Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Department of Environmental Protection
Address: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone**: 617-292-5500

Maura T. Healey	**Kim Driscoll**	**Rebecca Tepper**	**Bonnie Heiple**
Governor	Lieutenant Governor	Secretary	Commissioner

Reporting Year 2024

Toxics Use Reduction Information Release

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Department of Environmental Protection

Developed in collaboration with
Toxics Use Reduction Institute
Office of Technical Assistance and Technology
May 2026

Table of Contents

Executive Summary

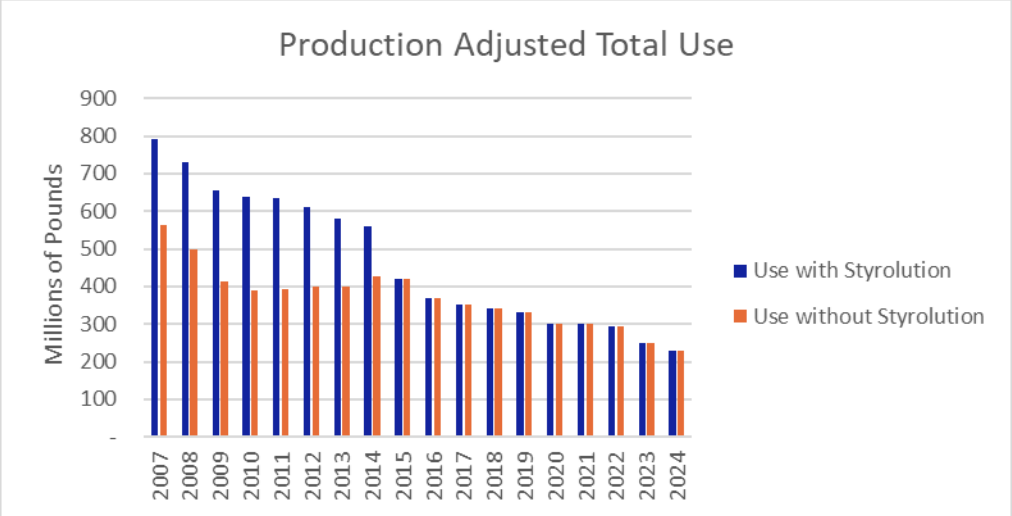
In 1989, the Toxics Use Reduction Act (TURA) (Chapter 21I of the Massachusetts General Laws) was enacted, to protect public health and the environment by promoting reduction in the use of toxic chemicals. TURA established reporting and planning requirements that encourage facilities to use toxic chemicals (hereinafter also referred to as chemicals, toxics, or toxic substances) only when necessary and to waste as little as possible in the production process. TURA has been successful. Massachusetts manufacturers and other businesses subject to TURA have dramatically reduced their reliance on toxic chemicals making Massachusetts a national leader in toxics use reduction. Through toxics use reduction, Massachusetts businesses have saved money while reducing pollution released to the environment, chemical transportation risks, workplace hazards, and toxics in products and waste.

Four hundred twenty-five (425) facilities reported using 130 different chemicals in 2024. In total (including data submitted as trade secret data – as defined on page 4), from 1990 to 2024 (with exception of transfers off-site, which is from 1991), the following reductions were observed:

- Chemical Use - from 1.2 billion to 561million pounds
- Byproduct Generation - from 127 to 57 million pounds
- Shipped in Product - from 433 to 276 million pounds
- On-Site Releases - from 21 to 1.8 million pounds
- Transfers Off-Site - from 46 to 31 million pounds

As shown below, between 2007 and 2024 when adjusted for the reported 63% increase in production, 2007 Core Group (as defined on page 4) facilities reduced:

- toxic chemical use by 71% (Styrolution is explained on page 9)
- toxic byproducts by 59%
- toxics shipped in product by 49%
- on-site releases of toxics to the environment by 84%
- transfers of toxics off-site for further waste management by 35%



This report includes the following six sections:

Section I: **Introduction.**

Section II: **Key TURA Terms.**

Section III: **2024 Toxics Use Reduction Progress** analyzes changes in reported chemical use and byproduct that can be attributed to the adoption of toxics use reduction by TURA filers, and associated reductions in pollution.

Section IV: **2024 Chemical Data** summarizes the reported information on chemical use in calendar year 2024 including detailed information on the top twenty chemicals used, generated as byproduct, shipped in product, released on-site as air or water pollution onsite, and shipped off-site for treatment and disposal.

Section V: **2024 Chemicals of Particular Concern** presents current and historical information on particularly toxic chemicals, on chemicals that promote asthma, and on carcinogens.

Section VI: **2024 Significant Industrial Sectors** describes the relative contributions of different industrial sectors to chemical use, waste, and release.

Section VII: **2024 Major TURA Facilities** presents the top 20 facilities for use, byproduct generation, shipped in product, released to the environment, and shipped offsite for treatment and disposal.

This 2024 Toxics Use Reduction Information Release contains chemical information useful to the public, government, and industry. However, because the data in this report is collected only from facilities within certain industrial sectors that have ten or more full-time employees, and use certain chemicals above established reporting thresholds, this report does not provide a complete picture of the use and release of all toxic chemicals in Massachusetts.

Downloadable data extracts, for reporting years 1990 through 2024, can be found at MassDEP Toxics Use Reduction Act (TURA) Data & Results | Mass.gov. The data extracts include all reported TURA data, except for trade secret data, in an Excel format.

I. Introduction

The annual TURA information release is required under MGL Chapter 21I, Section 3(H) and describes toxic chemical use in Massachusetts in 2024 and progress in toxics use reduction (TUR) under the Toxics Use Reduction Act (TURA). TURA was enacted in 1989 to reduce the risks to the public, workers, and the environment from exposure to toxic chemicals. Rather than taking the traditional "command and control" approach to pollution control and worker health and safety, TURA created a process to encourage Massachusetts facilities to reduce the quantity of toxics used and wasted in their production processes. TURA requires Large Quantity Toxics Users (LQTUs, hereinafter referred to as filers) to submit annual reports to the Massachusetts Department of Environmental Protection (MassDEP). These reports detail the quantity of the listed chemicals the facilities used, shipped in or as product, generated as byproduct (waste -- neither shipped in product nor converted to another chemical during the production process), release to the environment as pollution, and shipped off-site for waste treatment and disposal. Facilities are filers if they meet the following criteria:

- the facilities fall within Manufacturing Standard Industrial Classification (SIC) codes (20-39 inclusive) and those in SIC codes 10-14, 40, 44-51, 72, 73, 75 and 76, or the corresponding NAICS codes,
- have ten or more full-time employee equivalents, and
- use listed toxic substances at or above reporting thresholds.

Filers are also required to pay an annual fee based on the number of chemicals used and the number of workers employed and must develop biennial TUR plans. TUR Plans identify techniques that the facility could adopt to reduce the use and waste of toxic chemicals in their production processes and evaluate which of these TUR techniques would save the facility money if implemented. Although facilities are not required to implement identified TUR techniques, many do. The plans are not submitted to MassDEP for review and approval. Instead, they must be approved by a MassDEP-certified toxics use reduction planner (TURP); however, MassDEP audits several of these plans annually. After several toxics use reduction planning efforts, facilities have the option of developing reduction plans for energy use, water use, solid waste disposal, or use of other chemicals instead of the traditional TUR plan.

TURA also promotes toxics use reduction through education and assistance: The Office of Technical Assistance (OTA) provides free, confidential, technical assistance to facilities seeking to reduce the use of toxics. The Toxics Use Reduction Institute (TURI) located at UMass Lowell provides toxics use reduction education, training, and library services; supports research on cleaner materials and processes; provides toxics use reduction grants for businesses, industries, and communities; and operates a laboratory for testing non-toxic or less-toxic cleaning alternatives.

The work of MassDEP, OTA, and TURI is supported through fees paid by the filers and coordinated by the Toxics Use Reduction Administrative Council (Council). The Council is a governing body consisting of the Secretaries of Energy and Environmental Affairs, Economic Development, and Public Safety, the Commissioners of MassDEP and the Department of Public Health, and the Director of Labor and Workforce Development, and chaired by the Secretary of Energy and Environmental Affairs.

The MassDEP TURA Program website is: www.mass.gov/dep/toxics/toxicsus.htm.

II. Key TURA Terms

Definitions

TURA: Massachusetts Toxics Use Reduction Act of 1989 (MGL c. 21I).

TRI: federal EPA Toxics Release Inventory.

Trade Secret Data: the information identified as confidential by TURA filers and not determined to be otherwise by the Commissioner of MassDEP. To protect confidentiality claims by TURA filers, all trade secret data in this information release are presented in aggregated form. Aggregated data do not include the names and amounts of chemicals subject to claims of confidentiality.

2007 Core Group: includes all industry categories and chemicals that were subject to TURA reporting in 2007 and remained subject to reporting in the current reporting year at the same reporting threshold. The 2007 Core Group is used to measure progress from 2007, the first reporting year since the 2006 TURA Amendments became effective. The 2007 Core Group does not include trade secret quantities.

2000 Core Group: includes all industry categories and chemicals that were subject to TURA reporting in 2000 and remained subject to reporting in the current reporting year at the same reporting threshold. The 2000 Core Group is used to measure progress from 2000 and does not include trade secret quantities.

The terms and definitions below have been arranged in order of inputs and outputs. Chemicals that are used by facilities are manufactured, processed, or otherwise used. As a result of using these chemicals, a facility has outputs that can include a product that is created for sale, or a waste ("byproduct" as defined by TURA). The calculation of use and waste of chemicals is known as "mass balance". Generally, the inputs equal the outputs, but there are some circumstances in which there is an imbalance between inputs and outputs. These are most often the result of 1) chemicals being recycled on-site; 2) the product being held in inventory; 3) chemicals being consumed or transformed into another chemical during the production process; or 4) the chemical is a metal in a compound, and as a result use is calculated differently than byproduct. For metal compounds, use is calculated as the total amount of the compound while byproduct is calculated as only the amount of the parent metal in the compound.

Inputs

Total Use – the total quantity in pounds of TURA chemicals reported as manufactured, processed, and otherwise used.

Manufacture – TURA defines "manufacture", in part, as: "to produce, prepare, import or compound a toxic or hazardous substance".

Process – TURA defines "process", in part, as: "the preparation of a toxic or hazardous substance, after its manufacture, for distribution in commerce".

Otherwise Use – "Otherwise use" is defined in the TURA regulations (310 CMR 50.10), in part, as "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".

Outputs

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.

Shipped In Product – the quantity in pounds of the chemical that leaves the facility as product.

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

On-Site Releases – chemicals released to the air, land, surface, or groundwater at the facility.

Transfers Off-Site – chemicals shipped off-site to a wastewater treatment or waste management, or recycling facility.

III. 2024 Toxics Use Reduction Progress

To protect the environment, public, and workers from the adverse effects of toxic chemicals, TURA established processes that encourage facilities to implement TUR techniques that result in:

1) the use of toxic chemicals only when necessary, and
2) the smallest possible amount of waste generated.

The TURA program has been a resounding success. TURA's initial goal of a 50% reduction in the quantity of toxic chemicals generated as byproduct was met in the first decade of the program, and the TURA program has continued to make progress in toxics use reduction in the ensuing years. This section of the report describes the trends in chemical use by filers.

Trends in the Numbers of Filers and Reported Chemical Use, Byproduct, On-site Releases, and Transfers Off-Site for Treatment or Disposal

As shown in Figure 1, 130 of the over 1,700 TURA listed substances were reported in 2024. The number of filers rose from 686 in 1990 to 728 in 1991 and 1992, gradually declined, and then rose again to 713 in 2001, largely due to the promulgation of a lower reporting threshold for persistent bioaccumulative toxic (PBT) chemicals (see Section IV, 2024 TURA Chemical Data). The number of filers has decreased from 437 in 2023 to 425 in 2024. Regulated facilities submit one report for each reportable substance. The number of individual substance reports submitted followed a similar trend, decreasing from a high of 2,666 in 1993, to 1,425 in 2024, consistent with the decline in the number of TURA filers.

These reported amounts are influenced by changes in regulatory requirements. For example, the number of individual substances reported reached a high of 202 in 1996 due to an expansion in the chemical list, and the number of TURA filers increased to a high of 713 in 2001, due to a drop in the reporting threshold for certain chemicals. The number of chemical reports dropped by approximately 25% in 2007 when the TURA reporting threshold was raised for certain manufactured and processed chemicals to match the EPA TRI threshold. Individual chemical reports have declined as Massachusetts businesses reported using fewer chemicals.

Filers Entering and Leaving the TURA Reporting Universe

From 2023 to 2024, 26 facilities left, and 15 facilities entered the TURA reporting universe. The reasons for 26 facilities not reporting are as follows:

- 9 facilities closed
- 13 facilities reduced use to below reporting thresholds
- 1 facility reduced their staffing below the FTE threshold
- 3 facilities are under enforcement for failure to report

Figure 1
# of TURA Filers, Individual Chemical Reports, and Different Chemicals Reported (1990-2024) (Including Trade Secret Data)

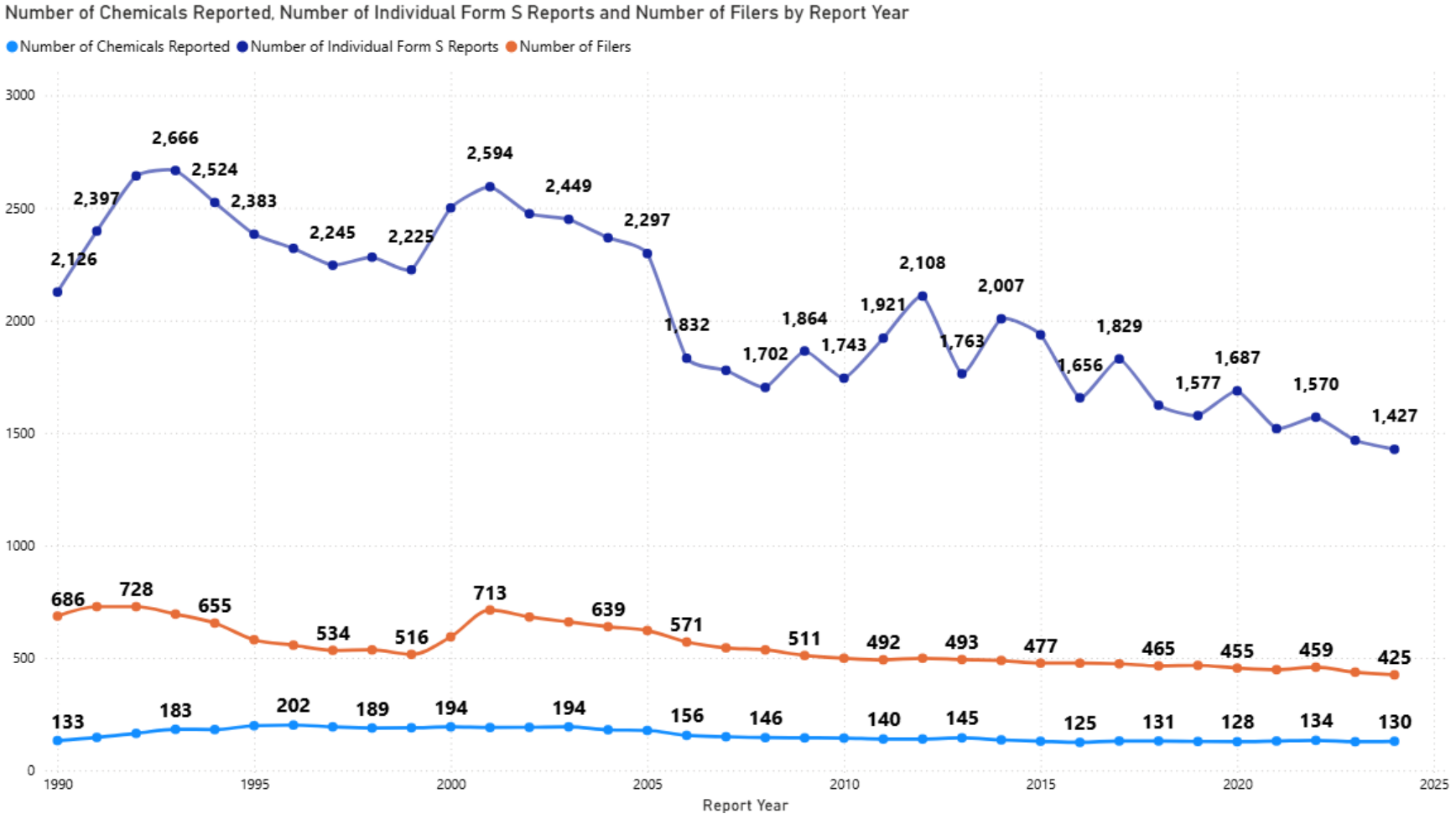
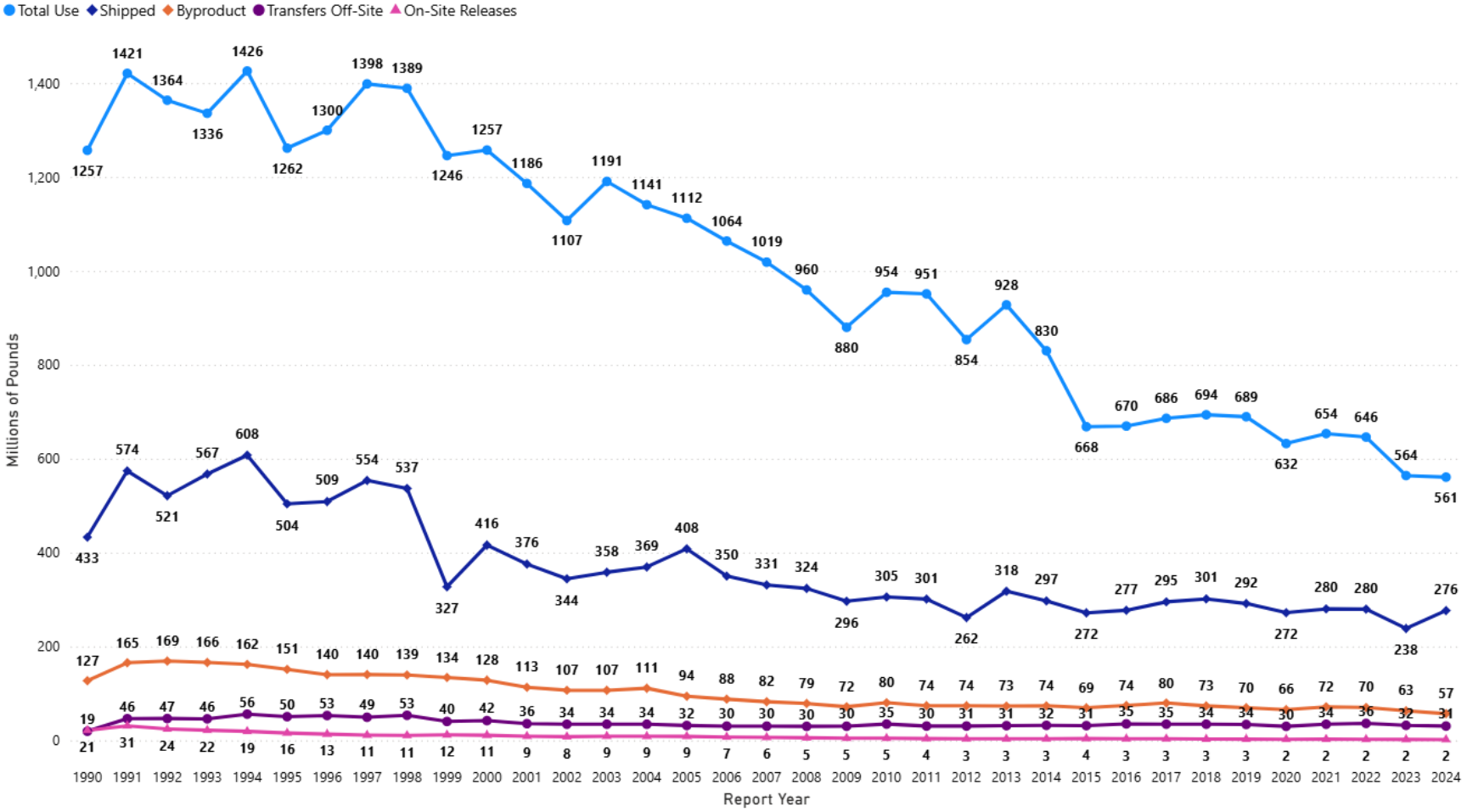


Figure 2
Raw Reported Data on the Pounds of Total Use, Generated as Byproduct, Shipped in or as Product, Released On-Site and Transferred Off-Site for Treatment or Disposal
Reporting Years 1990-2024 (includes trade secret data)



Measuring Progress in Toxics Use Reduction- Adjusting the Reported Data for Consistent Year to Year Comparisons:

While the raw reported data presents an overall picture of toxic chemical use and waste in the Commonwealth, it cannot be used to track progress in toxics use reduction. Because the types of facilities and the list of chemicals and their reporting thresholds change over time, progress in toxics use reduction is best measured by using a consistent set of chemicals and industries – a core group – subject to reporting. Without the use of a core group, changes in chemical use, byproducts, releases and shipments for treatment and disposal could be due to changes in the reporting requirements.

In past iterations of this report, two core groups were discussed: 2000 Core Group and 2007 Core Group. Although information and progress towards chemical reductions are still significant for the 2000 Core group, the following discussion will focus on the 2007 Core Group because it currently covers 93% of the total 401 million pounds of toxic chemicals reported in 2024 (excluding trade secret data). The "2007 Core Group" is made up of chemicals and industrial categories that were subject to reporting in 2007 and that remain subject to reporting, at the same reporting thresholds in 2024. The 2007 Core Group covered 99.9% of the reported data in 2007. Discussion on the "2000 Core Group" Progress is presented in Appendix A.

Raw reported data also need to be adjusted to account for changes in production levels. Because chemical use and byproduct generation generally increase as more products are produced, it is possible for a facility to report increases in use and byproduct while simultaneously implementing toxics use reduction. Filers are required to report the ratio of their production levels in the reporting year to their production levels in the prior year. The reported production ratios are used to normalize the data to eliminate the effects of changes in chemical use and waste that are due solely to changes in the amount of product produced. The following example illustrates how data are adjusted to reflect changes in production.

Example: Adjusting Raw Data for Year-To-Year Changes in Production

- In year 1, a facility produces 1,000 machine parts and generates 100 lbs. of byproduct.
- In year 2, the facility produces 10% fewer machine parts (900). Therefore, the production ratio is 0.90. However, the facility only generates 80 lbs. of byproduct.
- The production adjusted byproduct for year 2 is 80 lbs/0.90 = 89 lbs.

The production adjusted percent change from year 1 to year 2 is [100-89]/100 = 0.11, or an 11% reduction, while its actual byproduct reduction is 20%.

Progress in Toxics Use Reduction: 2007 Core Group

The 2007 Core Group includes all industry categories and chemicals that were subject to TURA reporting in 2007 and remained subject to reporting in 2024 at the same reporting threshold. The 2007 Core Group is used to measure progress from 2007, the first reporting year after the 2006 TURA Amendments became effective. The 2007 Core Group excludes trade secret chemicals, chemicals added through TRI after 2007, and chemicals designated as higher hazard substances (HHS) after 2007, except where they

are reported above standard TURA thresholds. Tables 1, 2 and Figures 3 and 4 below summarize TURA data from 2007 to 2024, excluding trade secret data.

2007 Core Group Progress: Adjusting for Production

Table 1 below summarizes TURA data from 2007 to 2024, showing production adjusted quantities. For the 2007 Core Group, the activity index shows an increase in production of 63% percent from 2007 to 2024. As shown in Table 1 below, and Figure 3, when adjusted for production, as of 2024, the 2007 Core Group facilities have reduced**:**

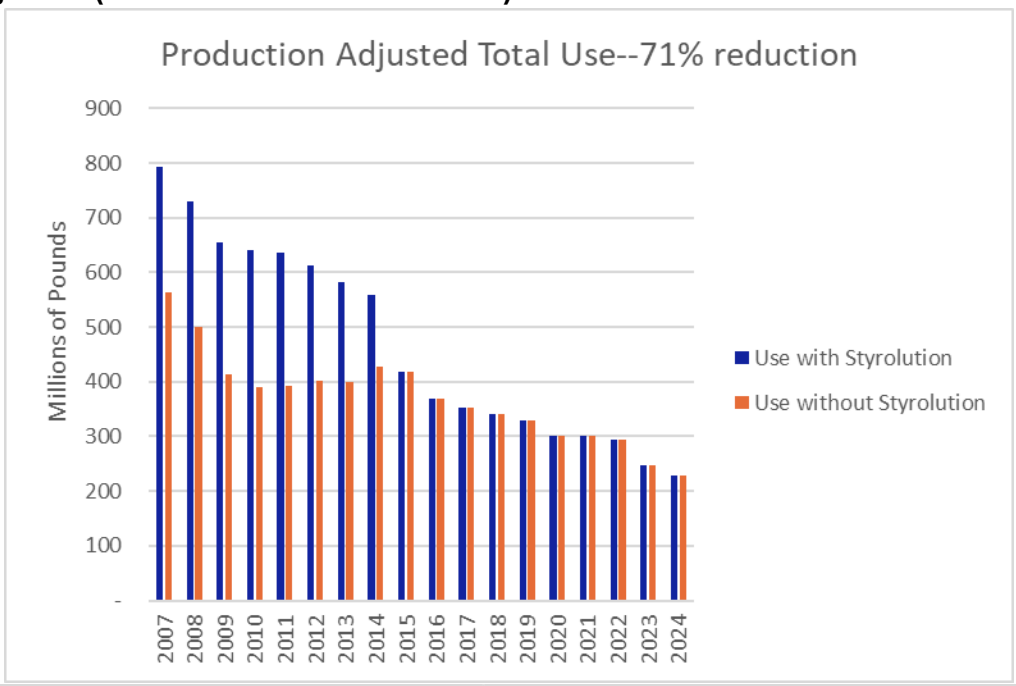
- toxic chemical use by 71%
- toxic byproducts by 59%
- toxics shipped in product by 49%
- on-site releases of toxics to the environment by 84%
- transfers of toxics off-site for further waste management by 35%

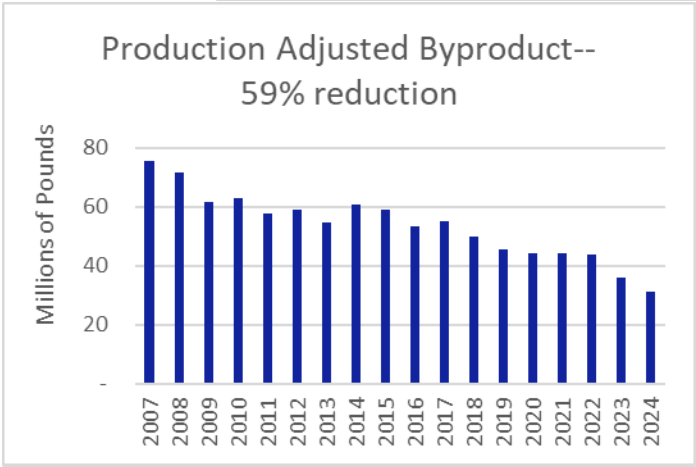
Table 1: 2007 CORE GROUP DATA: 2007 - 2024 TREND SUMMARY Adjusted for Changes in Production (Quantities are in millions of pounds and do not include trade secret quantities)

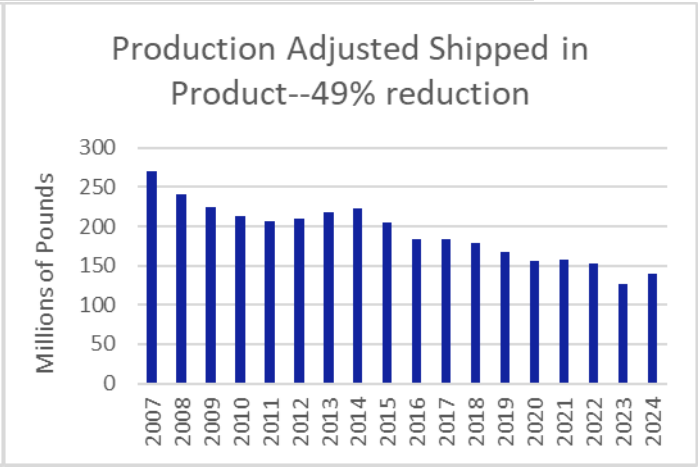
Year	Total Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site	Change in Production Ratio Year to Year	Cumulative Change in Production Ratio from 2007
2007	792.07	75.44	270.58	6.20	24.93	1	NA
2008	730.47	71.47	241.42	4.95	26.06	1.06	1.06
2009	655.62	61.78	224.88	4.08	23.72	1.02	1.08
2010	639.79	63.18	213.10	3.65	24.84	1.09	1.18
2011	635.54	57.74	206.60	3.00	21.20	0.99	1.17
2012	612.05	58.95	209.90	2.79	21.34	0.97	1.13
2013	581.54	54.78	217.50	2.47	21.20	1.07	1.21
2014	559.62	60.66	223.53	2.72	23.40	0.91	1.10
2015	418.61	58.91	204.30	3.26	24.99	0.99	1.09
2016	368.16	53.33	184.09	2.53	25.16	1.13	1.23
2017	351.99	54.93	183.36	2.29	22.70	1.08	1.33
2018	341.48	49.72	179.57	1.77	22.77	1.03	1.37
2019	330.08	45.72	167.62	1.66	20.97	1.03	1.41
2020	301.18	44.14	156.70	1.58	18.74	0.98	1.38
2021	300.40	44.32	157.00	1.49	20.62	1.06	1.47
2022	293.47	43.76	152.88	1.32	20.66	1.00	1.47
2023	248.27	36.14	126.26	1.07	17.75	1.05	1.54
2024	229.59	31.05	139.07	0.98	16.23	1.06	1.63
Percent Change 2007-2024	71% Reduction	59% Reduction	49% reduction	84% reduction	35% reduction	NA	63% Increase

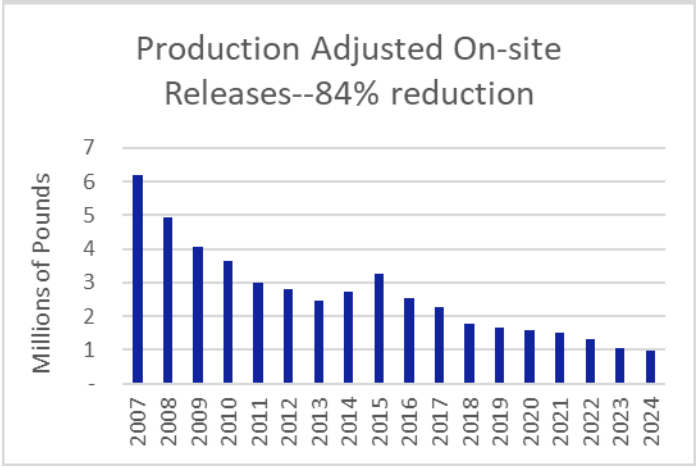
* Styrolution, which used over a quarter of the total reported use (excluding trade secret data) in 2007, ceased operations in Massachusetts in 2014.

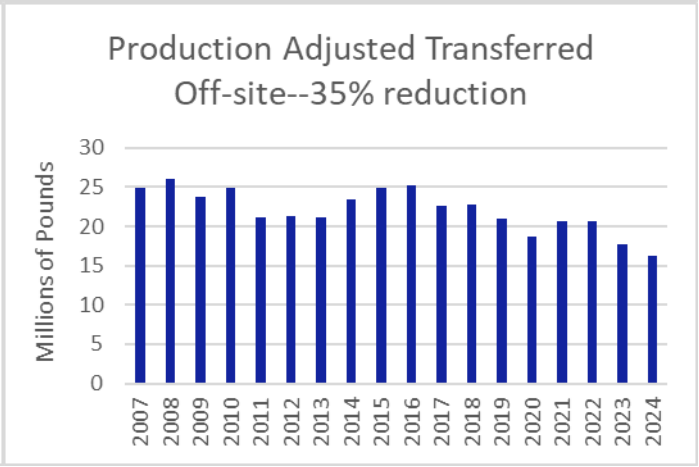
Figure 3 – 2007 Core Group Toxics Use Reduction Progress 2007-2024
Production Adjusted (Excludes Trade Secret Data)











2007 Core Group Progress without Adjusting for Production

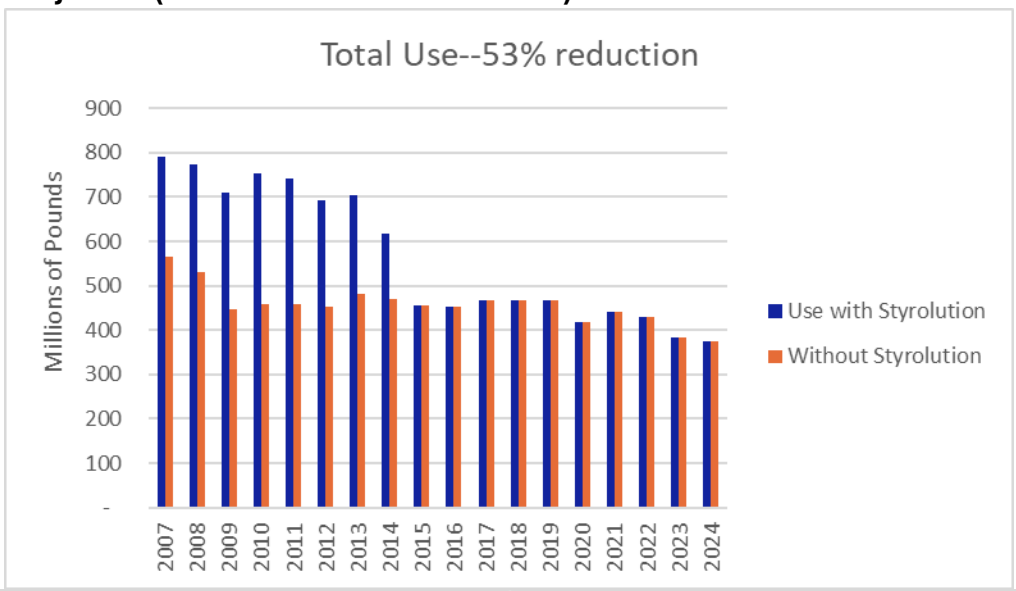
The actual quantities reported by the 2007 Core Group over the period 2007 to 2024 are shown in Table 2 and Figure 4. These quantities have not been adjusted for changes in production. From 2007 to 2024, Core Group facilities:

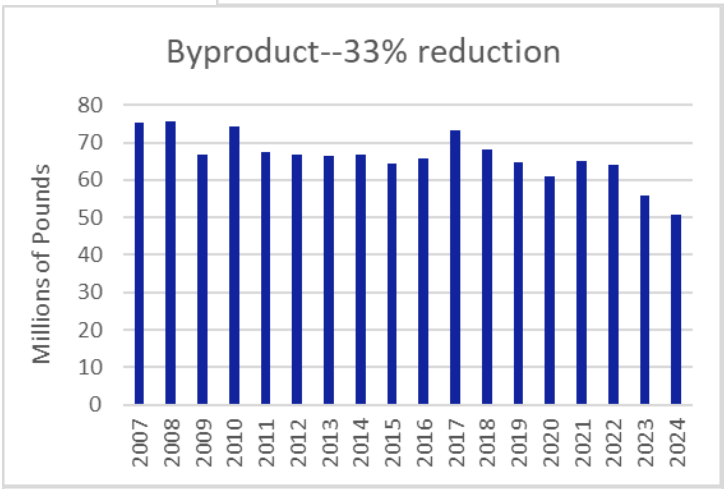
- reduced toxic chemical use by 53% (from 792 million to 375 million pounds between 2007 and 2024)
- reduced toxic byproducts by 33% (from 75 million to 51 million pounds between 2007 and 2024)
- reduced toxics shipped in product by 16% (from 271 million to 227 million pounds between 2007 and 2024)
- reduced on-site releases of toxics to the environment by 74% (from 6 million to 1.6 million pounds between 2007 and 2024)
- increased transfers of toxics off-site for further waste management by 6% (from 25 to 27 million pounds between 2007 and 2024).

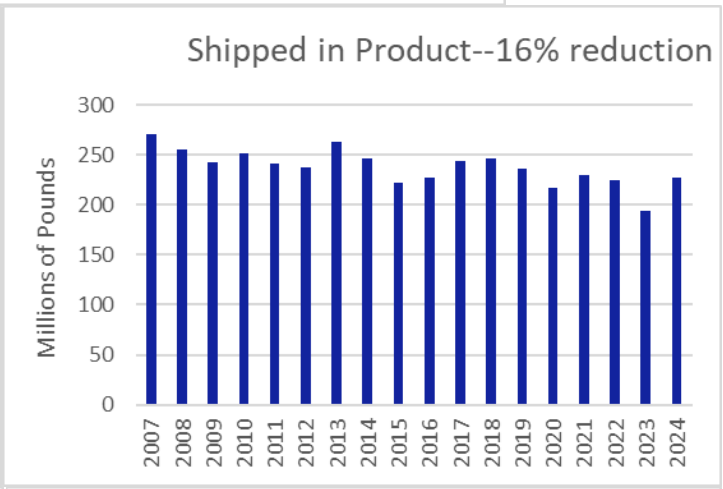
Table 2: 2007 CORE GROUP DATA: 2007 - 2024 TREND SUMMARY
(Quantities are in millions of pounds and do not include trade secret quantities)

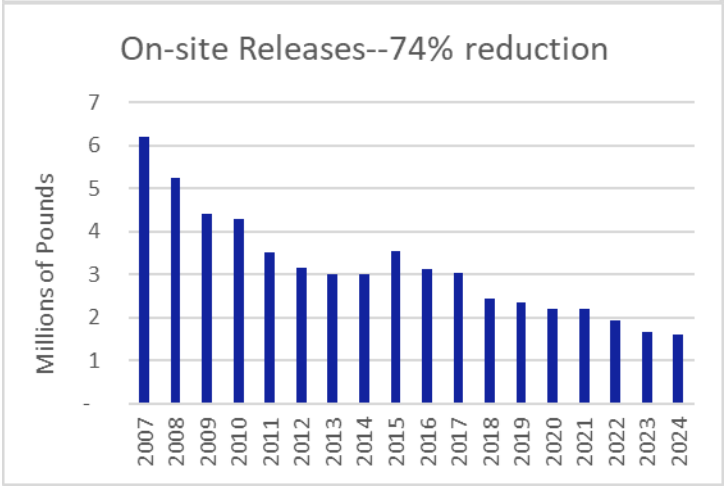
Year	Total Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site	Change in Production Ratio Year to Year	Cumulative Change in Production Ratio from 2007
2007	792.07	75.44	270.58	6.20	24.93	1	NA
2008	774.30	75.76	255.91	5.25	27.62	1.06	1.06
2009	708.85	66.79	243.14	4.41	25.64	1.02	1.08
2010	753.99	74.45	251.14	4.30	29.28	1.09	1.18
2011	741.50	67.37	241.05	3.51	24.73	0.99	1.17
2012	692.67	66.71	237.55	3.16	24.15	0.97	1.13
2013	704.21	66.33	263.38	3.00	25.67	1.07	1.21
2014	616.68	66.85	246.32	3.00	25.78	0.91	1.10
2015	456.68	64.27	222.87	3.55	27.26	0.99	1.09
2016	453.85	65.74	226.94	3.12	31.02	1.13	1.23
2017	468.63	73.13	244.13	3.04	30.22	1.08	1.33
2018	468.28	68.19	246.25	2.43	31.22	1.03	1.37
2019	466.23	64.58	236.75	2.35	29.62	1.03	1.41
2020	416.90	61.10	216.90	2.19	25.94	0.98	1.38
2021	440.77	65.03	230.36	2.19	30.26	1.06	1.47
2022	430.59	64.20	224.31	1.94	30.31	1.00	1.47
2023	382.48	55.68	194.51	1.65	27.34	1.05	1.54
2024	374.92	50.71	227.12	1.59	26.50	1.06	1.63
Percent Change 2007-2024	53% Reduction	33% Reduction	16% Reduction	74% Reduction	6% Increase	NA	63% Increase

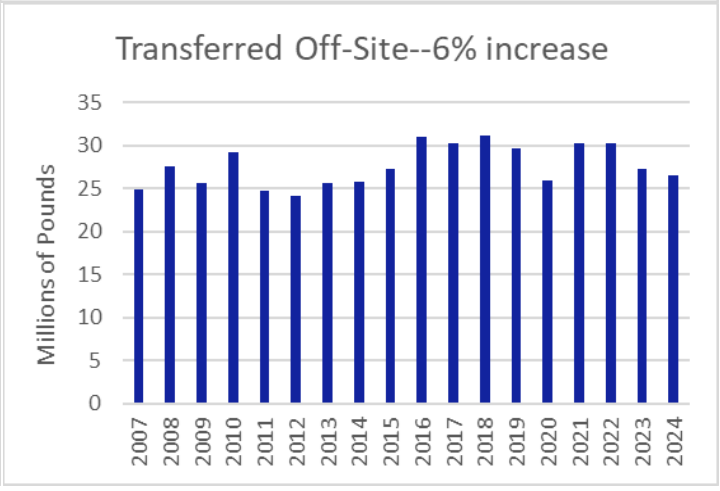
Figure 4 – 2007 Core Group Toxics Use Reduction Progress 2007-2024
Not Production Adjusted (Excludes Trade Secret Data)











IV. 2024 TURA Chemical Data

Table 3. All Reported Chemical Data 2024 (Rounded to millions of pounds) (Includes Trade Secret Data)

Category	Amount Reported	Percent of Total Chemical Use
Total Chemical Use	561,000,000	-
Shipped in Product	276,000,000	49%
Generated as Byproduct (total waste prior to treatment or disposal)	57,000,000	10%
On-Site Releases (to air, water, or land disposal)	1,800,000	0.3% of Total Chemical Use 3% of Total Byproduct
Transfers Off-Site (to a wastewater treatment plant, recycling or waste management facility for treatment or disposal)	31,000,000	6% of Total Chemical Use 54% of Total Byproduct

Trade Secret

Under certain circumstances, facilities have the right to claim that the amount of chemical used and generated as byproduct is a trade secret. Provided that the regulatory standards for making such a claim are met and the Commissioner has not determined that the information is not a trade secret, MassDEP may not share that information. Beginning in reporting year 2024, TURA trade secret filers were able to file electronically. As a result, sanitized portions of trade secret filings are now incorporated into the information release in sections that previously included no data from trade secret filers. In 2024, seven facilities made trade secret claims on a combined total of:

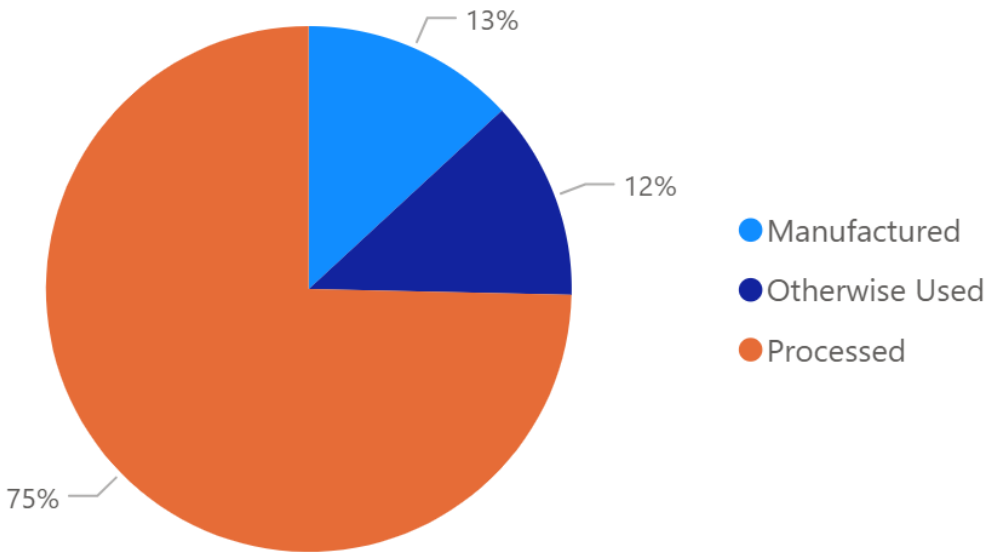
- 163 million pounds of chemical use
- 4 million pounds of byproduct generation
- 35 million pounds shipped in product.

Chemical Use by Use Category

TURA requires that facilities report chemical use in one of three chemical use categories: manufactured, processed, and otherwise used, identified by the Federal Toxics Release Inventory (TRI) program. Figure 5 below shows the proportion of 2024 chemical use for the three categories:

- Chemicals manufactured accounted for 13% of total chemical use.
- Chemicals processed accounted for 75% of total chemical use.
- Chemicals otherwise used accounted for 12% of total chemical use

Figure 5
2024 Total Use by Category
(561 Million Pounds)
(includes trade secret data)



Top 20 Chemicals

In 2024, filers reported using 130 out of the over 1,700 TURA-listed substances in amounts above the reporting threshold. The data was analyzed by chemical to identify the top 20 chemicals in each of the following amounts: used, generated as byproduct, shipped in product, released on-site, and shipped off-site for treatment or disposal.

Chemical Use

As shown in Table 4 below, the top 20 chemicals used in 2024 accounted for 83% (334 million pounds) of the total use reported (trade secret data was excluded to protect confidentiality claims). The top four chemicals, Sodium Hydroxide (14% of total use, 154 facilities, 56 million pounds), Methanol (13% of total use, 21 facilities, 50 million pounds), Sodium Hypochlorite (9% of total use, 30 facilities, 36 million pounds), and Hydrochloric Acid (8% of total use, 31 facilities, 30 million pounds), accounted for almost half of the total reported use (excluding trade secret data) in the state.

Tables 5,6,7, and 8 show the top 20 chemicals for the other reporting categories. As with use, the top 20 chemicals represent a significant proportion of the total amount reported. The top 20 chemicals comprised:

- 86% of the total reported byproducts (including trade secret data)
- 92% of the total reported shipped in product (excluding trade secret data)
- 94% of the total on-site releases (including trade secret data)
- 91% of the total off-site transfers (including trade secret data).

Quantities of sulfuric acid byproduct decreased significantly in 2024 mainly due to facility closure. Hydrochloric Acid accounted for 25% (463,000 pounds) of the statewide total of on-site releases. Ninety-nine (99) percent of hydrochloric acid releases were from municipal waste combustors.

The Nitrate Compounds chemical category accounted for 20% (6.1 million pounds) of the statewide total transfers off-site. Nitrate compounds were primarily co-manufactured during neutralization of nitric acid in wastewater treatment and were discharged to Publicly Owned Wastewater Treatment Plants. Ninety-five (95%) percent of total transfers off-site of lead, the fourth chemical on the list, was attributed to five municipal waste combustors that transferred lead in ash to off-site lined landfills.

Diisononyl Phthalate (DINP) is a new chemical category for reporting year 2024 and is listed ninth for total use with 11 million pounds reported. DINP is also listed in the top 20 chemicals for byproduct generation and chemicals shipped in product.

Table 4 – 2024 Top 20 Chemicals: Total Use
These quantities do not include Trade Secret Data
NOTE: **Bolded** chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

Butyraldehyde, Formaldehyde, Sodium Bisulfite, and Vinyl Acetate would appear in the Top 20 Chemicals Total Use list if trade secret quantities were included.

Chemical Name	CAS #	Total Use (lbs.)
Sodium Hydroxide	1310732	56,101,229
Methanol	67561	49,652,265
Sodium Hypochlorite	7681529	36,300,393
Hydrochloric Acid	7647010	29,528,849
Sulfuric Acid	7664939	18,427,437
Potassium Hydroxide	1310583	17,047,419
Acetone	67641	12,925,822
Toluene	108883	12,246,347
Diisononyl Phthalate (DINP)	1048	11,850,792
Zinc Compounds	1039	11,201,541
Ammonia	7664417	10,709,067
Methyl Ethyl Ketone	78933	9,201,484
Nitrate Compounds	1090	8,706,509
Nitric Acid	7697372	8,478,744
Phosphoric Acid	7664382	7,903,728
Glycol Ethers	1022	7,717,389
Diisocyanates	1050	7,609,645
Ethyl Acetate	141786	7,344,359
Ferric Chloride	7705080	5,751,074
Epichlorohydrin	106898	5,115,069

Table 5 – 2024 Top 20 Chemicals: Byproduct Generation
These quantities include Trade Secret Data
NOTE: Bolded chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

Chemical Name	CAS #	Byproduct Generation (lbs.)
Ethyl Acetate	141786	6,977,181
Nitrate Compounds	1090	6,531,939
Sodium Hydroxide	1310732	5,331,088
Acetone	67641	4,465,704
Toluene	108883	4,123,442
Methanol	67561	3,566,885
Sulfuric Acid	7664939	2,756,103
Methyl Ethyl Ketone	78933	2,275,019
Lead	7439921	2,245,697
Ethylene Glycol	107211	1,671,693
1-Methyl-2-Pyrrolidone	872504	1,411,859
Formaldehyde	50000	1,365,048
Acetonitrile	75058	1,358,062
Dimethylformamide	68122	1,207,676
Hydrochloric Acid	7647010	995,525
Aluminum Sulfate	10043013	739,900
Diisononyl Phthalate (DINP)	1048	694,286
Potassium Hydroxide	1310583	604,695
Butyraldehyde	123728	594,139
Zinc Compounds	1039	589,036

Table 6 – 2024 Top 20 Chemicals: Shipped in Product
These quantities do not include Trade Secret Data
NOTE: Bolded chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

Hydrochloric Acid and Sodium Bisulfite would appear in the Top 20 Chemicals Shipped in Product list if trade secret quantities were included.

Chemical Name	CAS #	Shipped in Product (lbs.)
Methanol	67561	46,605,524
Sodium Hydroxide	1310732	36,824,980
Sodium Hypochlorite	7681529	34,007,098
Potassium Hydroxide	1310583	15,491,390
Diisononyl Phthalate (DINP)	1048	11,760,828
Sulfuric Acid	7664939	9,050,603
Acetone	67641	7,933,274
Toluene	108883	7,838,748
Glycol Ethers	1022	7,357,324
Methyl Ethyl Ketone	78933	6,855,576
Phosphoric Acid	7664382	6,815,052
Zinc Compounds	1039	6,606,716
Ferric Chloride	7705080	4,992,514
Certain PFAS NOL	1300	3,749,497
Methyl Methacrylate	80626	2,947,625
Nitric Acid	7697372	2,722,115
Antimony Compounds	1000	2,209,473
Ethyl Acetate	141786	2,121,630
Ethylene Glycol	107211	1,732,193
C1-C4 Halogenated Hydrocarbons	1047	1,669,560

Table 7 – 2024 Top 20 Chemicals: Reported On-Site Releases
These quantities include Trade Secret Data
NOTE: **Bolded** chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

Chemical Name	CAS #	On-Site Releases (Lbs.)
Hydrochloric Acid	7647010	452,651
Acetone	67641	397,633
Toluene	108883	153,858
Ammonia	7664417	153,690
Ethyl Acetate	141786	147,004
Formaldehyde	50000	74,010
Methanol	67561	54,560
Glycol Ethers	1022	46,039
Butyl Acetate-T	540885	37,268
Methyl Ethyl Ketone	78933	32,018
Butyraldehyde	123728	25,915
Butyl Acetate	123864	21,029
Xylene Mixed Isomer	1330207	19,686
N Propyl Bromide	106945	16,915
Cyclohexane	110827	14,251
Trichloroethylene	79016	13,610
Hexane (N-Hexane)	110543	13,198
Dichloromethane	75092	13,040
1-Methyl-2-Pyrrolidone	872504	10,443
Sulfuric Acid	7664939	9,965

Table 8 – 2024 Top 20 Chemicals: Transfers Off-Site
These quantities include Trade Secret Data
NOTE: Bolded chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

Chemical Name	CAS #	Transfers Off-Site (Lbs.)
Nitrate Compounds	1090	6,125,353
Acetone	67641	3,647,806
Lead	7439921	2,322,047
Methanol	67561	2,297,517
Toluene	108883	1,841,216
1-Methyl-2-Pyrrolidone	872504	1,362,223
Acetonitrile	75058	1,355,568
Ethylene Glycol	107211	1,337,787
Methyl Ethyl Ketone	78933	1,305,485
Formaldehyde	50000	1,222,924
Zinc Compounds	1039	1,053,416
Sodium Hydroxide	1310732	641,010
Butyraldehyde	123728	571,419
Lead Compounds	1026	500,373
Ethyl Acetate	141786	478,969
Dichloromethane	75092	404,928
Ferric Chloride	7705080	374,926
Dimethylformamide	68122	317,513
Copper Compounds	1015	246,735
Certain PFAS NOL	1300	213,594

V. 2024 Chemicals of Particular Interest

Certain toxic chemicals are of particular concern because of their higher potential to harm the environment or public health. These include:

- Chemicals classified as persistent bioaccumulative toxic (PBT) chemicals by the U.S. Environmental Protection Agency (EPA) under the Toxics Release Inventory (TRI) Program
- Chemicals designated as Higher Hazard by the TURA Administrative Council
- Chemicals known to promote asthma (Asthmagens)
- Carcinogens

Trends in reported data for each of these groups of substances are discussed below.

Persistent Bioaccumulative Toxic (PBT) Chemicals
PBTs are highly toxic, remain in the environment for long periods of time, are not readily destroyed, and build up or accumulate in body tissue. As a result, relatively small releases of PBT chemicals can pose health and environmental threats that warrant public reporting as well as toxics use reduction efforts. Because of these concerns, the threshold for PBTs was lowered by USEPA from 25,000 pounds if the substance is manufactured or processed, and 10,000 pounds if the substance is otherwise used, to between 0.1 grams and 100 pounds, depending on the chemical, for all uses. The threshold was lowered for all PBTs, for reporting year 2000, except for lead and lead compounds which started with reporting year 2001.

Table 9 below shows the 2024 reported data and the number of filers for each PBT (excluding trade secret data). Nine PBTs are reported in Massachusetts. Five of these (dioxin, polycyclic aromatic compounds, benzoperylene, mercury and mercury compounds) are chiefly associated with combustion at resource recovery facilities, power plants, and the manufacture of concrete and asphalt paving.

Table 10 below shows each PBT's chemical use since the year before it was designated as a PBT. The reported chemical use increased from zero to hundreds of pounds when the PBT designation occurred and increased again in 2003 when the municipal waste combustors were required to report. Despite being used primarily to produce power, facilities did eliminate some of these chemicals when they switched from coal and oil to natural gas, and the majority showed that they were using less of the chemical or generating less byproduct per unit of product since the substance was designated as a PBT. However, reporting dropped substantially in 2007 when amendments to the Act exempted these facilities from reporting on chemicals in the fuel or coincidentally manufactured during combustion.

The use of lead and lead compounds stems from a combination of combustion, waste management, paving asphalt manufacture, and traditional manufacturing. Lowering the reporting threshold to 100 pounds in 2001 resulted in an increase in the number of facilities reporting lead from 15 in reporting year 2000, to 152 in 2001, and an increase in the number of facilities reporting lead compounds from 33 in 2000, to 129 in 2001. However, by 2024 the number of lead and lead compounds filers decreased to 57 and 43, respectively. Levels of lead and poly-chlorinated bisphenols were higher in 2024 compared to 2023 due to a waste disposal facility accepting large amounts of both chemicals.

Table 9 - 2024 Persistent Bioaccumulative Toxic (PBT) Chemicals Summary (Excludes Trade Secret Data)

Substance	Threshold (lbs or grams for dioxin)	# Filers in 2024	Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site
Benzo[ghi]-perylene	10	18	3,436	951	1,311	0	810
Dioxin and Dioxin Compounds	0.1	5	774	774	0	12	762
Lead	100	57	2,631,897	2,245,697	368,975	194	2,322,047
Lead Compounds	100	42	810,575	495,985	301,328	2,645	498,538
Mercury	10	14	7,850	4,626	3,450	31	4,594
Mercury Compounds	10	1	913	39	1,316	0	39
Polychlorinated Biphenyls	10	2	77,976	77,976	0	12	77,972
Polycyclic Aromatic Compounds	100	21	183,988	18,474	56,448	52	16,000
Tetrabromo-Bisphenol A	10	1	1,172	98	1,171	0	1

Table 10 PBTs Reported Use and Number of Facilities Reporting 2000 – 2024. Number of Facilities is listed in parentheses. (Excludes Trade Secret Data)

Year	Benzo[ghi]-perylene (lbs.)	Dioxin and Dioxin Compounds (grams)	Mercury (lbs.)	Mercury Compounds (lbs.)	Poly-Chlorinated Biphenyls (lbs.)	Polycyclic Aromatic Compounds (lbs.)	Tetrabromo-bisphenol A (lbs.)	Lead (lbs.)	Lead Compounds (lbs.)
1999	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	37,539,261 (6)	0 (0)	-	-
2000	146,531 (120)	12 (8)	4,973(11)	90,009 (6)	118,160 (2)	14,171,986 (158)	332 (1)	1,261,842 (15)	9,855,146(33)
2001	180,326 (127)	12 (8)	9,315 (13)	676 (5)	83,890 (2)	13,849,697 (151)	115 (1)	1,284,199 (152)	7,290,727 (129)
2002	123,429 (122)	13 (8)	5,922 (13)	1,765 (5)	64,981 (2)	11,148,250 (149)	19,057 (1)	912,922 (143)	5,146,270 (114)
2003	125,099 (119)	11,827 (17)	11,476 (20)	1,212 (6)	37,325 (2)	11,486,388 (136)	152 (1)	3,394,134 (140)	5,982,308 (117)
2004	128,874 (114)	3,033 (16)	12,629 (20)	966 (7)	46,879 (2)	11,796,370 (133)	0 (0)	3,651,671 (109)	5,279,027 (126)
2005	128,809 (109)	6,696 (17)	10,444 (22)	1,031 (6)	21,741 (2)	11,128,163 (127)	0 (0)	3,763,242 (114)	3,689,910 (126)
2006	49,376 (27)	761 (15)	13,351 (19)	1,011 (6)	22,042 (2)	3,735,104 (31)	0 (0)	4,811,219 (102)	2,279,105 (111)
2007	49,412 (28)	1,155 (13)	13,733 (19)	1,101 (5)	110,303 (3)	5,051,904 (29)	0 (0)	4,172,982 (90)	1,406,092 (104)
2008	33,393 (25)	1,523 (13)	12,231 (20)	3,421 (6)	156,170 (3)	3,275,212 (30)	0 (0)	3,799,929 (90)	1,241,717 (93)
2009	12,403 (24)	1,951 (11)	10,515 (17)	1,610 (5)	42,757 (3)	1,168,637 (28)	4,596 (1)	4,130,556 (73)	971,451 (84)
2010	4,275 (21)	1,980 (9)	11,434 (16)	1,161 (4)	71,091 (2)	382,534 (26)	4,875 (2)	3,208,423 (75)	736,262 (73)
2011	3,177 (23)	2,811 (9)	15,826 (17)	1,307 (5)	72,654 (2)	283,498 (27)	7,235 (3)	3,080,576 (75)	569,666 (66)
2012	2,712 (23)	2,650 (9)	7,795 (16)	157 (2)	83,372 (2)	206,532 (26)	7,242 (3)	3,289,441 (79)	654,024 (63)

Table 10 Continued—PBTs Reported Use and Number of Facilities Reporting 2000 – 2024. Number of Facilities is listed in parentheses. (Excludes Trade Secret Data)

Year	Benzo[ghi]-perylene (lbs.)	Dioxin and Dioxin Compounds (grams)	Mercury (lbs.)	Mercury Compounds (lbs.)	Poly-Chlorinated Biphenyls (lbs.)	Polycyclic Aromatic Compounds (lbs.)	Tetrabromo-bisphenol A (lbs.)	Lead (lbs.)	Lead Compounds (lbs.)
2013	4,832 (22)	1,847 (9)	6,619 (17)	639 (4)	126,857 (3)	523,396 (26)	5,881 (2)	3,531,726 (76)	754,176 (61)
2014	10,570 (21)	1,841 (10)	4,451 (17)	653 (3)	88,354 (2)	1,055,061 (24)	3,015 (2)	3,653,822 (69)	835,041 (55)
2015	10,692 (21)	1,762 (8)	6,867 (17)	1,000 (2)	59,887 (1)	1,398,282 (24)	4,466 (2)	3,427,441 (62)	956,565 (53)0
2016	7,318 (21)	2,094 (8)	8,479 (16)	1,365 (2)	45,621 (1)	576,833 (23)	3,418 (2)	3,213,445 (65)	730,746 (54)
2017	5,229 (21)	2,012 (8)	8,392 (18)	703 (2)	39,383 (1)	347,984 (23)	2,760 (2)	3,180,955 (66)	709,078 (47)
2018	6,597 (20)	1,622 (7)	7,627 (14)	694 (1)	31,933 (1)	478,357 (23)	179 (1)	3,344,065 (61)	578,872 (48)
2019	3,304 (19)	2,571 (7)	8,261 (16)	590 (1)	11,999 (1)	177,093 (22)	239 (1)	3,065,771 (61)	487,274 (44)
2020	2,326 (17)	2,114 (7)	11,494 (16)	615 (1)	22,356 (2)	82,518 (18)	337 (1)	2,959,713 (67)	395,735 (43)
2021	2,982 (19)	1,144 (7)	7,637 (15)	575 (1)	9,093 (1)	144,268 (20)	1,841 (2)	2,641,611 (66)	359,392 (44)
2022	6,966 (17)	1,547 (5)	6,716 (14)	871 (1)	2,138 (1)	506,417 (20)	3,421 (1)	2,764,658 (66)	317,475 (44)
2023	3,065 (18)	739 (5)	7,696 (14)	959 (1)	2,884 (1)	147,303 (21)	1,713 (1)	2,892,637 (63)	494,184 (44)
2024	3,436 (18)	774 (5)	7,850 (14)	913 (1)	77,976 (2)	183,988 (21)	1,172 (1)	2,631,897 (57)	810,575 (42)

NOTE: Benzo-perylene, Dioxin and Dioxin Compounds, Mercury, Mercury Compounds, Poly-Chlorinated Biphenyls, Polycyclic Aromatic Compounds, and Tetrabromo-bisphenol A were designated as PBTs beginning in 2000. Lead and Lead Compounds were designated as PBTs beginning in 2001.

Higher Hazard Substances (HHS)

Other higher hazard chemicals, beyond PBTs covered above, are also reported under TURA. The 2006 amendments to TURA directed the Council to categorize the TURA list of chemicals into higher or lower hazard substances, or to leave them uncategorized and lower the reporting threshold for higher hazard substances (HHS) to 1,000 pounds for all uses. Table 11 below shows HHS reported and the number of facilities reporting these chemicals from the year before the designation as an HHS.

The data showed a similar trend for trichloroethylene and tetrachloroethylene as that seen with PBTs - an initial increase in the number of facilities reporting since these chemicals were designated as HHS in 2008 and 2009. The increases, respectively, were from 9 in 2007 to 27 in 2008 reporting trichloroethylene, and 4 in 2008 to 23 in 2009 reporting tetrachloroethylene. However, by 2024 the number of trichloroethylene and tetrachloroethylene filers decreased to 6 and 1, respectively.

Table 12 below shows the fourteen HHS chemicals reported in 2024, including the number of filers, byproduct generation, shipped in product, on-site releases, and transfers off-site

Table 11 Higher Hazard Substances (HHS): Total Pounds of Use (Excludes Secret Data) and # Filers One Year Before and Thereafter HHS Designation. Number of filers is in parenthesis

Name (CAS #)	Toluene-2,4-diisocya-nate (584849)	Toluene-2,6-diisocya-nate (91087)	Toluene diisocyanate (mixed isomers) (26471625)	Hydrogen fluoride (7664393)	N- Propyl Bromide (106945)	Dimethyl-formamide (68122)	Cyanide Compounds (1016)	Methylene Chloride (Dichloro-methane) (75092)	Formaldehyde (50000)	Hexavalent Chromium (1216)	Tetrachloro-ethylene (127184)	Cadmium (7440439)	Cadmium Compounds (1004)	Trichloro-ethylene (79016)
2007	-	-	-	-	-	-	-	-	-	-	-	-	184,400 (1)	604,671 (9)
2008	-	-	-	-	-	-	-	-	-	-	230,345 (4)	**29,429(5)**	**167,355(6)**	**536,073 (27)**
2009	-	-	-	-	-	-	-	-	-	-	**176,186(23)**	28,969(4)	145,324(7)	556,457(23)
2010	-	-	-	-	-	-	-	-	-	-	151,918 (18)	23,970 (4)	242,702 (7)	294,836 (16)
2011	-	-	-	-	-	-	-	-	4,027,226 (9)	*	163,773 (19)	26,878 (4)	180,654 (5)	303,076 (17)
2012	-	-	-	-	-	-	-	-	**4,119,146(25)**	**121,504(16)**	89,216(16)	29,805(6)	181,666(5)	354,351(14)
2013	-	-	-	-	-	-	-	3,496,421(11)	4,011,427(27)	113,466(16)	110,550(18)	20,447(6)	210,550(6)	176,891(15)
2014	-	-	-	-	-	-	-	**3,031,438(24)**	3,276,305(25)	103,595(15)	164,606(16)	16,655(4)	217,235(6)	262,811(14)
2015	-	-	-	365,928(6)	30,295(2)	3,518,824(9)	71,695(3)	2,629,094(25)	3,017,674(23)	92,490(14)	320,950(11)	20,312(3)	128,953(6)	243,143(13)
2016	456,803(1)	114,201(1)	5,669,556(3)	**483,633(25)**	**102,998(23)**	**3,845,720(13)**	**118,955(14)**	2,628,375(20)	3,157,440(22)	77,657(14)	909,566(12)	17,707(3)	155,687(6)	239,983(15)
2017	**510,809 (1)**	**127,702** (1)	**5,392,008 (5)**	238,065 (28)	94,100 (23)	3,871,715(12)	142,450 (15)	2,781,125(20)	3,070,622(23)	89,696 (14)	346,348 (12)	16,991 (3)	153,463 (5)	224,882 (13)
2018	403,297(1)	100,824(1)	5,126,282(4)	209,972(24)	95,527(20)	3,616,365(13)	146,777(14)	2,500,120(18)	3,370,832(23)	77,103(13)	73,318(9)	20,162(4)	142,058(7)	274,876(13)
2019	511,236(2)	97,970(1)	4,317,010(4)	289,620(22)	69,631(18)	3,705,786(14)	134,095(15)	1,683,395(18)	2,793,325(23)	72,283(13)	71,100(7)	19,403(3)	119,549(5)	172,080(11)
2020	339,901(2)	70,322(1)	9,989,005(6)	200,976 (25)	58,588(17)	3,442,733(13)	116,042(15)	1,397,901(16)	2,036,787(23)	77,695(14)	33,747(4)	22,215(3)	100,364(4)	187,576(13)
2021	313,968(2)	59,374(1)	9,601,878(5)	219,665 (24)	62,671(15)	3,553,791(12)	126,786(16)	1,901,471(14)	2,331,245(22)	62,170(16)	13,937(4)	17,652(3)	123,966(4)	114,885(13)
2022	122,437(1)	30,609(1)	6,862,252(4)	307,139(22)	53,372(15)	3,348,500(12)	85,723(15)	1,693,452(13)	2,311,435(23)	56,530(14)	3,828(2)	14,817(3)	122,776(4)	88,724(11)
2023	144,197(1)	36,049(1)	5,024,068(3)	362,872 (20)	51,251(15)	2,479,488(10)	93,182(15)	1,385,813(14)	1,861,903 (21)	55,705(13)	6,078(2)	19,453(2)	92259 (4)	56,058(6)
2024	109,340 (1)	27,335 (1)	4,636,042 (4)	408,361(21)	36,949 (11)	2,905,046 (10)	82,583(14)	831,755(15)	1,794.506 (22)	48,838(13)	2,719(1)	19,003(2)	84,699(2)	29,925(6)

*Note: When hexavalent chromium was designated high hazard, the existing chromium compounds category was broken into two categories: hexavalent chromium and non-hexavalent chromium. As a result, there is no data for hexavalent chromium prior to 2012

Table 12 - 2024 Higher Hazard Substances (HHS) Summary (Excludes Trade Secret Data)

Substance and Year Designated as HHS	# Filers in 2024	Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site
Cadmium/2008	2	19,003	3,395	11,694	0	3,395
Cadmium Compounds/2008	2	84,699	1,737	6,259	8	1,725
Trichloroethylene/2008	6	29,925	29,424	6,788	13,610	6,632
Tetrachloroethylene/2009	1	2,719	1	3,406	1	0
Formaldehyde/2012	22	1,794.506	186,405	46,906	73,005	230,171
Hexavalent Chromium Compounds/2012	13	48,838	27,609	14,395	90	15,225
Methylene Chloride/ Dichloromethane/2014	15	831,755	418,241	371,363	13,040	404,928
Cyanide Compounds/2016	14	82,583	64,083	0	3,653	20,886
Dimethylformamide/ 2016	10	2,905,046	1,207,676	1,656,079	9,335	317,513
Hydrogen Fluoride/2016	21	408,361	160,204	55,977	2,702	18,122
N-Propyl Bromide/2016	11	36,949	31,223	4,800	16,915	12,644
Toluene-2,4-diisocyanate/2017	1	109,340	5,766	0	2	5,764
Toluene-2,6-diisocyanate/2017	1	27,335	82	0	0	0
Toluene diisocyanate (mixed isomers)/2017	4	4,636,042	486	24	134	812

Asthmagens

In 2009, the Lowell Center for Sustainable Production (LCSP) published *Asthma-Related Chemicals in Massachusetts: an Analysis of Toxics Use Reduction Data* (available on TURI's website www.turi.org). The purpose of this project was to understand the extent to which chemicals that can cause the initial onset of asthma or trigger subsequent asthma attacks are being used by Massachusetts industries reporting under the TURA program (using 1990 to 2005 data). The report identified 335 chemicals that can cause or exacerbate asthma, of which 68 chemicals are reportable under TURA and a subset of 41 have been reported at some point during the program's history.

The TURA program has been working to better understand the uses of these chemicals in relation to potential exposures and toxics use reduction opportunities. Table 13 below summarizes 2024 data on some of the chemicals identified in the LCSP report that were reported under TURA. In 2024, 15 chemicals identified as asthmagens by the Association of Occupational and Environmental Clinics (AOEC) were reported under TURA. In 2024, Sulfuric Acid was again reported as having the largest usage while Formaldehyde was again reported as having the largest amount of on-site releases.

Table 13 - Asthma-Related Toxics, in pounds (Excludes Trade Secret Data)

Chemical Name	Number of Facilities	Use	On-Site Releases
Acetic Acid	16	1,237,788	2,131
Chlorine	3	180,603	338
Chromium	2	104,994	0
Diethanolamine	1	211,345	2
Ethylene Oxide	1	124,988	45
Formaldehyde	22	1,794.506	71,019
Hydrazine	3	85,046	0
Maleic Anhydride	1	395,315	0
Methyl Methacrylate	5	4,565,543	1,960
Nickel	5	341,119	42
Nickel Compounds	3	199,343	1,022
Phthalic Anhydride	1	410,172	0
Styrene Monomer	4	2,144,185	4,798
Sulfuric Acid	95	18,427,443	9,965
Toluene Diisocyanate*	6	4,772,717	136

* Toluene Diisocyanate includes CAS numbers 91087, 584849, and 26471625.

Carcinogens

Several TURA chemicals are identified as Group 1 carcinogens (i.e., carcinogenic to humans) by the International Agency for Research on Cancer (IARC). In 2024, eight IARC Group 1 carcinogens were reported under TURA (see Table 14). The largest amount of use was reported for Formaldehyde. Formaldehyde was also reported as having the largest amount of releases and these releases were reported by the most facilities. Releases were primarily air releases; however, there were also releases to water and land.

Table 14 - IARC Group 1 Carcinogens (in pounds unless otherwise noted) (Excludes Trade Secret Data)

Chemical Name	Number of Facilities	Use	On-Site Releases
Cadmium	2	19,003	0
Dioxin*	5	775	12.264
Ethylene Oxide	1	124.988	45
Formaldehyde	22	1,794,506	74,011
Hexavalent Chromium Compounds	13	48,838	91
Polychlorinated Biphenyls	2	77,527	12
Nickel Compounds	3	199,343	1022
Trichloroethylene	6	29,925	13,610

* 2,3,7,8-Tetrachlorodibenzo-*para*-dioxin are the agents specifically listed as Group 1 by IARC (in grams).

VI. 2024 Significant Industrial Sectors

Under TURA, facilities in the Manufacturing Standard Industrial Classification (SIC) codes 20-39 inclusive and those in SIC codes 10-14, 40, 44-51, 72, 73, 75 and 76, or the corresponding NAICS code must report their chemical use if they meet or exceed certain thresholds. Tables 15-19 present, by sector, the numbers of reporting facilities, reported amount of use, byproduct, and releases on-site by industrial sector in 2024.

Tables 15-19 demonstrate that the chemical manufacturing sector dominates chemical use in the Commonwealth. Nineteen percent of filers are in this sector (Table 15). The chemical manufacturing sector accounts for 65% of chemical use (Table 16), and 40% of byproduct (Table 18). Waste management and remediation services category account for 26% of on-site releases while paper manufacturing and chemical manufacturing account for 15% and 13%, respectively of on-site releases (Table 19). The chemical manufacturing sector is a diverse group of industries and includes facilities that "manufacture" chemicals according to the TURA definition as well as facilities that "process" chemicals to formulate adhesives, paints, pharmaceuticals, and plastic materials and resins. The chemical manufacturing sector is broken into further sectors in Table 17.

Chemical distributors at 13% (Table 16) were the second largest contributor to use but had virtually no impact on byproduct and releases. Paper manufacturing and plastics manufacturing sectors also contributed substantially to byproduct and releases. The paper manufacturing sector, which accounted for 2% of total statewide use (Table 16), accounted for 16% of total byproduct generated (Table 18). Likewise, waste management and remediation services, which accounted for 6% of total statewide use (Table 16), accounted for 25% of total on-site releases (Table 19).

Table 15–2024 Number of Facilities by Industrial Sector
Total Number of Facilities = 425
(Includes Trade Secret Data)

Sector	Number of Facilities	Percent of Total
Chemical Manufacturing	82	19.3%
Fabricated Metal Product Manufacturing	59	13.9%
Nonmetallic Mineral Product Manufacturing	42	9.9%
Computer/Electronic Product Manufacturing	26	6.1%
Paper Manufacturing	26	6.1%
Food Manufacturing	22	5.2%
Utilities	18	4.2%
Electrical Equipment Manufacturing	17	4.0%
Miscellaneous Manufacturing	17	4.0%
Personal and Laundry Services	16	3.8%
Plastics and Rubber Products Manufacturing	14	3.3%
Chemical Distributors	12	2.8%
Primary Metal Manufacturing	12	2.8%
Textile Mills	12	2.8%
Machinery Manufacturing	9	2.1%
Petroleum and Coal Products Manufacturing	9	2.1%
Waste Management and Remediation Services	9	2.1%
Beverage and Tobacco Product Manufacturing	6	1.4%
Transportation Equipment Manufacturing	5	1.2%
Mining (except Oil and Gas)	4	0.9%
Wood Product Manufacturing	3	0.7%
Administrative and Support Services	1	0.2%
Furniture and Related Product Manufacturing	1	0.2%
Leather and Allied Product Manufacturing	1	0.2%
Printing and Related Support Activities	1	0.2%
Repair and Maintenance	1	0.2%

Table 16 – All Reported Data: 2024 Chemical Use by Industrial Sector
Total Use = 561,000,000 Pounds
(Includes Trade Secret Data)

Sector	Pounds of total use	Percent of total use
Chemical Manufacturing	365,099,486	65.1%
Chemical Distributors	73,652,766	13.1%
Waste Management and Remediation Services	30,938,049	5.5%
Plastics and Rubber Products Manufacturing	22,711,344	4.1%
Fabricated Metal Product Manufacturing	14,210,833	2.5%
Paper Manufacturing	13,226,484	2.4%
Miscellaneous Manufacturing	10,306,967	1.8%
Computer/Electronic Product Manufacturing	5,563,836	1.0%
Food Manufacturing	4,461,550	0.8%
Utilities	3,335,300	0.6%
Nonmetallic Mineral Product Manufacturing	3,261,784	0.6%
Textile Mills	3,259,125	0.6%
Primary Metal Manufacturing	1,943,360	0.4%
Machinery Manufacturing	1,777,436	0.3%
Electrical Equipment Manufacturing	1,553,639	0.3%
Personal and Laundry Services	1,433,114	0.3%
Beverage and Tobacco Product Manufacturing	1,203,978	0.2%
Mining (except Oil and Gas)	1,120,090	0.2%
Wood Product Manufacturing	790,109	0.1%
Transportation Equipment Manufacturing	626,565	0.1%

Table 17–2024 Chemical Manufacturing Sector Use
(Includes Trade Secret Data)

Sector	Pounds of Use	Percentage of Use
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	111,736,745	31%
Basic Chemical Manufacturing	94,678,743	26%
Soap, Cleaning Compound, and Toilet Preparation Manufacturing	65,779,400	18%
Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	56,349,542	15%
Paint, Coating, and Adhesive Manufacturing	23,653,703	6%
Other Chemical Product and Preparation Manufacturing	6,525,970	2%
Pharmaceutical and Medicine Manufacturing	6,369,671	2%

Table 18 – All Reported Data: 2024 Byproduct Generation by Industrial Sector
Total Byproduct = 57,000,000 Pounds (Includes Trade Secret Data)

Sector	Pounds of Byproduct	Percentage of Total Byproduct
Chemical Manufacturing	22,817,682	40.1%
Paper Manufacturing	8,888,552	15.6%
Fabricated Metal Product Manufacturing	4,137,434	7.3%
Plastics and Rubber Products Manufacturing	4,019,746	7.1%
Waste Management and Remediation Services	3,358,146	5.9%
Miscellaneous Manufacturing	3,049,269	5.4%
Textile Mills	2,721,472	4.8%
Food Manufacturing	1,849,926	3.3%
Machinery Manufacturing	1,407,226	2.5%
Computer/Electronic Product Manufacturing	1,241,799	2.2%
Chemical Distributors	1,070,739	1.9%
Personal and Laundry Services	462,011	0.8%
Utilities	315,132	0.6%
Transportation Equipment Manufacturing	305,508	0.5%
Electrical Equipment Manufacturing	297,684	0.5%
Beverage and Tobacco Product Manufacturing	292,715	0.5%
Primary Metal Manufacturing	259,197	0.5%
Nonmetallic Mineral Product Manufacturing	214,141	0.4%
Administrative and Support Services	124,988	0.2%

Table 19 – All Reported Data: 2024 On-Site Releases by Industrial Sector
Total On-Site Releases = 1,800,000 Pounds (Includes Trade Secret Data)

Sectors	On-Site Releases (lbs.)	Percentage of On-Site Releases
Waste Management and Remediation Services	449,791	24.6%
Paper Manufacturing	274,286	15.0%
Chemical Manufacturing	242,308	13.3%
Fabricated Metal Product Manufacturing	199,231	10.9%
Utilities	187,699	10.3%
Miscellaneous Manufacturing	152,289	8.3%
Plastics and Rubber Products Manufacturing	119,318	6.5%
Textile Mills	77,343	4.2%
Transportation Equipment Manufacturing	33,846	1.9%
Nonmetallic Mineral Product Manufacturing	21,750	1.2%
Computer and Electronic Product Manufacturing	16,899	0.9%
Chemical Distributors	16,084	0.9%
Machinery Manufacturing	15,656	0.9%
Electrical Equipment Manufacturing	11,745	0.6%
Repair and Maintenance	4,258	0.2%
Primary Metal Manufacturing	2,979	0.2%

VII. 2024 Major TURA Facilities

Tables 20 through 24 show the 20 facilities that report the highest quantities of reported chemical used, generated as byproduct, shipped in or as product, released on-site, and transferred off-site.

- Table 20 lists the 20 facilities that reported the largest total quantity of TURA chemicals used. These 20 facilities used 424 million pounds, or 76% of total statewide use.

- Tables 21 and 22 list the 20 facilities that generated the largest reported quantity of byproduct generated and shipped in product. These facilities generated 32 million pounds of byproduct or 57% of the statewide total. The 20 facilities with the largest quantity shipped in product, shipped 306 million pounds in product, or 92% of the statewide total.
- Tables 23 and 24 list the 20 facilities that reported the largest quantity of on-site releases and the 20 facilities that had the largest quantity of transfers off-site. These facilities released 1.2 million pounds, or 66% of total releases statewide. Four of the Top 20 on-site releases were municipal waste combustors (MWCs), which reported over 228,000 pounds of Hydrochloric Acid, that was coincidentally manufactured during combustion. The 20 facilities with the largest reported quantity of transfers off-site transferred 21 million pounds, or 69% of the total statewide transfers off-site.

Table 20 - 2024 Top 20 Facilities: Reported Total Use (Includes Trade Secret Data)

Facility Name	Town	Total Use (Lbs.)
Holland Company Inc	Adams	78,515,010
Solutia Inc	Springfield	62,523,399
Borden And Remington Corp	Fall River	56,166,075
Astro Chemicals Inc	Springfield	43,122,555
Highline Warren LLC	Leominster	35,691,614
Prefere Melamines LLC	Springfield	28,188,851
James Austin Co	Ludlow	17,775,811
Roberts Chemical Co Inc	Attleboro	15,367,235
Sika Sarnafil	Canton	12,623,713
Univar Solutions Usa LLC	Tewksbury	10,296,142
Semass Partnership	Rochester	9,498,687
ISP Freetown Fine Chemicals Inc	Assonet	8,686,598
Amrize Building Envelope LLC	Rockland	7,469,535
Webco Chemical Corp	Dudley	6,475,011
Solenis LLC	Chicopee	6,115,135
Reworld Haverhill Inc	Haverhill	5,607,902
Wheelabrator Millbury Inc	Millbury	5,325,790
Future Foam	Mansfield	5,224,830
Metalor Technologies USA	Attleboro	5,054,019
Wheelabrator Saugus Inc	Saugus	4,861,242

Table 21-2024 Top 20 Facilities: Reported Byproduct (Includes Trade Secret Data)

Facility Name	Town	Byproduct Generation (Lbs.)
Solutia Inc	Springfield	6,361,853
3M Company	Rockland	3,741,168
Flexcon Company Inc	Spencer	2,371,557
Prefere Melamines LLC	Springfield	2,311,498
Covestro LLC	Wilmington	1,842,156
Nissha Metallizing Solutions Ltd	Franklin	1,658,969
Nitto Denko Avecia Inc	Milford	1,561,684
Thermo Fisher Scientific	Bedford	1,313,345
Waters Corporation	Taunton	1,273,867
Munters Corp	Amesbury	1,115,679
Kovalus Separation Solutions Inc	Wilmington	1,017,132
Metalor Technologies USA	Attleboro	954,016
Thermo Fisher Scientific	Chelmsford	938,112
Veranova LP	Devens	933,994
Semass Partnership	Rochester	903,771
ITW Shinemark	Newburyport	860,649
Adhesive Applications Inc	Easthampton	833,177
Cedars Mediterranean Foods Inc	Haverhill	813,703
Trelleborg Monson	Monson	808,406
Bostik Inc	Middleton	780,272

Table 22-2024 Top 20 Facilities: Reported Shipped In Product (Includes Trade Secret Data)

Facility Name	Town	Shipped In Product (Lbs.)
Borden And Remington Corp	Fall River	48,498,199
Astro Chemicals Inc	Springfield	38,797,112
Highline Warren LLC	Leominster	35,686,414
Holland Company Inc	Adams	22,044,919
James Austin Co	Ludlow	17,701,877
Roberts Chemical Co Inc	Attleboro	15,367,235
Sika Sarnafil	Canton	12,364,271
Univar Solutions Usa LLC	Tewksbury	10,264,078
AmSolutia Inc	Springfield	9,375,367
ISP Freetown Fine Chemicals Inc	Assonet	7,694,112
Amrize Building Envelope LLC	Rockland	7,344,693
Webco Chemical Corp	Dudley	6,462,759
Kidde Fenwal Inc	Ashland	3,418,521
ITW Performance Polymers	Danvers	3,002,663
Alpha Chemical Services Inc	Stoughton	2,759,957
Advance Coatings Co	Westminster	2,220,364
Mexichem Specialty Compounds Inc	Leominster	2,161,132
Tilley Distribution Inc	Walpole	1,601,080
Bostik Inc	Middleton	1,587,164
Tricab Usa Inc	Worcester	1,460,973

Table 23 - 2024 Top 20 Facilities: Reported On-Site Releases (Includes Trade Secret Data)

Facility Name	Town	On-Site Releases (Lbs.)
Reworld Haverhill Inc	Haverhill	135,693
Semass Partnership	Rochester	134,177
Ideal Tape Company	Lowell	129,830
Callaway Golf Ball Operations Inc	Chicopee	94,683
Wheelabrator North Andover Inc	North Andover	92,727
Wheelabrator Millbury Inc	Millbury	72,208
Solutia Inc	Springfield	71,987
Jain Americas Inc Nucedar Mills	Chicopee	52,326
Flexcon Industries	Randolph	52,229
Nissha Metallizing Solutions Ltd	Franklin	47,042
Nylco Division Worthen Industries Inc	Clinton	45,936
Fore River Energy Center	Weymouth	37,909
Smith And Wesson Inc	Springfield	35,532
Central Metal Finishing Inc	North Andover	33,492
Raytheon Company	Andover	32,810
Hazen Paper Co	Holyoke	31,867
Entegris Inc	Bedford	30,255
Masspower LLC	Indian Orchard	29,056
Flexcon Company Inc	Spencer	26,696
Onyx Specialty Papers Inc Willow Mill	South Lee	26,318

Table 24 - 2024 Top 20 Facilities: Reported Transfers Off Site (Includes Trade Secret Data)

Facility Name	Town	Transfers Off-Site (Lbs.)
Solutia Inc	Springfield	5,430,676
Prefere Melamines LLC	Springfield	1,866,532
Covestro LLC	Wilmington	1,817,148
Nitto Denko Avecia Inc	Milford	1,543,501
Thermo Fisher Scientific	Bedford	1,226,808
Waters Corporation	Taunton	1,061,488
Kovalus Separation Solutions Inc	Wilmington	980,490
Veranova LP	Devens	930,065
Thermo Fisher Scientific	Chelmsford	873,038
Semass Partnership	Rochester	769,594
Bostik Inc	Middleton	759,458
Veranova LP	North Andover	592,021
Callaway Golf Ball Operations Inc	Chicopee	520,441
Metalor Technologies Usa	Attleboro	518,952
Clean Harbors of Braintree Inc	Braintree	469,746
Metalor Technologies USA	North Attleborough	446,061
Ideal Tape Company	Lowell	438,154
Wheelabrator Saugus Inc	Saugus	410,062
Wheelabrator Millbury Inc	Millbury	386,190
Brittany Global Technologies Corp	New Bedford	328,088

Appendix A - 2000 Core Group Progress

The “2000 Core Group” includes all industry categories and chemicals that were subject to TURA reporting in 2000 and remained subject to reporting in 2024 at the same reporting threshold. The 2000 Core Group is used to measure progress from 2000. The 2000 Core Group currently covers 82% of the total 401 million pounds of toxic chemicals reported in 2024 (excluding trade secret data).

Progress in Toxics Use Reduction: 2000 Core Group

The 2000 Core Group includes all industry categories and chemicals that were subject to TURA reporting in 2000 and remained subject to reporting in 2024 at the same reporting threshold. The 2000 Core Group is used to measure progress from 2000 and provides a longer history of TURA chemical use, byproduct, and releases than the 2007 Core Group. Table A-1 and Figures A-1 and A-2 below summarize 2000 Core Group TURA data from 2000 to 2024, excluding trade secret data. In addition to the filers excluded from the 2007 Core Group, the 2000 Core Group excludes reports discontinued when the TURA reporting threshold was lowered for certain manufactured and processed chemicals to match the EPA TRI threshold for lead and lead compounds reports, due to the lowered 2001 PBT thresholds.

2000 Core Group Progress: Adjusting for Production

Table A-1 below summarizes TURA data from 2000 to 2024, showing reported and production adjusted quantities. For the 2000 Core Group, the activity index shows an increase in production of 59 percent from 2000 to 2024. As shown below in Table A-1 and Figure A-1, when adjusted for production, as of 2024, the 2000 Core Group facilities have reduced**:**

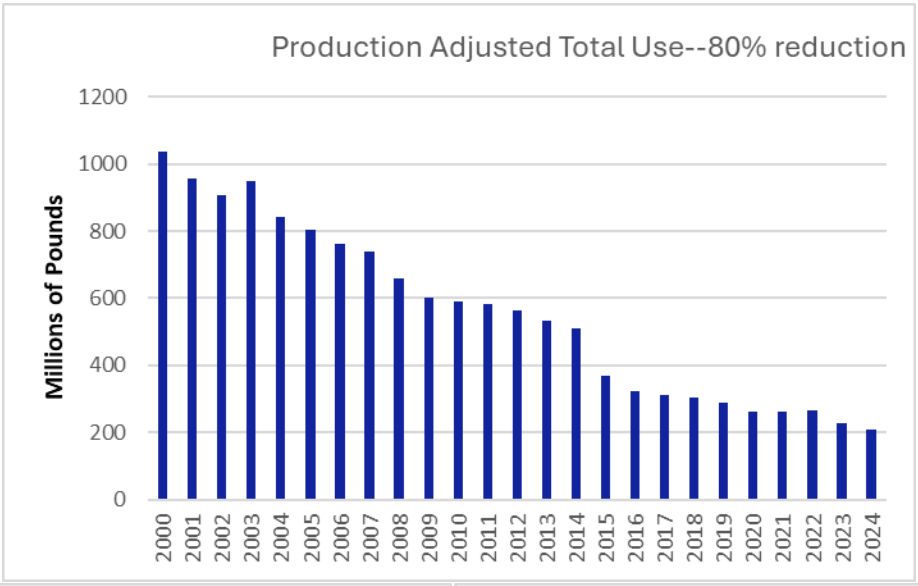
- Toxic chemical use by 80%
- Toxic byproducts by 77%
- Toxics shipped in product by 61%
- On-site releases of toxics to the environment by 93%
- Transfers of toxics off-site for further waste management by 63

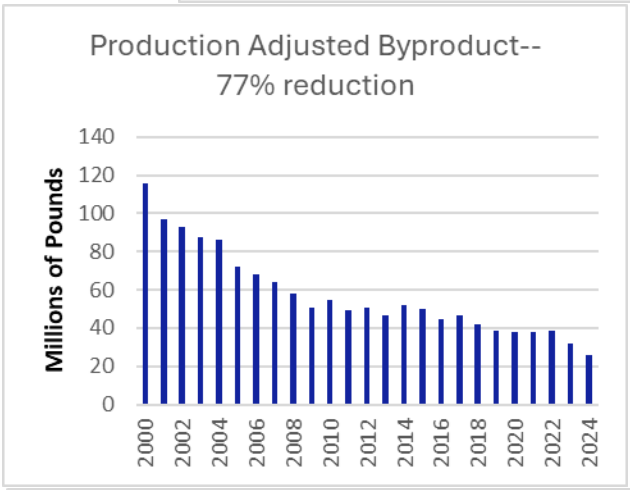
Table A-1: 2000 CORE GROUP DATA: 2000 - 2024 TREND SUMMARY (Quantities are in millions of pounds and do not include trade secret quantities) Adjusted for Changes in Production

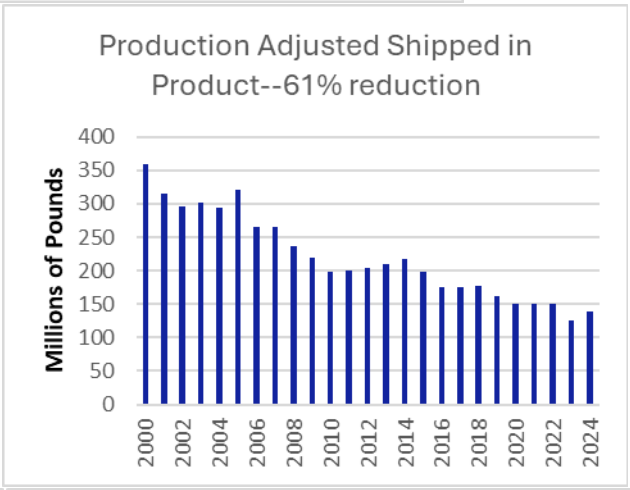
Year	Total Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site	Change in Production Ratio Year to Year	Cumulative Change in Production Ratio from 2007
2000	1038.40	115.50	358.80	10.70	26.90	-	-
2001	955.40	96.80	315.30	8.70	21.30	1.00	1.00
2002	908.02	93.02	295.73	8.02	20.94	0.96	0.96
2003	948.33	87.19	301.46	7.40	20.10	1.00	0.96
2004	842.36	86.11	293.15	6.75	19.35	1.05	1.01
2005	804.46	72.10	321.19	6.68	15.81	1.01	1.02
2006	759.98	68.28	266.26	5.68	14.64	1.02	1.04
2007	738.91	63.93	265.96	5.16	15.49	0.97	1.01
2008	659.63	57.88	237.23	4.03	13.77	1.06	1.07
2009	603.04	50.92	219.23	3.18	15.82	1.03	1.10
2010	588.45	54.39	198.71	2.84	16.10	1.09	1.20
2011	581.22	49.46	200.47	2.38	12.17	0.98	1.17
2012	561.99	50.90	204.65	2.22	11.44	0.96	1.13
2013	532.93	46.63	210.51	1.89	12.23	1.08	1.22
2014	510.95	51.72	218.21	2.10	13.32	0.90	1.10
2015	368.22	49.67	198.11	2.58	14.74	0.99	1.09
2016	321.46	44.62	175.56	1.86	15.20	1.14	1.24
2017	309.55	46.55	175.13	1.65	13.77	1.08	1.34
2018	305.04	41.93	176.89	1.24	14.46	1.03	1.38
2019	289.95	38.64	162.02	1.05	13.83	1.04	1.43
2020	263.57	37.86	150.57	0.93	12.55	0.98	1.40
2021	261.92	37.71	150.56	1.03	13.88	1.06	1.49
2022	264.42	38.79	150.59	1.01	14.79	0.97	1.44
2023	225.79	31.64	126.28	0.92	11.67	1.05	1.51
2024	207.54	26.06	138.70	0.76	10.04	1.05	1.59
Percent Change 2000-2024	80% reduced	77% reduced	61% reduced	93% reduced	63% reduced	-	59% Increase

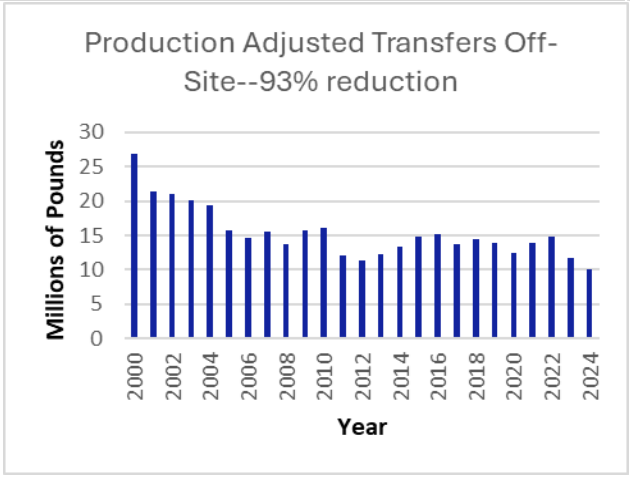
* Styrolution, which used over a quarter of the total reported use (excluding trade secret data) in 2000, ceased operations in Massachusetts in 2014.

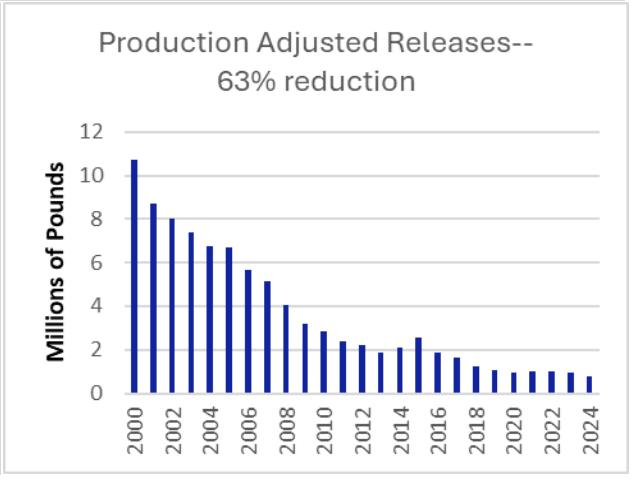
Figure A-1 - 2000 Core Group Toxics Use Reduction Progress 2000-2024
Production Adjusted
(Excludes Trade Secret Data)











2000 Core Group Progress without Adjusting for Production

The actual quantities reported by the 2000 Core Group over the period 2000 to 2024 are shown in Figure A-2. These quantities have not been adjusted for changes in production. From 2000 to 2024, Core Group facilities:

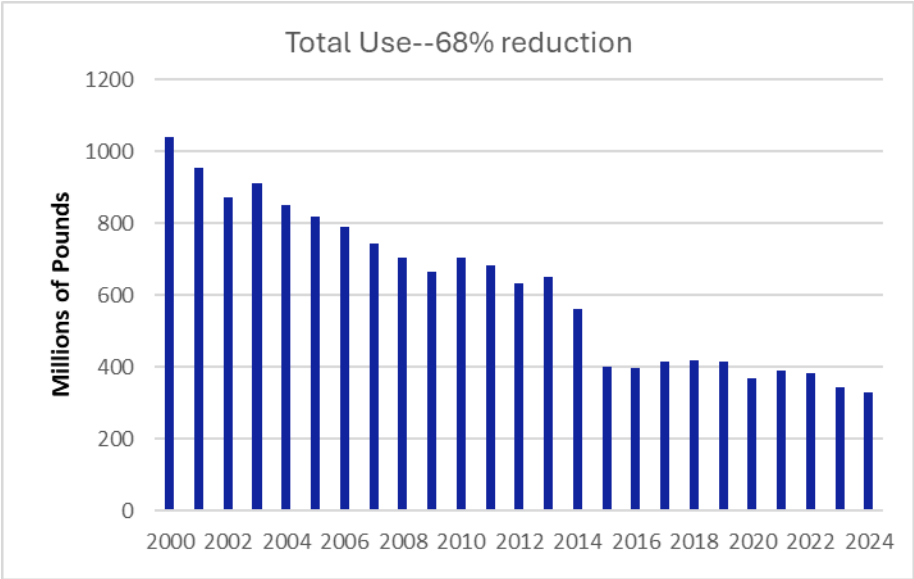
- Reduced toxic chemical use by 68% (from 1,038 million to 330 million pounds between 2000 and 2024).
- Reduced toxic byproducts by 64% (from 116 million to 41 million pounds between 2000 and 2024)
- reduced toxics shipped in product by 39% (from 359 million to 221 million pounds between 2000 and 2024).
- Reduced on-site releases of toxics to the environment by 89% (from 11 million to 1.2 million pounds between 2000 and 2024).
- Reduced transfers of toxics off-site for further waste management by 41% (from 27 to 16 million pounds between 2000 and 2024).

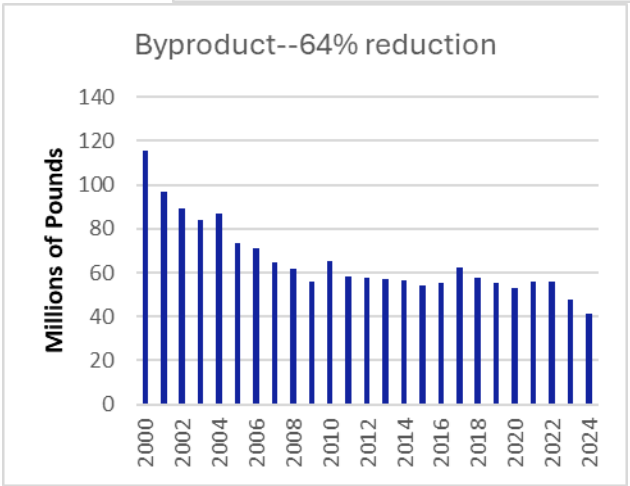
Table A-2: 2000 CORE GROUP DATA: 2000 - 2024 TREND SUMMARY (Quantities are in millions of pounds and do not include trade secret quantities)

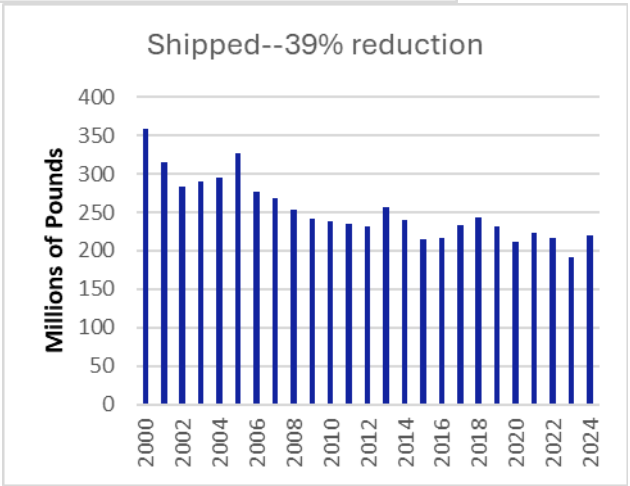
Year	Total Use	Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site	Change in Production Ratio Year to Year	Cumulative Change in Production Ratio from 2007
2000	1038.40	115.50	358.80	10.70	26.90	-	-
2001	955.40	96.80	315.30	8.70	21.30	1.00	1.00
2002	871.70	89.30	283.90	7.70	20.10	0.96	0.96
2003	910.40	83.70	289.40	7.10	19.30	1.00	0.96
2004	849.10	86.80	295.50	6.80	19.50	1.05	1.01
2005	819.00	73.40	327.00	6.80	16.10	1.01	1.02
2006	789.20	70.90	276.50	5.90	15.20	1.02	1.04
2007	744.30	64.40	267.90	5.20	15.60	0.97	1.01
2008	704.30	61.80	253.30	4.30	14.70	1.06	1.07
2009	663.20	56.00	241.10	3.50	17.40	1.03	1.10
2010	705.40	65.20	238.20	3.40	19.30	1.09	1.20
2011	682.80	58.10	235.50	2.80	14.30	0.98	1.17
2012	633.80	57.40	230.80	2.50	12.90	0.96	1.13
2013	649.10	56.80	256.40	2.30	14.90	1.08	1.22
2014	560.10	56.70	239.20	2.30	14.60	0.90	1.10
2015	399.60	53.90	215.00	2.80	16.00	0.99	1.09
2016	397.70	55.20	217.20	2.30	18.80	1.14	1.24
2017	413.60	62.20	234.00	2.20	18.40	1.08	1.34
2018	419.80	57.70	243.44	1.70	19.90	1.03	1.38
2019	415.00	55.30	231.90	1.50	19.80	1.04	1.43
2020	369.70	53.10	211.20	1.30	17.60	0.98	1.40
2021	389.43	56.06	223.86	1.53	20.63	1.06	1.49
2022	381.35	55.94	217.18	1.46	21.33	0.97	1.44
2023	341.92	47.91	191.23	1.40	17.67	1.05	1.51
2024	330.00	41.44	220.53	1.21	15.97	1.05	1.59
Percent Change 2000-2004	68% reduced	64% reduced	39% reduced	89% reduced	41% reduced	-	59% Increase

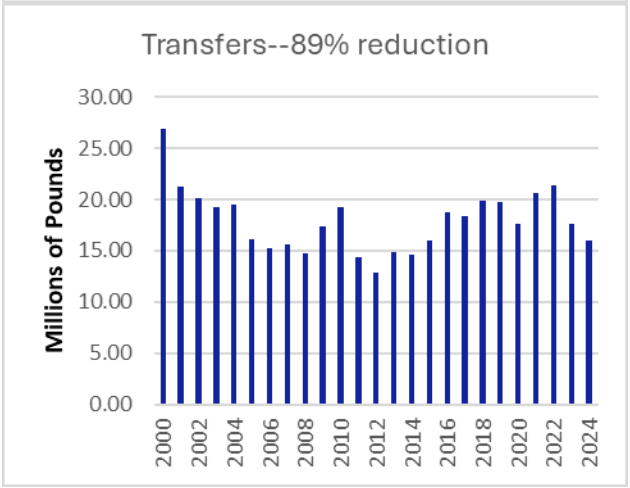
* Styrolution, which used over a quarter of the total reported use (excluding trade secret data) in 2000, ceased operations in Massachusetts in 2014.

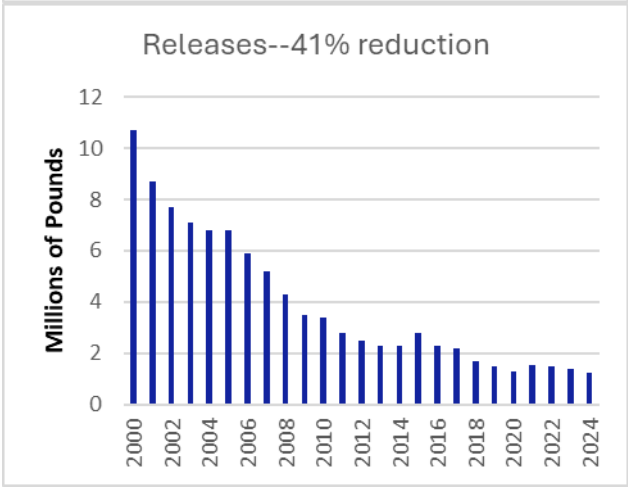
Figure A-2 - 2000 Core Group Toxics Use Reduction Progress 2000-2024
Not Production Adjusted
(Excludes Trade Secret Data)











Massachusetts Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114

Commonwealth of Massachusetts
Maura T. Healey, Governor

Executive Office of Energy and Environmental Affairs
Rebecca L. Tepper, Secretary

Department of Environmental Protection
Bonnie Heiple, Commissioner