# 1996 TURA Information Release

# Introduction

TURA was a cutting edge bill when it was unanimously passed by the Massachusetts legislature in 1989. It introduced a new way of promoting environmental protection by focusing on pollution prevention as a way to comply with, and to exceed, regulatory standards while increasing the economic competitiveness of Massachusetts industry. Evidence gathered over the life of the TURA program has verified the success of this new environmental protection strategy.

In a recent program evaluation, Massachusetts industries credited TURA with helping them increase their manufacturing efficiency and improve their bottom lines. In fact, TURA is one of the few environmental laws that saves companies money while it improves the environment. TURA filers documented monetized benefits as a result of their toxics use reduction efforts that are more than the costs associated with TURA and its implementation.

The progress of Massachusetts industries in reducing toxic chemical waste, use, and emissions to the environment is remarkable. DEP would like to thank companies which have demonstrated significant reductions in chemical waste, and the TURA Program staff for their commitment to continuous improvement and protection of the environment.

# Executive Summary

This report summarizes the information collected by the Massachusetts Toxics Use Reduction Program from 530 Large Quantity Toxics Users who reported under TURA in calendar year 1996. In addition, it provides a comprehensive analysis of the 7 years of TURA information to allow evaluation of toxics use reduction progress in Massachusetts from 1990 to 1996.

Since the last TURA Information Release, significant work has been done to raise the quality and reliability of the information. This year's Release contains the most accurate up-to-date information to evaluate toxics use reduction progress. It also contains the same type of analysis and information we have presented in the past: a core group of companies and chemicals with both reported numbers and numbers adjusted to account for changes in production.

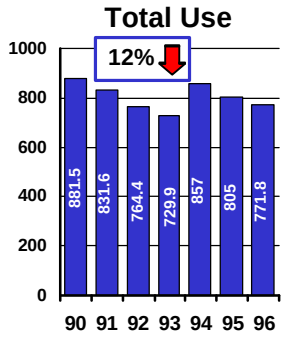
Here are some highlights from the Core Group:

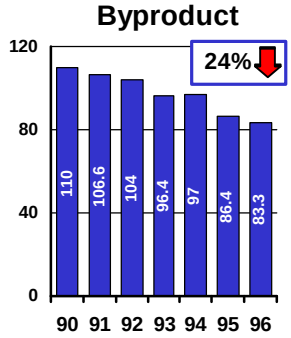
**Reported TURA Data:**

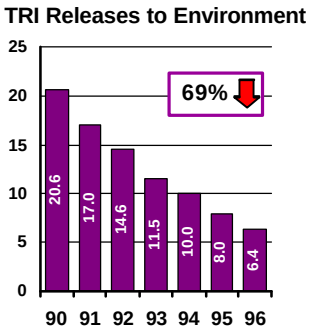
- From 1995 to 1996, Massachusetts manufacturers have decreased their total use of chemicals by 33.2 million pounds, their byproduct generation by 3 million pounds, and their toxic releases by 1.6 million pounds.

| | TOTAL USE | BYPRODUCT | TRI RELEASES TO THE ENVIRONMENT |
|---|---|---|---|
| 1995 | 805,000,000 | 86,400,000 | 8,000,000 |
| 1996 | 771,800,000 | 83,300,000 | 6,400,000 |

- Since 1990, Massachusetts manufacturers have decreased their total chemical use by 109.7 million pounds, their byproduct generation by 26.7 million pounds, and their toxic releases to the environment by 14.2 million pounds.

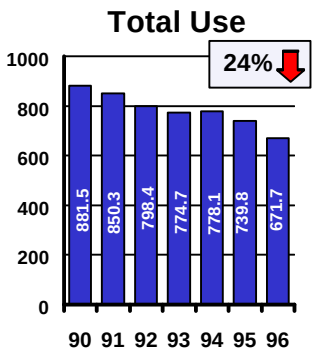


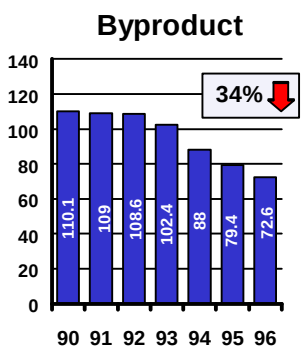



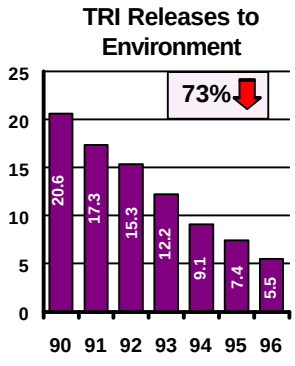




**Toxics Use Reduction Progress from 1990 to 1996 - Production Adjusted Data:**

- When the information is adjusted to account for changes in production, this information documents that Massachusetts manufacturers are now using 24% fewer toxic chemicals to make their products, they are generating 34% fewer wastes, and they are releasing 73% fewer toxics to the environment since the first year of TURA reporting.



# Summary of Terms Used in the Information Release

***For a more detailed description of these terms, please refer to the TURA and TRI annual reporting packages.***

## 1. TURA and TRI Definitions

**TURA** - Massachusetts Toxics Use Reduction Act of 1989

**TRI** - federal EPA Toxics Release Inventory

**Chemical Use** - amount of the manufacture, processing and otherwise use of a chemical. Relabeling or redistributing a container of a toxic substance where no repackaging of the toxic substance occurs does not constitute use or processing of the toxic substance.

**Manufacture** - to produce, prepare, import or compound a toxic or hazardous substance

**Otherwise Use** - any use of a toxic substance that is not covered by the terms "manufacture" or "process" and includes use of a toxic substance contained in a mixture or trade name product.

**Process** - the preparation of a toxic or hazardous substance, including without limitation, a toxic substance contained in a mixture or trade name product, after its manufacture, for distribution in commerce:

a) in the same form or physical state, or in a different form or physical state, from that in which it was received by the toxics user so preparing such substance; or
b) as part of an article containing the toxic or hazardous substance

**Total Use** - the total amount of TURA chemicals reported as manufactured, processed, and otherwise used

**Byproduct** - all non-product outputs of reportable substances generated by a production unit prior to handling, transfer, treatment, and release.

**Product** - a product, a family of products, an intermediate product, family of intermediate products, or a desired result or a family of results. "Product" also means a byproduct that is used as a raw material without treatment.

**Process Codes** - alpha-numeric codes

**TURA Fact**
**1996 TURA and TRI Information**

| | |
|---|---|
| 1,285,000,000 lb | Total Use |
| 551,000,000 lb | Shipped in/as Product |
| 139,000,000 lb | Byproduct |
| 66,000,000 lb | TRI Releases and Transfers |

by which TURA filers identify the processes included in their production units. For instance, the code AA-01 refers to dip, flow and curtain coating.

**Shipped in or as Product** - the quantity of the chemical that leaves the facility as product.

**Transfers and Releases (TRI)** - Total transfers and releases reported under TRI. This is the total of all releases to the environment, (Form R-Sections 5 and 8.8) transfers to publicly owned treatment works (POTWs) and off-site transfers (Form R-Section 6) for energy recovery, recycling, treatment and disposal.

**Transfers Off-Site (TRI)** - Byproducts that are transferred off-site for energy recovery, recycling, treatment and disposal (Form R-6.2).

**Releases to the Environment (TRI)** - All byproducts that are released to the air, discharged to surface waters, on-site releases to land and underground injection wells (Form R-5.1 through 5.5 and 8.8)

**Trade Secret** - All quantities in this report include aggregated trade secret data, unless otherwise noted.

# 2. Trend Analysis Definitions

**Core Group Definition** - The TURA information is used to measure progress of Massachusetts TURA filers in reducing their use of toxic materials and their generation of toxic byproducts. Because the TURA reporting requirements have changed form 1990 to 1996, it is important to examine a set of industries and chemicals which have been consistently subject to reporting.

In the first year, only manufacturing firms were required to report. Then pursuant to the TURA statute, non-manufacturers were added. The list of chemicals subject to reporting was expanded during reporting years 1991 through 1993. In addition, over the years, certain chemicals have been delisted.

To create a meaningful comparison from one year to the next, a group of records, called the Core Group, has been defined. The Core Group consists of industries and chemicals that were subject to reporting in 1990 and remain subject to reporting now. For industries, the Core Group includes any facility whose Standard Industry Classification (SIC) code is within the range of 20 to 39 (inclusive), the manufacturing SIC codes. For chemicals, the Core Group includes all chemicals on the 1990 TURA reporting list that have not since been delisted.

- The qualifications for inclusion in the Core Group never change.
- The companies & chemicals included in the Core Group may change.
- If a chemical is delisted, it is removed from the Core Group for all reporting years.

- If a core facility drops below the reporting threshold, their prior year records remain in the core. New filers are included in the Core Group if their SIC codes and chemicals qualify as core.

- There are yearly changes in the Core Group according to chemical delistings and facility revisions.

- The Core Group includes the majority of the chemicals and facilities reporting in each year, both in terms of the number of forms received and the quantities of chemicals reported.

- The Core Group does not include chemicals for which a facility claimed trade secret in any year.

**Reported Change** -The change in total reported Core Group quantities over the period 1990 to 1996 (unless otherwise noted). For example, there has been a reported reduction of 24% in total pounds reported of byproduct from 1990 to 1996. Observed changes may be due to either TUR or changes in production.

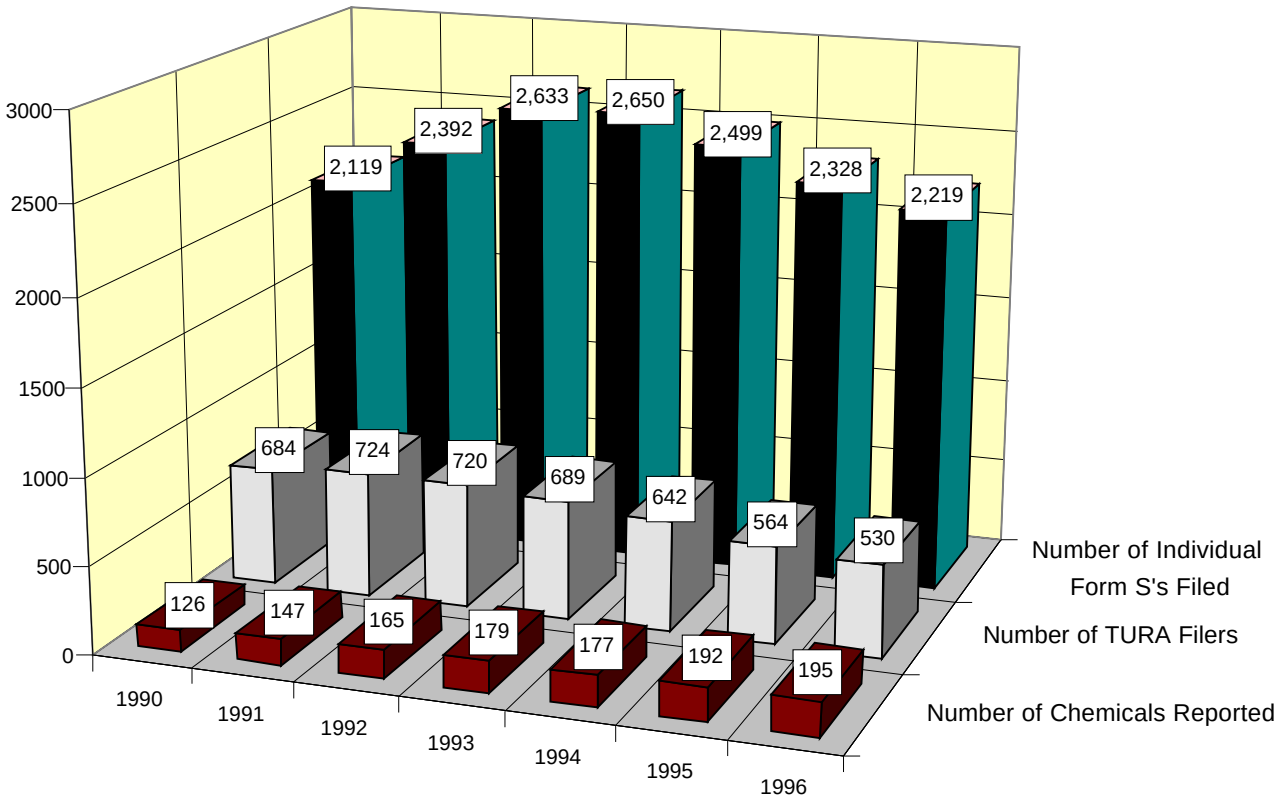
**Production Adjusted -** From year to year, the Core Group reported quantities change, and are adjusted for changes in manufacturing activity.

| **TURA Fact<br>Core Non-Trade Secret<br>1990 - 1996 Trends** | |
|---|---|
| Total Use | 12% Reported Reduction<br>24% Production Adjusted Reduction |
| Byproduct | 24% Reported Reduction<br>34% Production Adjusted Reduction |

**Example:**

- *A facility produces 1,000 machine parts, and generates 100 lbs of byproduct in year 1.*
- *In year 2, it produces 25% more machine parts (1,250). Therefore, the TRI production ratio = 1.25. However, it still only generates 100 lbs of byproduct.*
- *The production adjusted byproduct for year 2 is 100 lb/1.25 = 80 lbs.*
- *The production adjusted percent change is [100-80]/100=0.20. The reduction from year 1 to year 2 is 20%, while their actual byproduct reduction is 0%.*

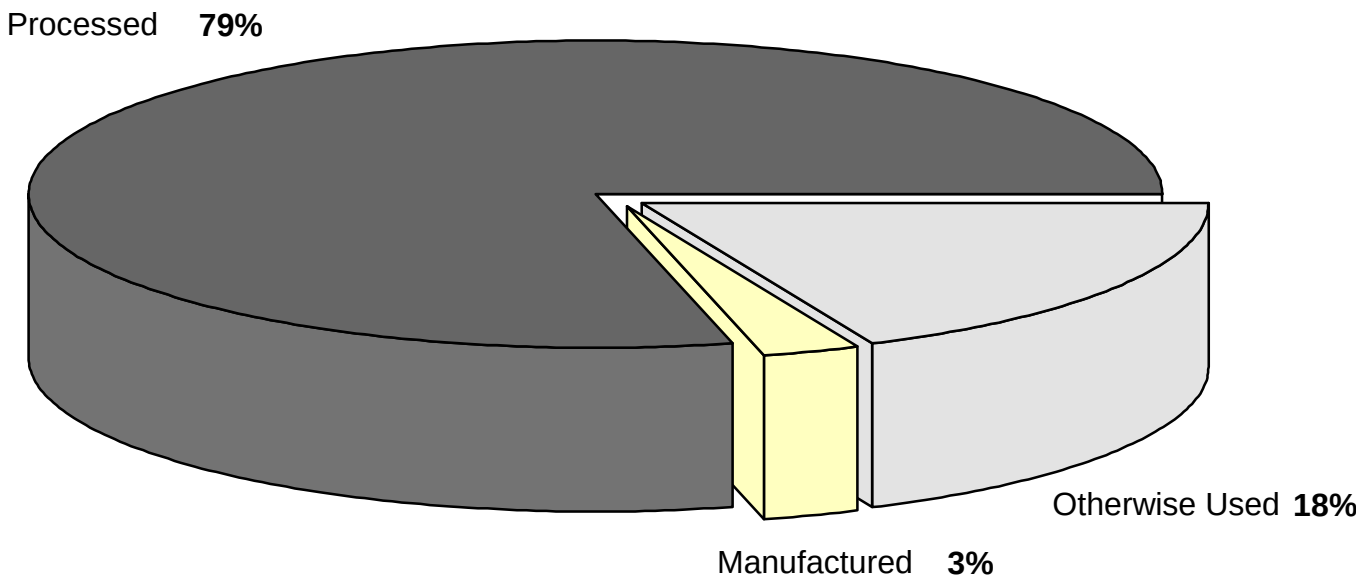
# TURA Filer Trends 1990-1996




One Form S is completed for each TURA chemical reported. The number of individual Form S's filed has decreased since 1993, the year in which CERCLA chemical list was completely phased into reporting. As of 1996, only 195 of 1500 listed chemicals were reported by TURA regulated the facilities

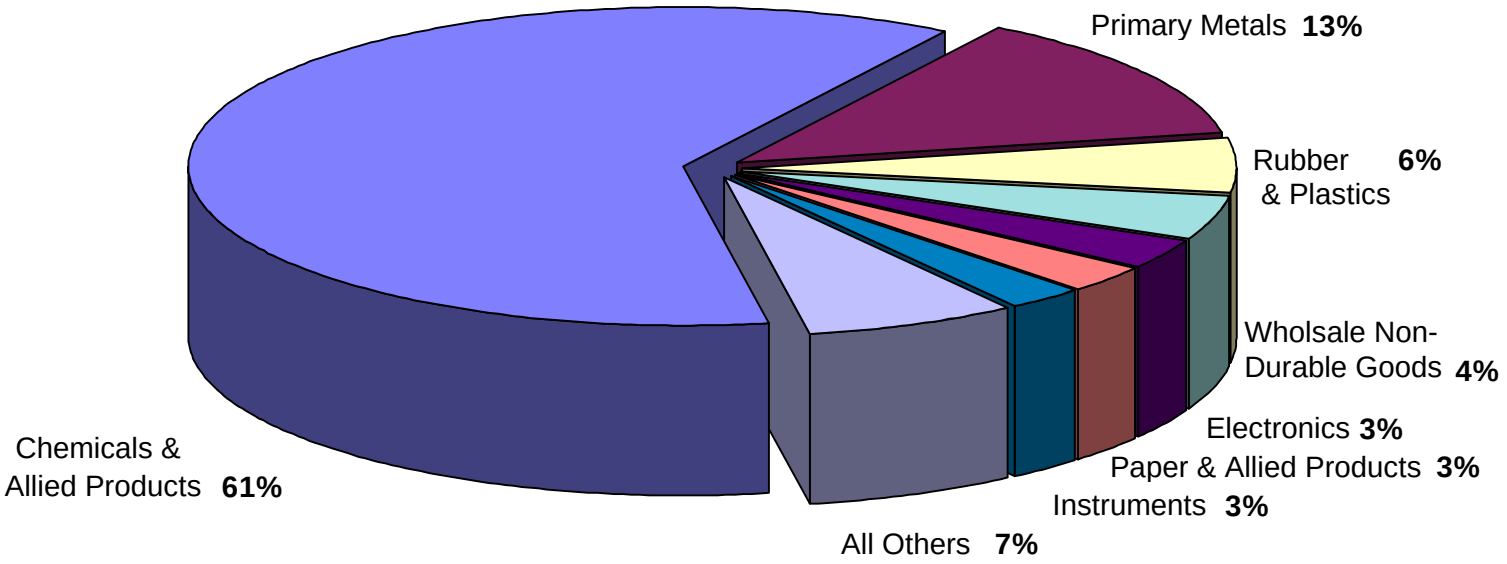
# 1996 Chemical Use

**(Does Not Include Trade Secret)**



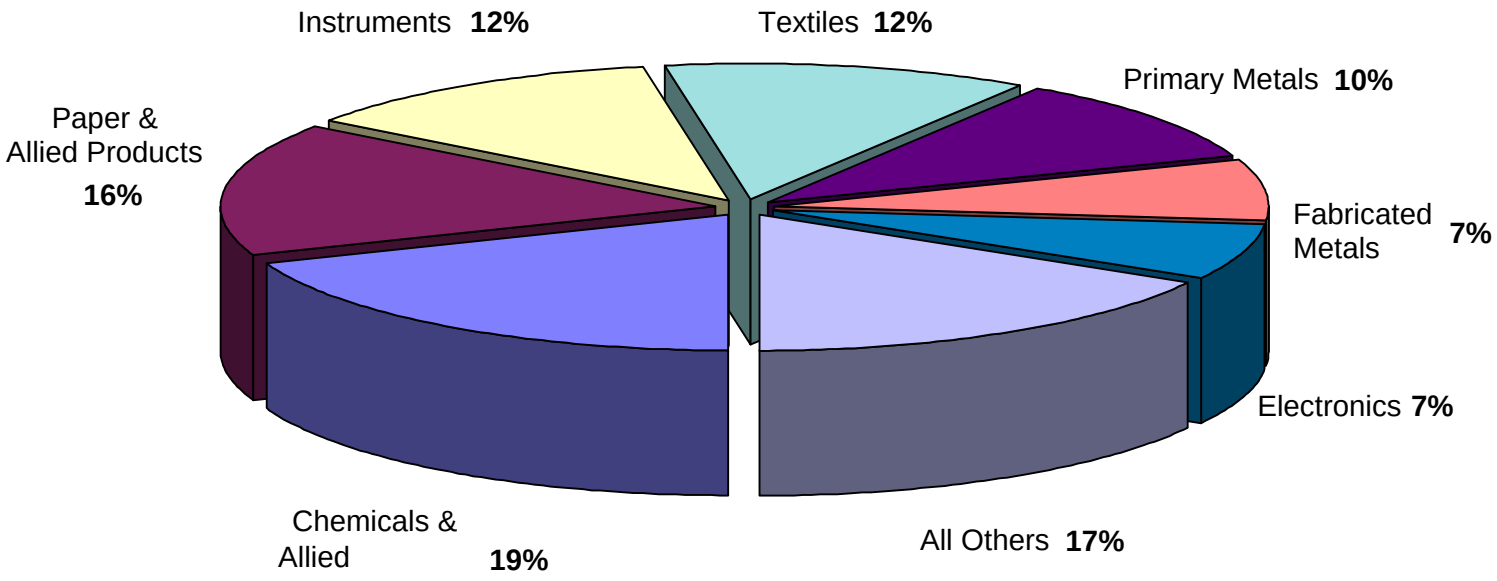
# 1996 Chemical Use

## (By Industrial Sector)

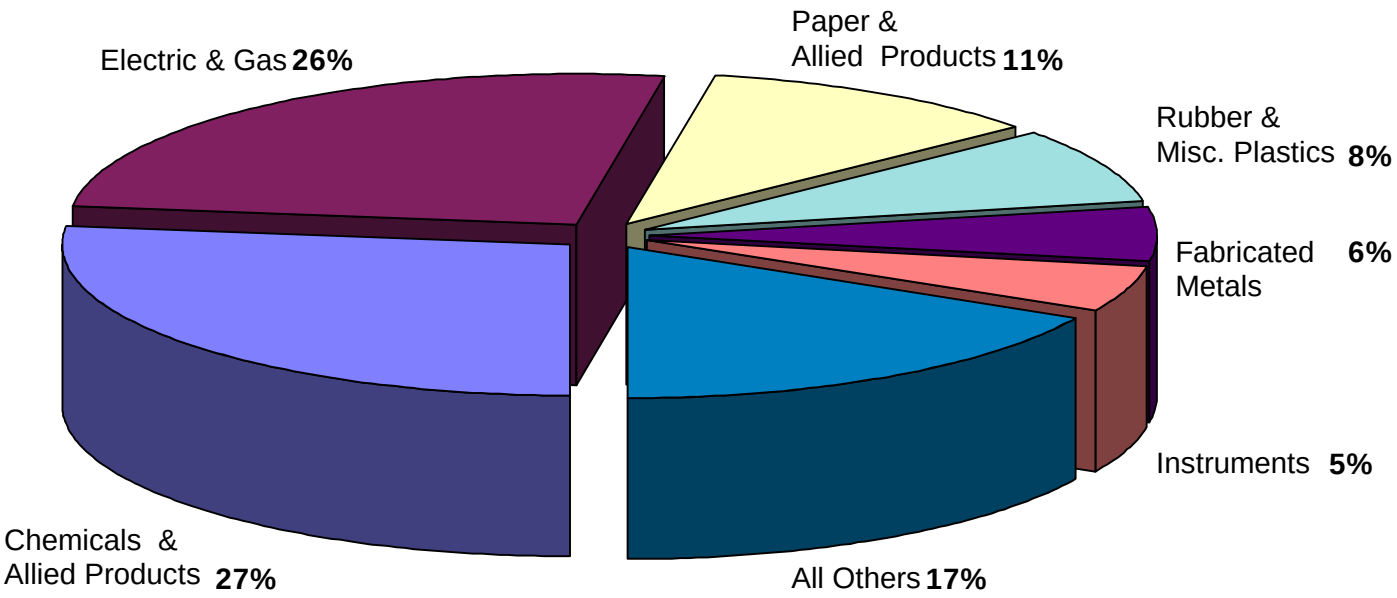


# 1996 Byproduct Generation

**(By Industrial Sector)**

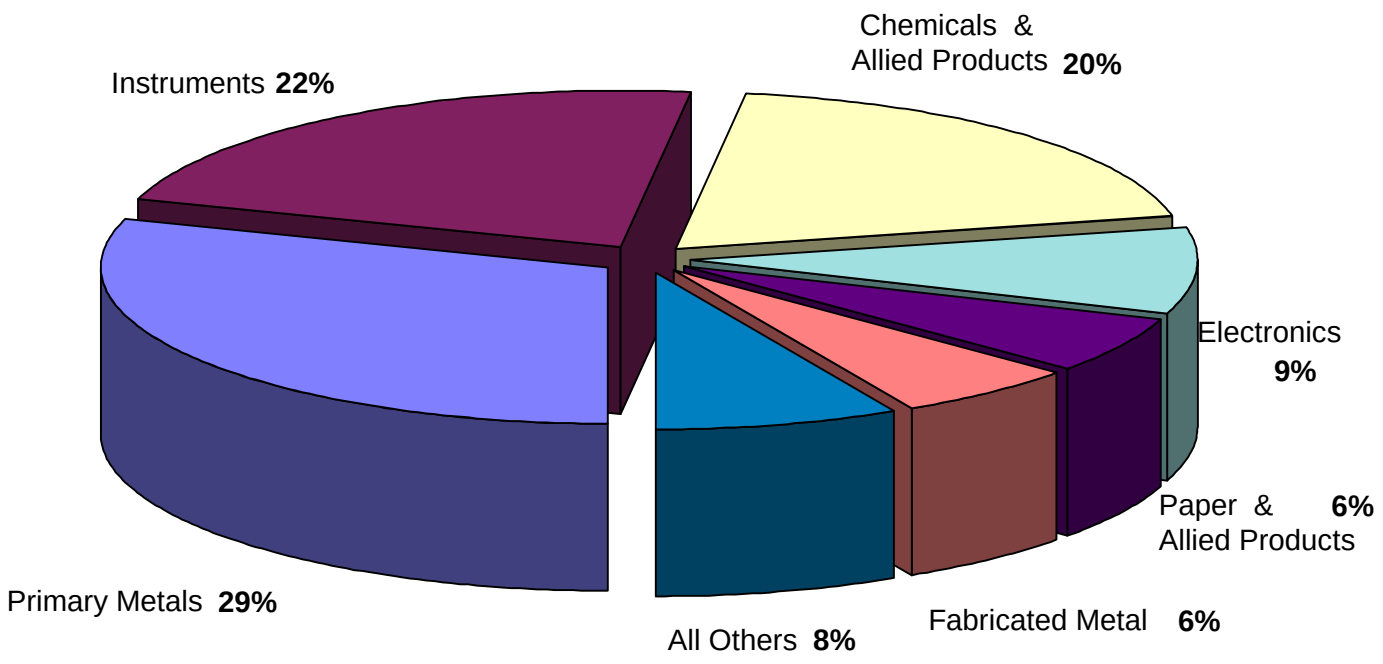


# 1996 TRI Releases
## (By Industrial Sector)



# 1996 TRI Transfers Off-Site

## (By Industrial Sector)



## Four Most Commonly Reported Industrial Processes

**This table shows the four most commonly reported process codes and the five most common industries, chemicals, and TUR techniques associated with each of these process codes.**

| | GG-01<br>Blending, Mixing, Compounding | BB-04<br>Removal by Chemical Means | BB-02<br>Aqueous Cleaning | GG-03<br>Packaging/Filling |
|---|---|---|---|---|
| **Chemicals Most Commonly Reported Used in this Process** | ● Zinc Compounds<br>● Toluene<br>● Methyl Ethyl Ketone<br>● Glycol Ethers<br>● Xylene | ● Sulfuric Acid<br>● Nitric Acid<br>● Sodium Hydroxide<br>● Hydrochloric Acid<br>● Copper | ● Sodium Hydroxide<br>● Sulfuric Acid<br>● Copper<br>● Hydrochloric Acid<br>● Nitric Acid | ● Toluene<br>● Glycol Ethers<br>● Acetone<br>● Xylene<br>● Zinc Compounds |
| **Industries Most Commonly Reporting this Process** | ● Chemicals & Allied Products<br>● Rubber & Miscellaneous Plastic Products<br>● Paper & Allied Products<br>● Textile Mill Products<br>● Primary Metal Industries | ● Fabricated Metal Products<br>● Electronic & Other Electric Equipment<br>● Textile Mill Products<br>● Primary Metal Industries<br>● Paper and Allied Products | ● Fabricated Metal Products<br>● Electronic & Other Electric Equipment<br>● Textile Mill Products<br>● Primary Metal Industries<br>● Miscellaneous Manufacturing Industries | ● Chemicals & Allied Products<br>● Wholesale Trade of Nondurable Goods<br>● Rubber & Miscellaneous Plastic Products<br>● Instruments and Related Products<br>● Food and Kindred Products |
| **TUR Techniques Most Commonly Reported for this Process** | ● Improved O&M of Processing Equipment<br>● Product Reformulation | ● Improved O&M of Processing Equipment<br>● Recycling, Reuse or Extended Use of Toxics | ● Improved O&M of Processing Equipment<br>● Recycling, Reuse or Extended Use of Toxics | ● Improved O&M of Processing Equipment<br>● Product Reformulation |

***The industries, chemicals, and TUR techniques associated with each process code are listed in order from the most commonly reported to the least commonly reported.***

| 1996 Top 10 Facilities with the Greatest Reduction in Byproduct Generation While Implementing Toxics Use Reduction (1995-1996) | |
|---|---|
| **Company** | **Reduction in Byproduct (Lbs.)** |
| 1. Solutia (Springfield) | 5,464,830 |
| 2. Novacor Chemicals (Springfield) | 2,064,085 |
| 3. Eastman Gelatin Corp. (Peabody) | 471,679 |
| 4. Hazen Paper Co. (Holyoke) | 429,822 |
| 5. Sullivan Paper Company (W. Springfield) | 400,517 |
| 6. Cambridge Electric Light (Wareham) | 386,374 |
| 7. Boston Edison Co. (Boston, ID# 130085) | 324,000 |
| 8. Cranston Print Works (Webster) | 258,028 |
| 9. Lepages, Inc. (Gloucester) | 255,403 |
| 10. Surface Coatings, Inc. (Wilmington) | 208,350 |

# 1996 Top 20 Chemicals

## Total Use

**(These quantities do not include Trade Secret)**

| Chemical Name (CAS Number) | Total Use (Lbs.) |
|---|---|
| STYRENE MONOMER (100425) | 325,846,809 |
| COPPER (7440508) | 181,797,675 |
| SODIUM HYDROXIDE (1310732) | 80,858,810 |
| HYDROCHLORIC ACID (7647010) | 47,087,474 |
| SULFURIC ACID (7664939) | 44,847,784 |
| TOLUENE (108883) | 32,021,690 |
| METHANOL (67561) | 20,594,237 |
| METHYL ETHYL KETONE (78933) | 17,757,207 |
| COPPER COMPOUNDS (1015) | 17,162,028 |
| ZINC AND COMPOUNDS (1039) | 16,162,351 |
| DIISOCYANATES (822060) | 16,104,791 |
| AMMONIA (7664417) | 14,980,502 |
| SODIUM HYPOCHLORITE (7681529) | 14,584,204 |
| POTASSIUM HYDROXIDE (1310583) | 14,156,940 |
| ACETONE (67641) | 13,425,905 |
| METHYL METHACRYLATE (80626) | 12,541,273 |
| ETHYL ACETATE (141786) | 12,449,496 |
| LEAD COMPOUNDS (1026) | 8,897,196 |
| PHOSPHORIC ACID (7664382) | 8,877,590 |
| PHTHALIC ANHYDRIDE (85449) | 8,527,101 |

## Byproduct Generation

| Chemical Name (CAS Number) | Byproduct Generation (Lbs.) |
|---|---|
| SODIUM HYDROXIDE (1310732) | 16,712,505 |
| TOLUENE (108883) | 14,624,411 |
| SULFURIC ACID (7664939) | 12,136,313 |
| COPPER (7440508) | 10,840,639 |
| ETHYL ACETATE (141786) | 9,752,930 |
| METHYL ETHYL KETONE (78933) | 9,283,874 |
| ACETONE (67641) | 9,157,037 |
| METHANOL (67561) | 6,141,829 |
| HYDROCHLORIC ACID (7647010) | 5,967,839 |
| COPPER COMPOUNDS (1015) | 5,420,775 |
| NITRICACID (7697372) | 3,947,544 |
| DICHLOROMETHANE (75092) | 2,992,406 |
| NITRATE COMPOUNDS (1090) | 2,566,046 |
| AMMONIA (7664417) | 2,198,521 |
| PHOSPHORIC ACID (7664382) | 2,089,756 |
| ACETIC ACID(64197) | 1,757,500 |
| DIMETHYLFORMAMIDE (68122) | 1,529,255 |
| XYLENEMIXEDISOMER (1330207) | 1,101,889 |
| TRICHLOROETHYLENE (79016) | 1,086,372 |
| ZINC AND COMPOUNDS (1039) | 954,249 |

Total Use/Top 20 Chemicals (Including Trade Secret) = 1,050,887,133
or 82% of Total Use Reported for All Chemicals Statewide

Byproduct Generation/Top 20 Chemicals = 120,261,690
or 86% of Byproduct Generation for All Chemicals Statewide

The following 3 chemicals appear in the Top 20 Chemicals Total Use
list when trade secret chemical quantities are included: BUTYRALDEHYDE, FORMALDEHYDE, VINYL ACETATE

# 1996 Top 20 Chemicals

## Shipped in Product

**(These quantities do not include Trade Secret)**

| Chemical Name (CAS Number) | Shipped in Product (Lbs.) |
|---|---|
| COPPER (7440508) | 170,107,648 |
| STYRENE MONOMER (100425) | 54,268,265 |
| SODIUM HYDROXIDE (1310732) | 33,328,360 |
| TOLUENE (108883) | 18,533,427 |
| METHANOL (67561) | 14,840,251 |
| ZINC AND COMPOUNDS (1039) | 13,419,957 |
| POTASSIUM HYDROXIDE (1310583) | 11,235,218 |
| COPPER COMPOUNDS (1015) | 11,004,325 |
| DIISOCYANATES (822060) | 10,912,479 |
| SODIUM HYPOCHLORITE (7681529) | 8,828,091 |
| METHYL ETHYL KETONE (78933) | 8,646,974 |
| ACETONE (67641) | 7,853,616 |
| SULFURIC ACID (7664939) | 7,234,290 |
| LEAD COMPOUNDS (1026) | 7,190,513 |
| HEXANE (N-HEXANE) (110543) | 6,562,993 |
| GLYCOL ETHERS (1022) | 6,129,959 |
| FORMALDEHYDE (50000) | 6,060,121 |
| ANTIMONY COMPOUNDS (1000) | 5,524,240 |
| AMMONIUM HYDROXIDE (1336216) | 5,308,390 |
| AMMONIA (7664417) | 5,095,720 |

## TRI Transfers and Releases

| Chemical Name (CAS Number) | Transfers and Releases (Lbs.) |
|---|---|
| COPPER (7440508) | 12,382,211 |
| COPPER COMPOUNDS (1015) | 5,556,149 |
| TOLUENE (108883) | 5,447,654 |
| METHANOL (67561) | 3,146,861 |
| DICHLOROMETHANE (75092) | 2,939,731 |
| METHYL ETHYL KETONE (78933) | 2,722,984 |
| NITRATE COMPOUNDS (1090) | 2,606,389 |
| HYDROCHLORIC ACID (7647010) | 2,547,454 |
| SODIUM HYDROXIDE (1310732) | 2,279,790 |
| ACETONE (67641) | 2,066,984 |
| SULFURIC ACID (7664939) | 1,884,510 |
| AMMONIA (7664417) | 1,772,181 |
| ETHYL ACETATE (141786) | 1,573,305 |
| TRICHLOROETHYLENE (79016) | 1,360,306 |
| PHOSPHORIC ACID (7664382) | 1,211,817 |
| NICKEL AND COMPOUNDS (1029) | 726,552 |
| ANTIMONY COMPOUNDS (1000) | 716,251 |
| XYLENEMIXEDISOMER (1330207) | 597,191 |
| 1-METHYL-2-PYRROLIDONE (872504) | 560,746 |
| HEXANE (N-HEXANE) (110543) | 560,103 |

Shipped in Product/Top 20 Chemicals (Including Trade Secret) = 452,169,806
or 82% of Shipped in Product Reported for All Chemicals Statewide

Transfers and Releases/Top 20 Chemicals = 52,659,169
or 79% of Transfers and Releases for All Chemicals Statewide

The following 2 chemicals appear in the Top 20 Chemicals Shipped in Product
list when trade secret chemical quantities are included: ETHYL ACETATE, ETHYLENE GLYCOL

# 1996 Top 20 Facilities

## Total Use

| Facility Name | Town | Total Use (Lbs.) |
|---|---|---|
| Novacor Chemicals, Inc. | Springfield | 214,169,490 |
| Solutia, Inc. | Springfield | 126,165,750 |
| BASF Corp. - Polymers | Holyoke | 62,761,000 |
| Boremco Specialty Chemicals | Fall River | 61,657,326 |
| American Polymers | Oxford | 56,782,939 |
| American Insulated Wire Corp. | Attleboro | 54,956,579 |
| Holland Company, Inc. | Adams | 46,090,042 |
| Eastman Gelatin Corporation | Peabody | 40,449,360 |
| General Cable | Taunton | 26,756,842 |
| American Flexible Conduit | New Bedford | 25,485,423 |
| Brand Rex Nonotuck Division | South Hadley | 21,174,019 |
| Astro Chemicals, Inc. | Springfield | 20,876,377 |
| Texas Instruments | Attleboro | 16,326,590 |
| Houghton Chemical Corporation | Boston | 16,092,233 |
| Elite Chemicals | Ludlow | 15,805,714 |
| Ashland Chemical Company | Tewksbury | 14,768,138 |
| Firestone Building Products | Springfield | 12,607,427 |
| Monson Companies, Inc. | Leominster | 10,631,153 |
| Rockbestos Surprenant & Cable Corp. | Clinton | 10,447,441 |
| Teknor Apex Co. | Attleboro | 10,317,629 |

## Byproduct Generation

| Facility Name | Town | Byproduct Generation (Lbs.) |
|---|---|---|
| Rexam Graphics, Inc. | South Hadley | 10,191,593 |
| Chemdesign Corp. | Fitchburg | 8,464,622 |
| American Insulated Wire Corp. | Attleboro | 8,359,272 |
| Polaroid Corporation | Waltham | 7,931,812 |
| Solutia, Inc. | Springfield | 7,314,170 |
| Flexcon Co., Inc. | Spencer | 5,837,804 |
| Texas Instruments | Attleboro | 5,307,301 |
| Eastman Gelatin Corporation | Peabody | 3,311,008 |
| Crane & Co., Inc. Pioneer Mill | Dalton | 2,072,607 |
| Ideal Tape Company | Lowell | 1,995,009 |
| Veratec Griswoldville Plant | Colrain | 1,892,862 |
| Venture Tape | Rockland | 1,887,004 |
| Polaroid Corporation | Assonet | 1,745,064 |
| New England Power Company | Westborough | 1,687,000 |
| Cranston Print Works | Webster | 1,579,080 |
| Anitec Printing Plates | Holyoke | 1,440,762 |
| Foilmark, Inc. | Newburyport | 1,351,473 |
| Madico, Inc. | Woburn | 1,351,134 |
| Altron | Wilmington | 1,346,979 |
| Precision Lithograining Corp. | South Hadley | 1,330,160 |

# 1996 Top 20 Facilities

## Shipped in Product

| Facility Name | Town | Shipped in Product (Lbs.) |
|---|---|---|
| Boremco Specialty Chemicals | Fall River | 61,624,833 |
| American Polymers | Oxford | 53,137,383 |
| American Insulated Wire Corp. | Attleboro | 46,597,307 |
| Solutia, Inc. | Springfield | 28,597,000 |
| General Cable | Taunton | 26,438,095 |
| American Flexible Conduit | New Bedford | 25,468,293 |
| Brand Rex Nonotuck Division | South Hadley | 20,617,650 |
| Astro Chemicals, Inc. | Springfield | 19,690,296 |
| Ashland Chemical Company | Tewksbury | 17,519,193 |
| Houghton Chemical Corporation | Boston | 16,080,205 |
| Firestone Building Products | Springfield | 12,550,226 |
| Monson Companies, Inc. | Leominster | 10,616,320 |
| Rockbestos Surprenant & Cable | Clinton | 10,432,505 |
| Elite Chemicals | Ludlow | 10,411,162 |
| Tacc International | Rockland | 9,642,808 |
| Industrial Blast Coil Corp. | South Easton | 8,897,872 |
| Spalding & Evenflo Co., Inc. | Chicopee | 7,853,603 |
| Texas Instruments | Attleboro | 7,265,000 |
| Shipley Co., Inc. | Marlborough | 7,052,835 |
| Mohawk CDT | Leominster | 6,291,894 |

## Transfers and Releases

| Facility Name | Town | Transfers and Releases (Lbs.) |
|---|---|---|
| American Insulated Wire Corp. | Attleboro | 8,360,171 |
| Texas Instruments | Attleboro | 5,218,640 |
| Solutia, Inc. | Springfield | 4,567,923 |
| Chemdesign Corp. | Fitchburg | 3,953,108 |
| Polaroid Corp. | Waltham | 3,749,495 |
| Rexam Graphics, Inc. | South Hadley | 2,066,239 |
| New England Power Company | Westborough | 1,592,000 |
| Modern Aluminum Anodizing | North Adams | 1,167,660 |
| Mass Recycling Assoc Ltd Partnership | Hingham | 1,103,185 |
| Altron | Wilmington | 1,076,423 |
| Polaroid Corporation | Assonet | 1,038,777 |
| Attleboro Refining Company, Inc. | Attleboro | 938,937 |
| Ideal Tape Company | Lowell | 871,230 |
| New England Power Company | Westborough | 866,808 |
| Boston Edison Company | Boston | 830,000 |
| Montaup Electric Co. | W. Bridgewater | 776,636 |
| Gould Electronics, Inc. | Newburyport | 649,949 |
| Judd Wire Div HVEC | Turners Falls | 641,748 |
| Spectrum Wire Corp. | E. Londmeadow | 576,957 |
| Brand Rex Nonotuck Division | South Hadley | 556,369 |

# Measuring Progress 1990-1996

**Measuring changes in raw totals doesn't tell the whole story because:**

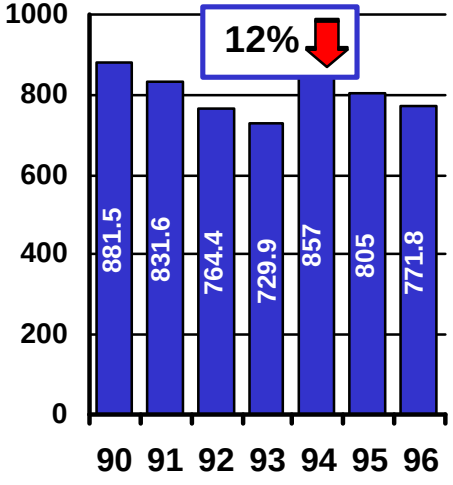
- There have been changes in the list of chemicals covered by the law
- There have been changes in the industrial sectors covered by the law
- There have been changes in production levels

**Therefore:**

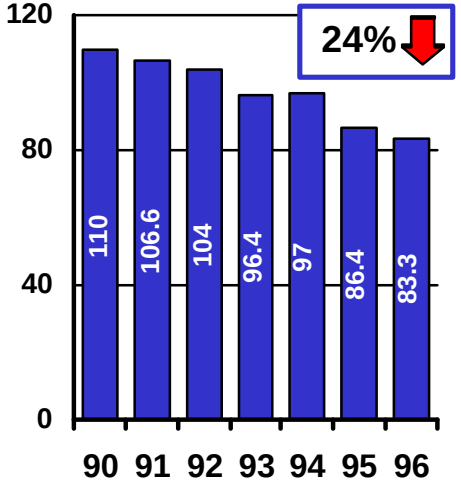
- Core Group is defined which consists of:
  - Chemicals reportable in all years
  - Industrial sectors required to report in all years
- Reported Totals for the Core Group are adjusted for changes in the level of manufacturing activity using production ratio/activity index that facilities report under TRI
  - "Production Adjusted"

# Core Chemicals and Industries: Reported Quantity Trends: 1990 - 1996

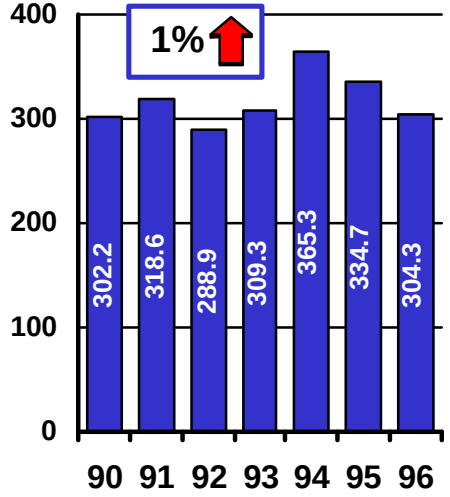
## Total Use



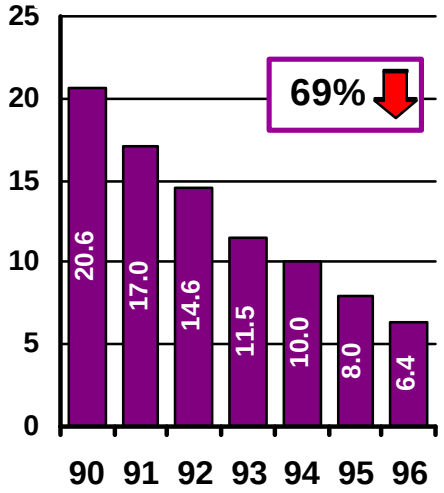

## Byproduct



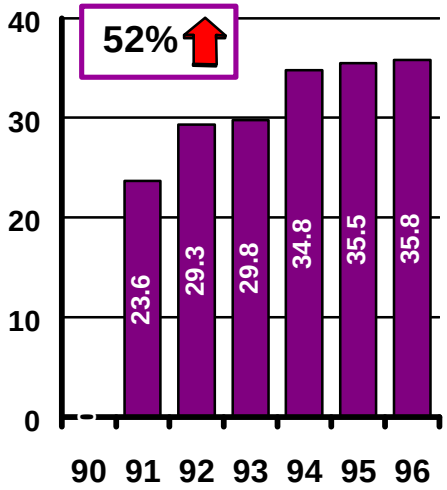

## Shipped




## TRI Releases to Environment

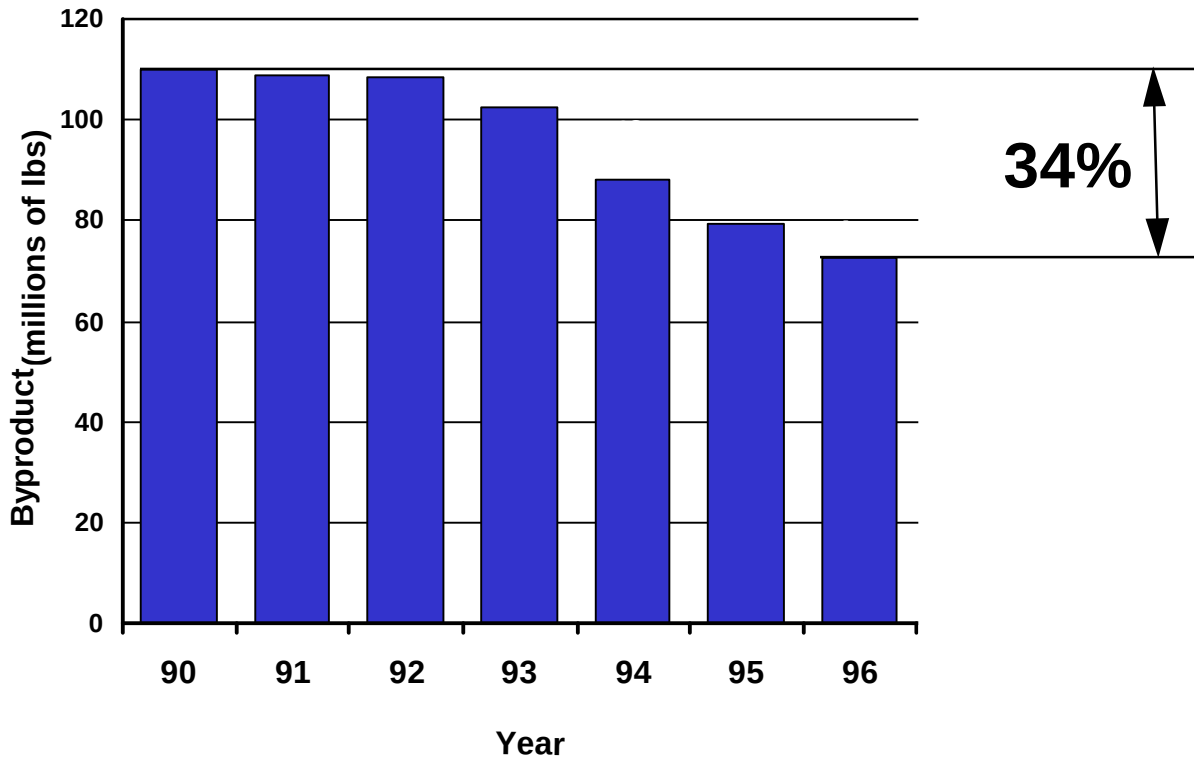



## TRI Transfers Off-Site




All quantities in millions of pounds, not production adjusted

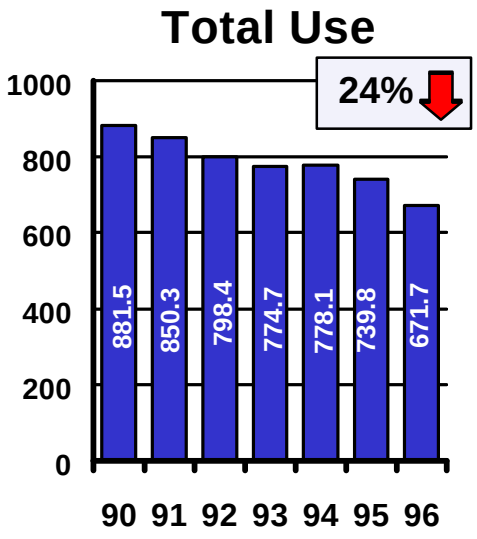
# TUR Byproduct Reduction Goal Progress
# Production Adjusted Byproduct

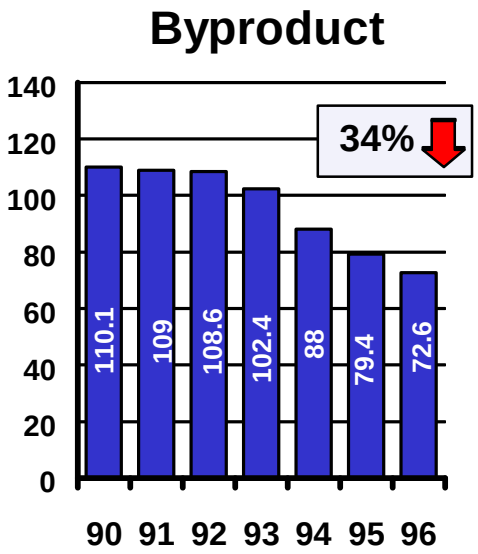


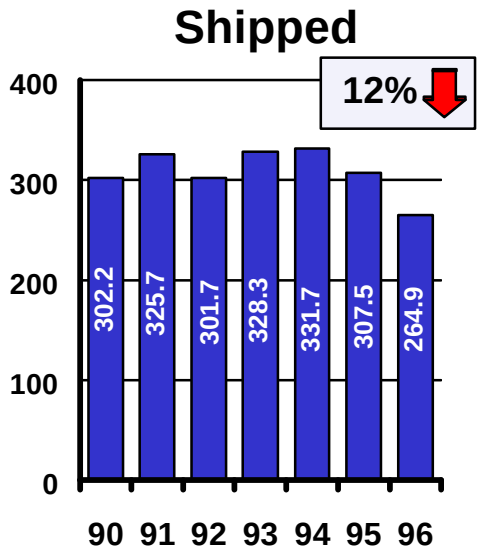

**Byproduct Generation**

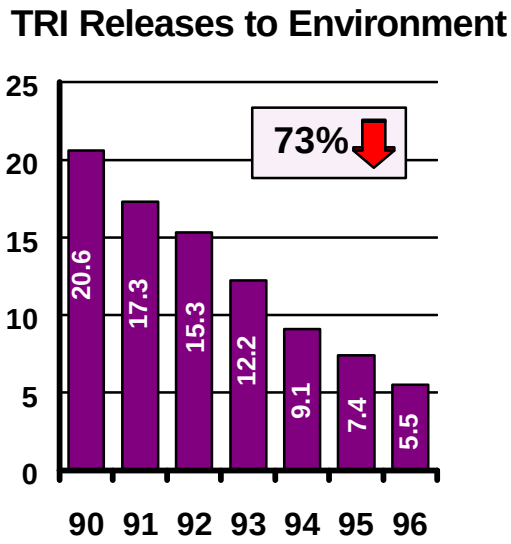
**34% Reduction**

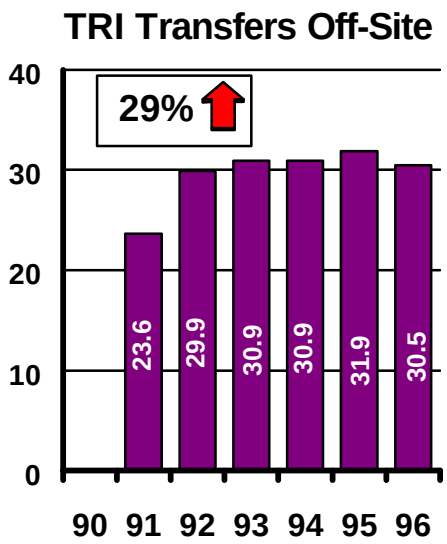
# Core Chemicals and Industries: Production Adjusted Trends: 1990 - 1996




All quantities in millions of pounds, production adjusted

# CORE GROUP TURA INFORMATION: 1990 - 1996 Trend Summary

(Does Not Include Trade Secret Quantities)

Quantities are in Millions of Pounds

| | TOTAL USE | | BYPRODUCT | | SHIPPED IN PRODUCT | | TRI RELEASES TO THE ENVIRONMENT | | TRI TRANSFERS OFF-SITE (Notes 2&3) | | TRI PRODUCTION RATIO ACTIVITY INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Reported Quantity | Adjusted for Production | Reported Quantity | Adjusted for Production | Reported Quantity | Adjusted for Production | Reported Quantity | Adjusted for Production | Reported Quantity | Adjusted for Production | |
| 1990 | 881.5 | 881.5 | 110.1 | 110.1 | 302.2 | 302.2 | 20.6 | 20.6 | | | |
| 1991 | 831.6 | 850.3 | 106.6 | 109.0 | 318.6 | 325.7 | 17.0 | 17.3 | 23.6 | 23.6 | 0.98 |
| 1992 | 764.4 | 798.4 | 104.0 | 108.6 | 288.9 | 301.7 | 14.6 | 15.3 | 29.3 | 29.9 | 0.98 |
| 1993 | 729.9 | 774.7 | 96.4 | 102.4 | 309.3 | 328.3 | 11.5 | 12.2 | 29.8 | 30.9 | 0.98 |
| 1994 | 857.0 | 778.1 | 97.0 | 88.0 | 365.3 | 331.7 | 10.0 | 9.1 | 34.8 | 30.9 | 1.17 |
| 1995 | 805.0 | 739.8 | 86.4 | 79.4 | 334.7 | 307.5 | 8.0 | 7.4 | 35.5 | 31.9 | 0.99 |
| 1996 | 771.8 | 671.7 | 83.3 | 72.6 | 304.3 | 264.9 | 6.4 | 5.5 | 35.8 | 30.5 | 1.06 |
| Percent Change 1990-1996 | 12% Reduction | 24% Reduction | 24% Reduction | 34% Reduction | 0.7% Increase | 12% Reduction | 69% Reduction | 73% Reduction | 52% Increase | 29% Increase | 15% Increase |

Notes:

1) Quantities in shaded boxes are adjusted for changes in manufacturing activity (production adjusted) using the facility-reported TRI production ratio/activity index.

2) Definition of TRI off-site transfers changed in 1991, therefore trends must be measured from 1991 to 1996.

3) Most of the transfers off-site are metals being sent to scrap metal recycling facilities.