

- Envirofacts TRI Search
  - Search results show if a facility has reported P2 information in the past

**EPA** United States Environmental Protection Agency  
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## Envirofacts

You are here: EPA Home » Envirofacts » TRI » Search Results

### Search Results

Home Multisystem Search Topic Searches System Data Searches About the Data Data Downloads Widgets Services Mobile Other Datasets

#### TRI

Only TRI facility information was searched to select facilities  
<< Return

#### List of EPA-Regulated Facilities in TRI

TRI FACILITY ID	FACILITY INFORMATION	FACILITY NAME	ADDRESS	COUNTY NAME	LATITUDE/LONGITUDE	SUBMISSIONS	RISK SCREENING	P2 REPORT
01810NDVRC3BRIC	<a href="#">View Facility Information</a>	ANDOVER CONTROLS CORP	300 BRICKSTONE SQUARE ANDOVER, MA 01810	ESSEX	Latitude: 42.67522 Longitude: -71.14672	4	N/A	N/A
01810BTLSP77LOW	<a href="#">View Facility Information</a>	BTL SPECIALTY RESINS CORP.	77 LOWELL JUNCTION RD. ANDOVER, MA 01810	ESSEX	Latitude: 42.61524 Longitude: -71.16912	18	N/A	N/A
01810CLFRN150DA	<a href="#">View Facility Information</a>	CALIFORNIA PRODUCTS CORP	150 DASCOMB RD ANDOVER, MA 01810	ESSEX	Latitude: 42.62351 Longitude: -71.18146	36	N/A	N/A
01810CMBRDSFRNT	<a href="#">View Facility Information</a>	CAMBRIDGE ISOTOPE LABORATORIES INC	50 FRONTAGE RD ANDOVER, MA 018105413	ESSEX	Latitude: 42.63212 Longitude: -71.18156	6	Report	Report
01810DGTLQ100MI	<a href="#">View Facility Information</a>	DIGITAL EQUIPMENT CORP., HIGH TECHNOLOGY CENTER	100 MINUTEMAN RD. ANDOVER, MA 018101098	ESSEX	Latitude: 42.69156 Longitude: -71.214564	14	N/A	N/A
01810GNTCSONEBU	<a href="#">View Facility Information</a>	GENETICS INSTITUTE LLC.	1 BURTT RD ANDOVER, MA 01810	ESSEX	Latitude: 42.61413 Longitude: -71.16952	21	N/A	Report
01810GRNMHHAVER	<a href="#">View Facility Information</a>	GERMANIUM POWER DEVICES CORP	300 BRICKSTONE SQ YORK ST ANDOVER, MA 018102065	ESSEX	Latitude: 42.67522 Longitude: -71.14672	20	N/A	N/A



# Integrating P2 into TRI Searches - myrtek

**EPA Mobile**  
US Environmental Protection Agency

	(Pounds Released)	Cancer	Other
FORMALDEHYDE	0.0	✓	✓
DIISOCYANATES	0.0		✓
ETHYLENE GLYCOL	0.0		✓
PHENOL	13135.0		✓
N-METHYL-2-PYRROLIDONE	8378.0		✓
XYLENE (MIXED ISOMERS)	8184.0		✓
1,2,4-TRIMETHYLBENZENE	8159.0		
CRESOL (MIXED ISOMERS)	3973.0		✓
ETHYLBENZENE	2126.0	✓	✓
2,4-DIMETHYLPHENOL	798.0		✓
CUMENE	425.0		✓
METHANOL	280.0		✓
COPPER	73.0		✓

Legend: Air (Green), Water (Blue), Waste (Red)

Pollution Prevention Activities : ✓

**Facility reports in myrtek (TRI mobile app) provide link to P2 details report**

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# Summary: Accessing TRI P2 Data

Data Resource	What You Can Use it For
	<ul style="list-style-type: none"> <li>• Read about overall trends in P2 and waste management</li> <li>• Download P2 stats and lists of P2 activities for 2011</li> </ul>
	<ul style="list-style-type: none"> <li>• Find P2 activities for particular industries, chemicals, or states</li> <li>• Gauge which practices may have been most effective</li> </ul>
	<ul style="list-style-type: none"> <li>• Identify TRI facilities in your area of interest</li> <li>• View P2 and waste management trends for particular facilities</li> </ul>
	<ul style="list-style-type: none"> <li>• Design sophisticated queries involving P2 and other TRI data</li> <li>• Find downward trends in releases and see which companies and P2 activities contributed</li> </ul>
	<ul style="list-style-type: none"> <li>• Find P2 information for TRI facilities in your neighborhood using your mobile device</li> </ul>

# REPORTING P2 INFORMATION TO TRI



# 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)



## Production Ratio or Activity Index (§ 8.9)

- Unit-less ratio of current year production or activity to previous year
  - Based on the variable(s) that most directly determines the amount of chemical managed as waste
  - 1 indicates no change in production; 1.06 is a 6% increase, etc.
- Puts releases into context of production
  - e.g., Was change in releases caused by changes in production?  
Did releases decline relative to production?
- New! The Production Ratio wizard in TRI-MEweb can help you with the calculation



# Reporting Production Ratio in TRI-MEweb

## Production Ratio or Activity Index

(Form R, Part II, Section 8.9)

Cambridge, MA  
ZBRTS55WHE  
nethylbenzene

**Attention:** Beginning in RY 2012, you may use the standard or weighted calculator to assist you in determining your Production Ratio or Activity Index.

Enter the production ratio for the use of this chemical at the facility. This figure is a ratio of production or activity involving the toxic chemical in the current year to production or activity in the prior year. This ratio puts year-to-year changes in quantities released and managed as waste into the context of production (i.e., have releases increased more than production increased?).

If the manufacture or use of the reported TRI chemical began during the current reporting year, check the "Not Applicable" box provided.

Not Applicable

Example Calculation:  
EPCRA Section 313 chemical used in the manufacture of refrigerators.

- Refrigerators manufactured by the facility in 2012 = 1000
- Refrigerators manufactured by the facility in 2011 = 800

Production ratio equals  $1000/800 = 1.25$   
Note: this is reported as a ratio, not as a percent (i.e., report 1.25 for a 25% increase, not 125% or 25%)

Click **Use Wizard** to use the Production Ratio/Activity Index Wizard.

Note: If you would like to calculate a weighted average using multiple Production or Activity Variables, select 'Multiple Variable' before clicking **Use Wizard**.

Single Production or Activity Variable Use Wizard  
 Multiple Variables (Weighted Average)

Production ratio or activity index:   
1.0 equals the same production level as the prior reporting year.

Optional: Include additional info on production or activity variable(s) used to calculate ratio. Learn More



# Production Ratio Wizard



Logged in as: TUTORIAL\_1, Test Facility

Preferences

Save

Welcome My Facilities **Prepare** Validate Transmit Review eFDP

Select Year | Select Facility | Forms | Waste Management | On-site Release/Disposal | On-site Waste Mgmt | Off-site Transfer | **Source Reduction/Recycling** | Misc Info | Summary

## Standard Production Ratio Calculator

(Form R, Part II, Section 8.9)

Test Faci

02

2012 Form R for 1,2,4

Identify the production variable that primarily determines the amount of chemical used or produced at your facility and enter values for the current and prior reporting years.

Select Metric:  Production Ratio  Activity Index

[More](#) on Production Ratio and Activity Index

**Production Variable Example:** Your facility uses toluene to paint refrigerators. The Production Variable selected is "number of refrigerators painted" because it most directly impacts the quantity of toluene used.

Production Variable	Prior Year 2011 Value	Current Year 2012 Value	Production Ratio
Refrigerators	800	1000	1.25

= Calculate Clear

Include Production Ratio or Activity Variable(s) in Section 9.1 (Miscellaneous Information). [Learn More](#)

[Production Variable Example](#)





# Reporting Production Variable (optional)

## Production Ratio or Activity Index

(Form R, Part II, Section 8.9)

Test Facility Cambridge, MA  
0213WZBRTS55WHE

2012 Form R for 1,2,4-Trimethylbenzene

**Attention:** Beginning in RY 2012, you may use the standard or weighted calculator to assist you in determining your Production Ratio or Activity Index.

Enter the production ratio for the use of this chemical at the facility. This figure is a ratio of production or activity involving the toxic chemical in the current year to production or activity in the prior year. This ratio puts year-to-year changes in quantities released and managed as waste into the context of production (i.e., have releases increased more than production increased?).

If the manufacture or use of the reported TRI chemical began during the current reporting year, check the "Not Applicable" box provided.

Not Applicable

Example Calculation:

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Click **Use Wizard** to use the Production Ratio/Activity Index Wizard.

Note: If you would like to calculate a weighted average using multiple Production or Activity Variables, select 'Multiple Variable' before clicking **Use Wizard**.

Single Production or Activity Variable

Multiple Variables (Weighted Average)

Production ratio or activity index:   
1.25 equals a 25% increase.

Optional: Include additional info on production or activity variable(s) used to calculate ratio.

[Learn More](#)

Miscellaneous Information:

**Including information on your production or activity variable helps TRI data users understand changes in TRI chemical quantities reported.**



## Choosing a Production or Activity Variable

- Remember: select the variable(s) that most directly determine the amount of chemical managed as waste
  - Typically a measure of output not throughput
  - Variable is used to normalize releases; i.e., “releases per \_\_\_\_\_”
- Production Ratio
  - Production is the primary determinant of the quantity of chemical managed as waste
- Activity Index
  - A variable other than production is the primary determinant of the quantity of chemical managed as waste



# Production Ratio Variable Examples

Example	Production Ratio or Activity Index	Selected Variable
Hydrochloric acid is a waste product from the production of inorganic pigments.	Production Ratio	Quantity of inorganic pigments produced
An organic dye manufacturer uses glycol ether to clean equipment during color changeovers.	Activity Index	Number of color changeovers
1,1,1-trichloromethane is used in a vapor degreaser to clean manufactured surgical instruments.	Activity Index	Vapor degreaser's hours of operation
Several chemicals are released in the combustion of coal at an electricity generating facility.	Production Ratio	Number of megawatt-hours of electricity produced per year
Ethylene glycol is applied to coal at a coal mine facility to prevent freezing during the winter months.	Production Ratio	Tons of coal shipped during the winter
A facility accepts hazardous waste with 10% dichlorobenzene from off-site for incineration.	Activity Index	Pounds of waste incinerated
A facility repackages a formulated gasoline product with 1.0% n-hexane.	Production Ratio	Gallons of gasoline repackaged

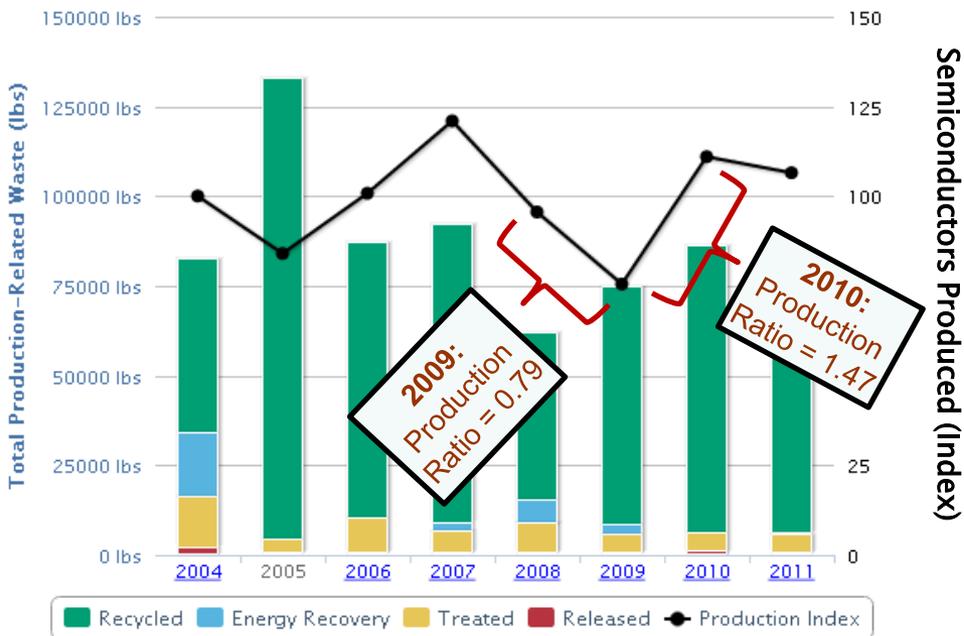


# How Production Ratio is Displayed

## Production Related Waste Management for Selected Chemical

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

Management of N-Methyl-2-Pyrrolidone at Facility



### 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: 2011

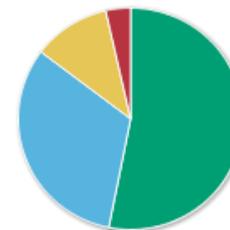
### This Facility



- Recycled
- Energy Recovery
- Treated
- Released

Total for N-Methyl-2-Pyrrolidone: 68112 lbs

All Semiconductor and Related Device Manufacturing  
115 total TRI reporters, 36 reporting N-Methyl-2-Pyrrolidone



- Recycled
- Energy Recovery
- Treated
- Released

Total for N-Methyl-2-Pyrrolidone: 4.95 million lbs

Find additional P2 activities for this [industry and chemical](#).



## New Source Reduction Activities (§ 8.10)

- Source Reduction Activities reduce the amount of the chemical *before* it enters a waste stream
- Report all source reduction activities for the chemical that were newly implemented in the reporting year
- Source Reduction Activities are reported by selecting applicable Source Reduction codes from dropdown

Source Reduction Activity 1	
W13 - Improved maintenance scheduling, record keeping, or procedures	<input type="button" value="Provide Additional Info (optional)"/>
<b>Methods to identify Activity 1</b>	
Select a Source Reduction Method	▼
Select a Source Reduction Method	▼
Select a Source Reduction Method	▼



# New! Green Chemistry Codes

- Six new source reduction codes have been added for RY2012 that can be used to report green chemistry and green engineering practices.

Code	Code Description	Select this code if:
W15	Introduced in-line product quality monitoring or other process analysis system	The introduction of such a system led to a reduction in the amount of the TRI chemical generated as waste.
W43	Substituted a feedstock or reagent chemical with a different chemical	The TRI chemical was a feedstock or reagent chemical and was replaced (in whole or in part) with a different chemical.
W50	Optimized reaction conditions or otherwise increased efficiency of synthesis	The amount of the TRI chemical generated as waste was reduced by increasing the yield of the synthesis.
W56	Reduced or eliminated use of an organic solvent	The TRI chemical was used as a solvent in the process and the process was modified such that the TRI chemical was replaced or required in lower quantities.
W57	Used biotechnology in manufacturing process	The use of biotechnology in the process reduced or eliminated the use of the TRI chemical.
W84	Developed a new chemical product to replace previous chemical product	The TRI chemical had been produced at the facility but was replaced (in whole or in part) with the production of a different chemical or chemicals.



# Barriers to Source Reduction

- If your facility did not implement any new Source Reduction activities, you can provide information on any barriers your facility might be facing
- Potential barriers include:
  - Insufficient capital to install source reduction equipment or implement new initiatives
  - Require technical information on pollution prevention techniques
  - Concern that product quality may decline
  - Source reduction activities were implemented but not successful
  - Pollution Prevention was previously implemented, and additional reduction is not feasible



# Sample Barrier Descriptions

## TRI Section 8.11 Barrier Examples

Attempts have been made in the past to use high grade zinc in the galvanizing process. The high grade zinc has less lead as a component than the prime western zinc. Due to the economic challenges and the loss of some employees it was difficult to maintain high product quality while using the high grade zinc. Consequently, the decision was made to go back to the prime western zinc to keep the quality of the galvanizing high. Efforts continue to be made to use prime western zinc with a lower percentage of lead.

Cr is a component of the Stainless Steel barstock used to produce our products - fuel injectors. Good inventory control, machine maintenance, and recycling practices are already in place at this facility.

The Princess Marble Company continues to work with its trade association, the International Cast Polymer Association, in testing the latest in VOC reduction technology. We will also continue to search for a method of applying the gel coat that will effectively coat the mold while reducing the amount of overspray. After careful consideration, we have determined that automating this spray coating operation would not result in less overspray than application by a well-trained employee.

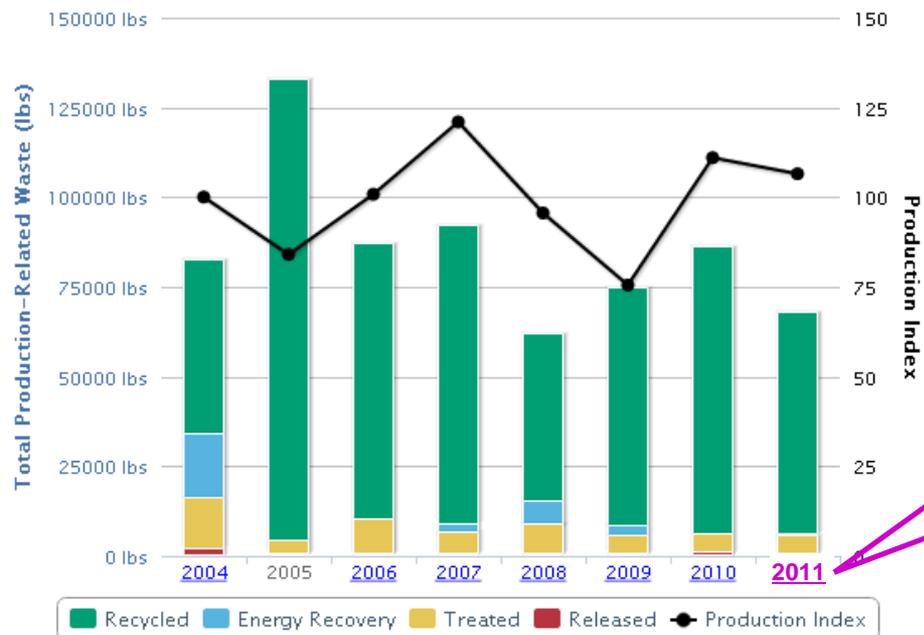
# Displaying Barriers to P2

## Production Related Waste Management for Selected Chemical

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

Management of N-Methyl-2-Pyrrolidone at Facility

Waste Management Comparison - Select Year: 2011



### This Facility



**Barriers to Source Reduction:** Source reduction activities implemented in 2005-08 were successful. No further P2 is possible at this time without compromising product quality.

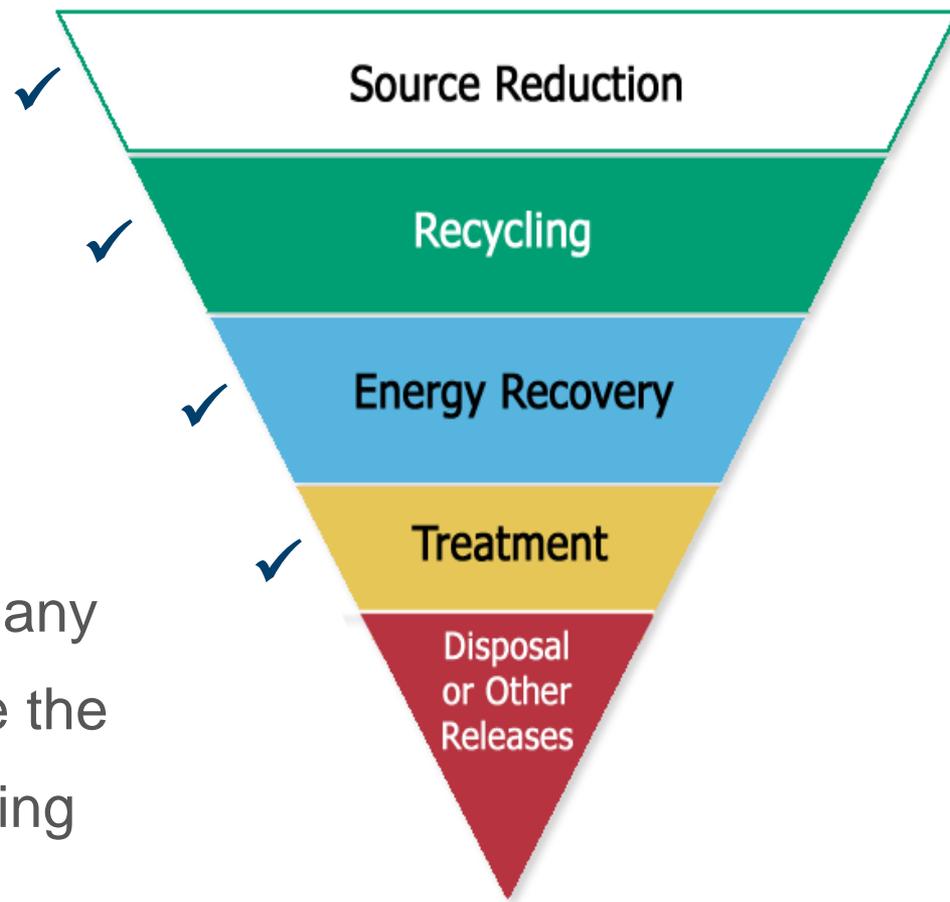
**Chart Options:**

- Display waste quantities only
- Display production index
- Normalize waste quantities relative to production
- Display waste quantities as a percentage of total waste



# Optional Pollution Prevention Information

- Form R § 8.11 open text field
- Report additional information related to:
  - Source reduction,
  - Recycling,
  - Pollution controls
- Opportunity to publicly highlight any steps your facility took to reduce the amount of toxic chemicals entering the environment





# Tips for Reporting Optional P2 Information

- Be Specific
  - Which technologies and materials were used?
  - Which processes and products were affected?
  - Did specific release or waste quantities change?
  - Were there other benefits (e.g., costs, product quality)?
  - Who provided the idea or assisted with implementation?
  - Why did you implement this activity?
- Enter Useful URLs
  - Equipment manufacturers
  - Other information sources (e.g., corporate sustainability pages)
- If it's not related to P2, put it in § 9.1 (Misc. Info)



# Pollution Prevention Reporting Tipsheet



## TRI Pollution Prevention Reporting Tipsheet



### Give yourself some credit!

Report your pollution prevention (P2) achievements through EPA's Toxics Release Inventory (TRI) Program. Section 8.11 of your annual TRI report invites you to describe your P2 activities, as well as recycling, energy recovery or treatment activities related to the chemicals at your facility. Take this opportunity to highlight your company's commitment to reducing the release of toxic chemicals in your neighborhood.

### Tell us your story

Don't forget the details! Detailed descriptions help communities better understand your pollution prevention activities. You may want to consider the topics/questions listed below when preparing to complete the optional P2 section of your TRI report (Form R, Section 8.11).



- Which **chemical(s)** did you target for P2 activities?
- What **type(s) of P2 activities or technologies** did you adopt and why?
- Which **processes and products** were affected?
- Did you employ any **safer chemical** alternatives?
- What are the **environmental benefits** (e.g., realized or expected results)?
- Did your company attain **other benefits** (e.g., cost savings, improved product quality, energy savings)?
- Did an outside organization **provide assistance**?
- Do you have any updates on P2 activities implemented in **prior years**?
- Are there any **webpages** with more information?

Feel free to use this space for notes or to share information internally.

Do not submit this sheet to EPA.



To find out if your facility is required to submit a TRI report, go to [www.epa.gov/tri](http://www.epa.gov/tri)

## Pollution Prevention Achievements



### See what others are doing\*

EPA promotes P2 efforts by sharing your stories on our website ([www.epa.gov/tri/p2](http://www.epa.gov/tri/p2)) and featuring examples in other publications, including EPA's annual TRI National Analysis ([www.epa.gov/tri](http://www.epa.gov/tri)). Share your success and demonstrate your environmental stewardship!

**BAE Systems** reduced its xylene and zinc releases in its Southeast Shipyard Alabama facility by implementing new pollution prevention and waste minimization procedures and policies for its surface coating activities. The facility established a materials management program that tracks the usage and disposal of all hazardous and nonhazardous substances. All coatings are inventoried quarterly and properly labeled for tracking which allows for monitoring shelf life and minimizes over-stocking. Purchasing is now centralized and done in a manner that identifies possible nonhazardous alternatives and orders the smallest quantities possible to avoid waste. The facility is also now training all of its employees on the proper handling of hazardous and nonhazardous wastes to prevent mixing.



**Xerox** implemented a solvent recovery system for its methyl isobutyl ketone wastes in its Webster, New York manufacturing facility. Prior to diverting the waste to the recovery system, it was shipped offsite and combusted for energy. The reclaimed solvents are used for cleaning certain process equipment and in support of research and development projects. In 2011, the facility recovered 45 percent of its methyl isobutyl ketone waste and plans to increase this amount to as much as 70 percent in the future. The recovered solvent saves the facility nearly \$20 per gallon when compared to the cost of virgin solvent. The measure reduced the amount of virgin solvent purchased by the facility and the amount it spent on solvents by about 50 percent.



*"TRI offers a unique opportunity to showcase your commitment to go above and beyond compliance by deploying the powerful tools of green chemistry, green engineering and other green practices. By completing the optional P2 section on your TRI reports, you will help all of us—industry, EPA, and the public—work together to implement sustainable development."*



— Dr. Robert Peoples  
Former Director of the American Chemical Society's Green Chemistry Institute;  
Executive Director, Carpet America Recovery Effort,  
and President, Environmental Impact Group, Inc.

\*This content is for informational purposes only. The EPA does not endorse any company, product or service.



To find out more about P2 opportunities, go to [www.epa.gov/p2](http://www.epa.gov/p2)



## For More Information

- Daniel Teitelbaum, TRI P2 Staff Lead
  - [Teitelbaum.daniel@epa.gov](mailto:Teitelbaum.daniel@epa.gov)
- EPA Websites
  - [www.epa.gov/tri/p2](http://www.epa.gov/tri/p2) (TRI P2 webpage)
  - [www.epa.gov/p2](http://www.epa.gov/p2) (EPA's P2 Program)
  - [www.epa.gov/tri](http://www.epa.gov/tri) (TRI homepage)
  - [http://www.epa.gov/tri/reporting\\_materials/tutorials/pollution\\_prevention/index.htm](http://www.epa.gov/tri/reporting_materials/tutorials/pollution_prevention/index.htm) (TRI P2 Tutorial)