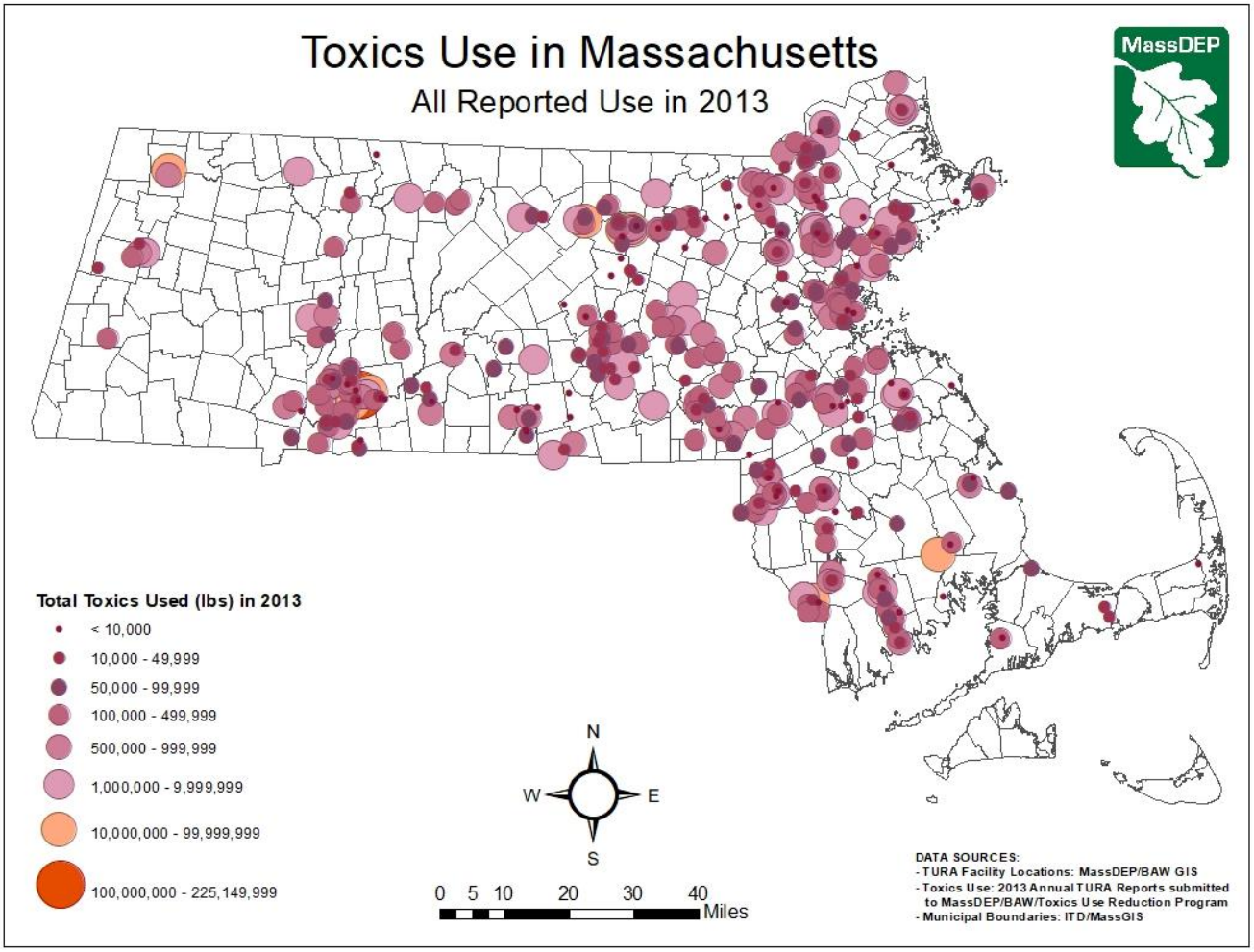
Reporting Year 2013
Toxics Use Reduction
Information Release



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 2020

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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 the efficient use of toxic chemicals. The Act established incentives that encourage facilities to use toxic chemicals (hereinafter referred to as chemicals, toxics, or toxic chemicals) only when necessary to make a product 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.

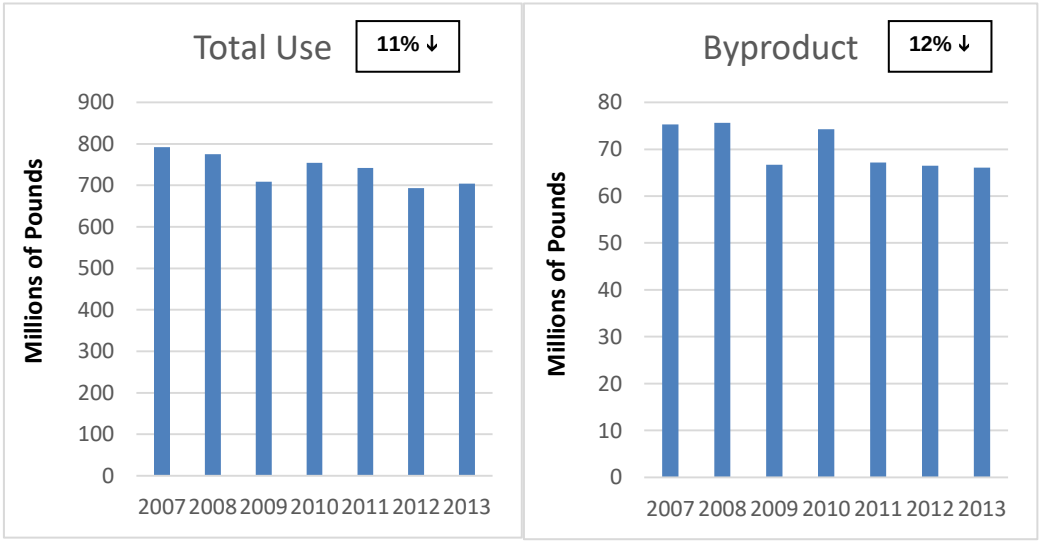
470 facilities subject to TURA reported using 145 different toxic chemicals in 2013. In total (including data submitted as trade secret), from 1990 to 2013, the following reductions were observed:

- Chemical Use (from 1.2 to 0.9 billion pounds)
- Byproduct Generation (from 127 to 73 million pounds)
- Shipped in Product (from 434 to 339 million pounds)
- On-Site Releases (from 21 to 3 million pounds)
- Transfers Off-Site (from 46 to 31 million pounds)

From 2007 to 2013, 2007 Core Group facilities:

- reduced toxic chemical use by 11% (from 792 to 704 million pounds)
- reduced toxic chemical byproducts by 12% (from 75 to 66 million pounds)
- reduced toxic chemicals shipped in product by 3% (from 272 to 264 million pounds)
- reduced on-site releases of toxic chemicals to the environment by 53% (from 6 to 3 million pounds)
- increased transfers of toxic chemicals off-site for further waste management by 3% (from 25 to 25.5 million pounds).

Toxics Use Reduction Core Group Progress 2007-2013
(Excluding Trade Secret Data)



This report includes the following seven sections:

Section I: **Introduction**

Section II: **Key TURA Terms** explains important TURA terms and concepts.

Section III: **2013 Toxics Use Reduction Progress** describes changes in toxic chemical use over the stated time period and documents progress toward the Act's overall toxic use reduction goal.

Section IV: **2013 Chemical Data** summarizes the reported information on chemical use in calendar year 2013 including detailed information on the top twenty chemicals used, generated as byproduct, shipped in product, released onsite as air or water pollution onsite, and shipped offsite for treatment and disposal.

Section V: **2013 Chemicals of Particular Concern** presents current and historical information on particularly toxic chemicals, on chemicals that promote asthma, and on carcinogens.

Section VI: **2013 Significant Industrial Sectors** describes the relative contributions of different industrial sectors to chemical use, waste and release.

Section VII: **2013 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 2013 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.

I. Introduction

This report describes toxic chemical use in Massachusetts in 2013 and progress in toxics use reduction under the Toxics Use Reduction Act (TURA). TURA was enacted in 1989 in order to reduce the risks to the public, workers, and the environment from exposure to toxic chemicals. Rather than taking the then traditional "command and control" approach to pollution control and worker health and safety, TURA created incentives for Massachusetts companies to reduce the amount 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 they use, ship in product, "generate as byproduct" (waste -- neither ship in product nor convert to another chemical during the production process), release to the environment as pollution, and ship offsite for waste treatment and disposal. Companies are filers if they meet the following criteria:

- 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 they use and the number of workers they employ, and must develop biennial Toxics Use Reduction (TUR) plans. TUR Plans identify techniques that the company could adopt that could 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 companies 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. After several toxics use reduction planning efforts, companies have the option of developing reduction plans for energy use, water use, solid waste disposal or use of other chemicals instead of for their toxic chemical use.

TURA also promotes toxics use reduction through two agencies that provide toxics use reduction education and assistance: The Office of Technical Assistance (OTA) and the Toxics Use Reduction Institute (TURI).

Office of Technical Assistance (OTA)

The Office of Technical Assistance and Technology (OTA) provides non-regulatory technical assistance to facilities seeking to reduce the use of toxics, develops fact sheets and other technical guidance documents, supports the development of technology solutions by leveraging state and federal funding, and creates marked-based incentives to reduce toxics use for qualifying TURA filers.
https://www.mass.gov/environmental-assistance-services-for-businesses

Toxics Use Reduction Institute (TURI)

The Toxics Use Reduction Institute (TURI) at the University of Massachusetts, Lowell provides toxics use reduction education, training, and library services; supports research on cleaner materials and processes; and operates a laboratory for testing non-toxic or less-toxic cleaning alternatives. TURI also makes TURA data available on its website (http://turadata.turi.org/) in a user-friendly way that is searchable by community, chemical or company.

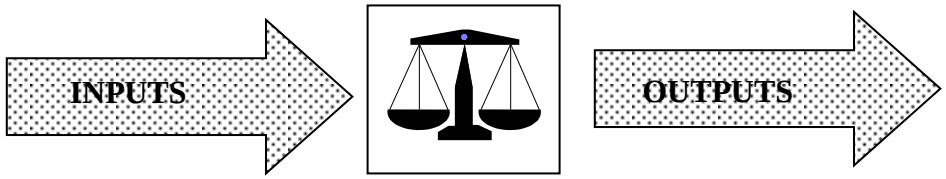
The work of MassDEP, OTA and TURI is supported by the fees paid by the filers and coordinated by the Toxics Use Reduction Administrative Council (Council). The Council is a governing body consisting of the Secretaries of Energy and Environmental Affairs, Economic Development, and Public Safety, the Commissioners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

Massachusetts Department of Environmental Protection Toxics Use Reduction Program: www.mass.gov/dep/toxics/toxicsus.htm.

II. Key TURA Terms

TURA – Massachusetts Toxics Use Reduction Act of 1989 (MGL c. 21I)
TRI – federal EPA Toxics Release Inventory
TRADE SECRET – the information identified as confidential by TURA filers. To protect confidentiality claims by Trade Secret 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.

The terms and definitions below have been arranged in order of inputs and outputs. Chemicals that are used by companies are brought into the facility and are manufactured, processed or otherwise used. As a result of using these chemicals, a company 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 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 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.



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, including without limitation, a toxic substance contained in a mixture or trade name product, 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".

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 offsite to a wastewater treatment or waste management, or recycling facility

III. 2013 Toxics Use Reduction Progress

In order to protect the environment, public, and workers from the adverse effects of toxic chemicals, the Toxics Use Reduction Act (TURA) established incentives that encourage facilities to implement toxics use reduction techniques that result in:

1) the use of toxic chemicals only when necessary to make a product, and
2) the smallest possible amount of toxic chemicals are wasted in the production process.

TURA has been a resounding success. TURA's initial goal of a 50% reduction in the quantity of toxic chemicals "generated as byproduct" (wasted – neither shipped in product nor converted into another chemical during production) was met by 1997, and the program has continued to make progress in toxics use reduction in the ensuing years. This section of the report describes the trends in absolute chemical use by filers as well as their progress in implementing toxics use reduction.

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 Figures 1 and 2 below, the number of different TURA-listed chemicals used in the Commonwealth at reportable levels, the number of facilities using those chemicals, and the total amount of those chemicals used, generated as byproduct, released to the environment, and shipped offsite for treatment and disposal has declined in the twenty-three years since 1990.

As shown in Figure 1, out of 1,416 chemicals listed under TURA, 145 were reported in 2013, up from 133 in 1990, and down from 194 in 2000. The number of filers rose 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 V, Chemicals of Particular Interest). The number of filers has since declined to 470 in 2013. The number of individual chemical reports submitted (facilities file one Form S for each chemical reported) has followed a similar trend, decreasing from a high of 2,666 in 1994, to 1,686 in 2013, consistent with the decline in the number of TURA filers.

The reduction in reported chemical use is attributable to a combination of factors. These include reduced chemical use through toxics use reduction, 2006 statutory and other regulatory changes to TURA reporting requirements which eliminated certain chemicals and industrial sectors, reduced production levels due to economic conditions, and facilities closing.

Filers Entering and Leaving the TURA Reporting Universe

- From 1990 to 2013, there have been a total of 1,384 TURA filers.
- 291 of these filers have closed, and of these closed facilities:
    - 65% of them had reported incorporating 1 or more TUR technique before closing, and
    - 48% of these closed facilities had reported incorporating 2 or more TUR techniques before closing.
- The number of 1990 filers that are no longer reporting is 517.
- The number of filers that filed for the first time, after 1990, was 786.

Between 2012 and 2013, 33 facilities left and 19 facilities entered the TURA reporting universe, for a net decrease of 14 facilities. The reasons for 33 facilities not reporting in 2013 were:

- 13 closed
- 15 reduced use below the reporting threshold
- 3 reduced staffing below the FTE threshold
- 2 were being investigated for potential enforcement for failure to report.

Figure 1 – TURA Filer Trends 1990-2013
(including trade secret data)

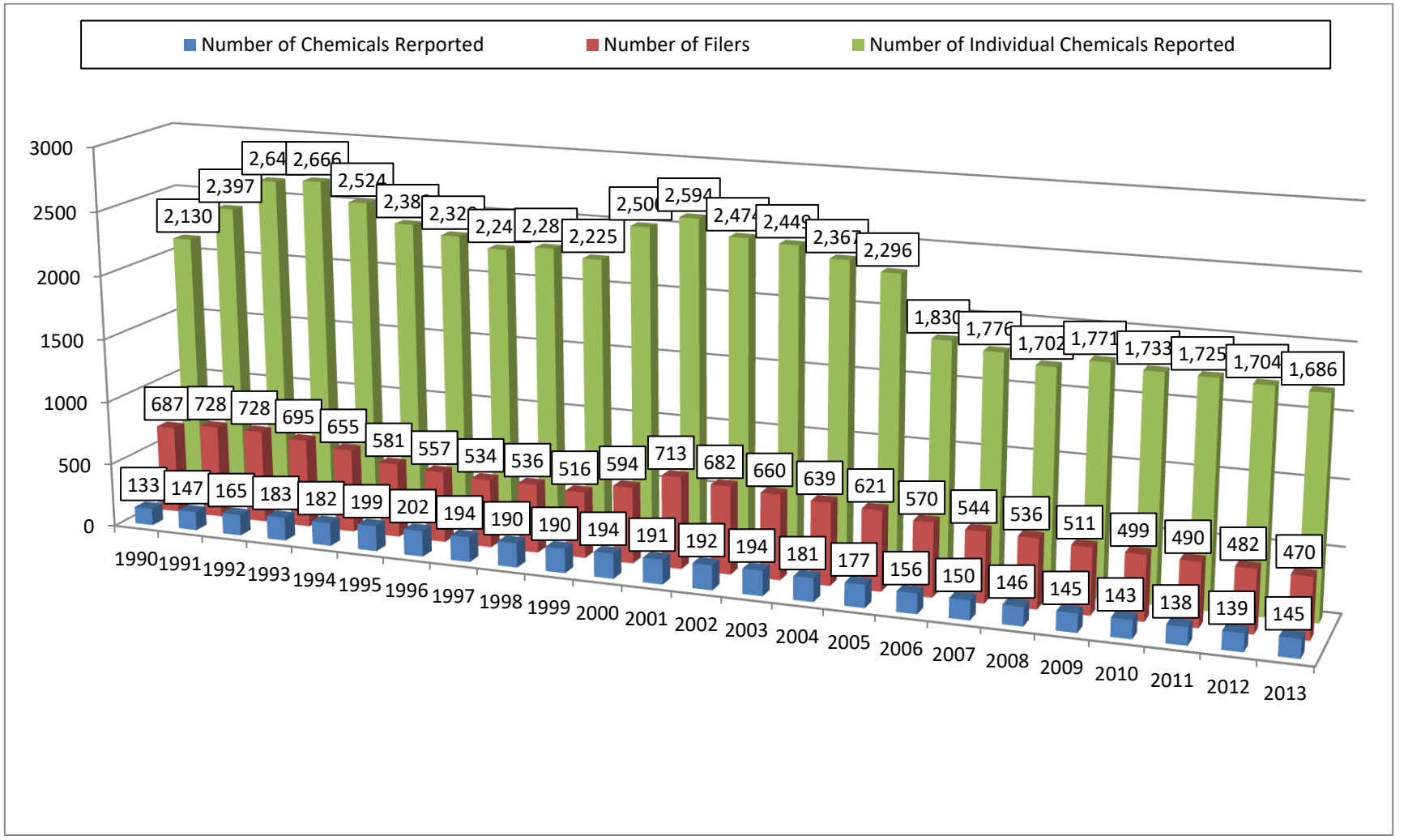
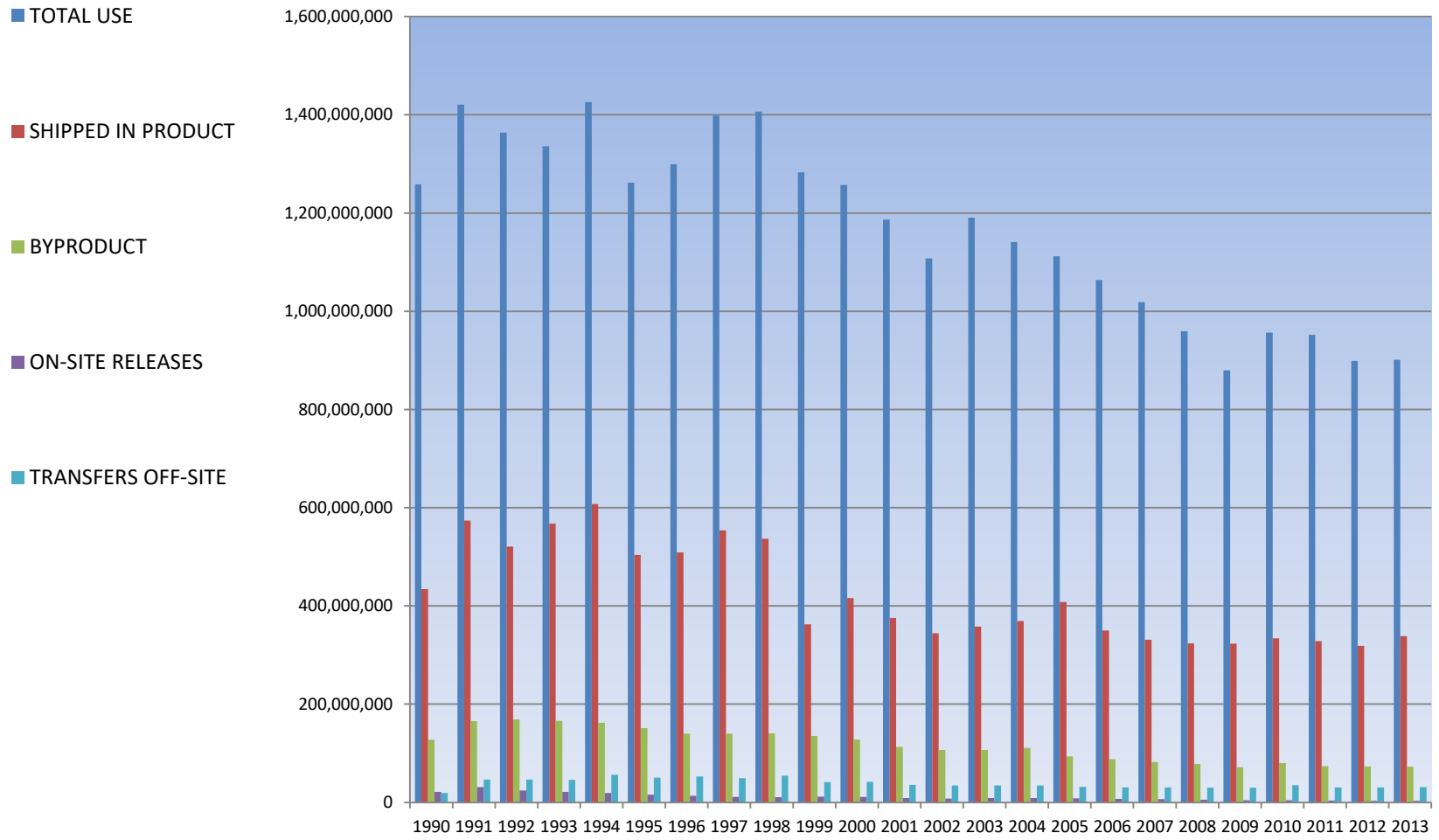


Figure 2
Raw Reported Data on the Pounds of Total Use, Shipped in or as Product, Generated as Byproduct, Released On-Site* and Transferred Off-Site for Treatment or Disposal
Reporting Years 2000-2013
(includes trade secret data)



Progress in Toxics Use Reduction: 2007 Core Group

The previous year's (2012) TURA Information Release included the 1990 and 2000 Core Groups. However, since these Core Groups are less representative of the overall TURA reporting universe, the TURA program has created a new 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 2013 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. The 2007 Core Group represents 96% of the 2013 TURA filers.

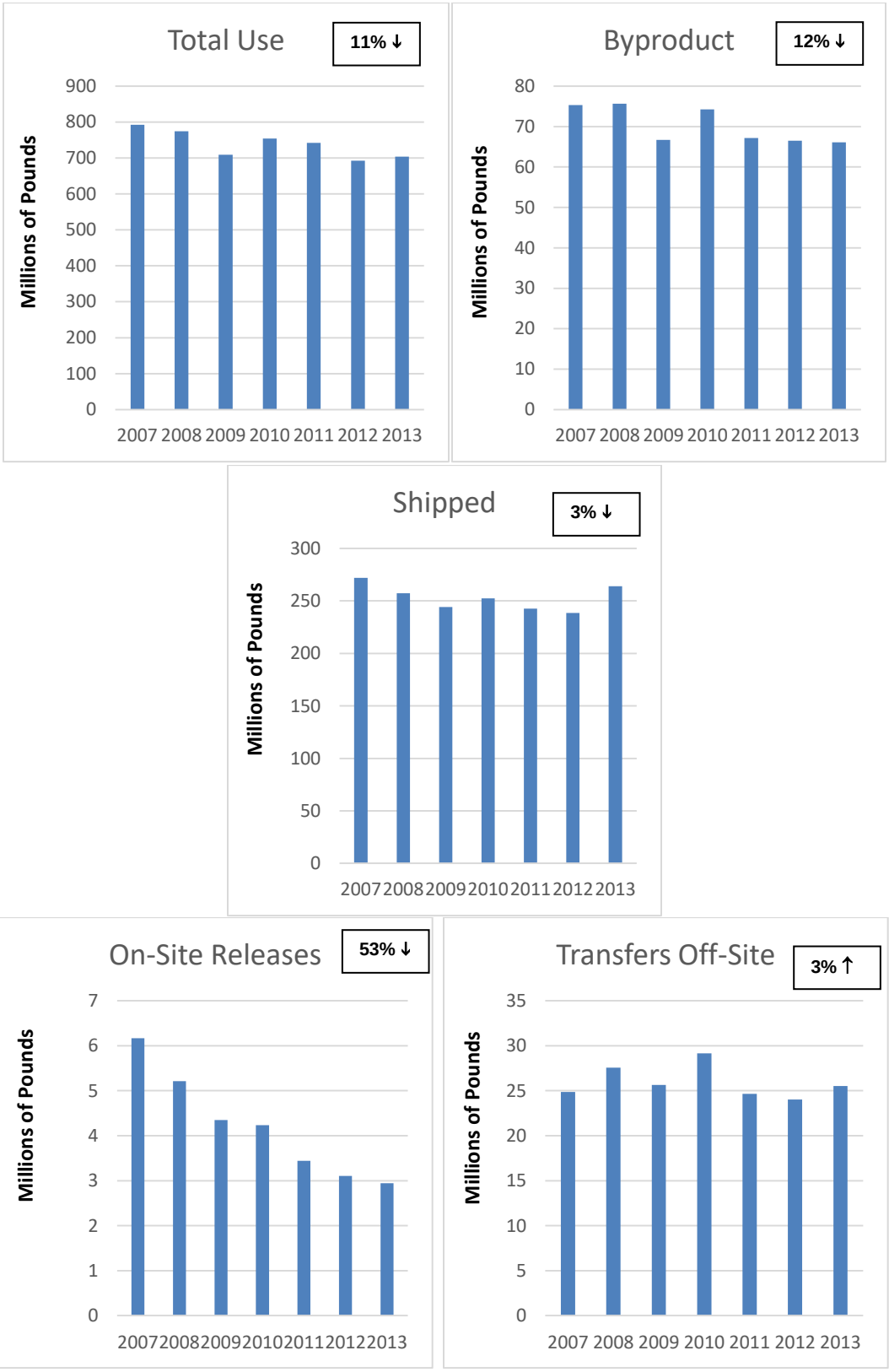
Table 1 and Figure 3 below summarize TURA data from 2007 to 2013, excluding trade secret data. The quantities reported by the 2007 Core Group over the period 2007 to 2013 are shown in Table 1. From 2007 to 2013, 2007 Core Group facilities:

- reduced toxic chemical use by 11% (from 792 to 704 million pounds)
- reduced toxic chemical byproducts by 12% (from 75 to 66 million pounds)
- reduced toxic chemicals shipped in product by 3% (from 272 to 264 million pounds)
- reduced on-site releases of toxic chemicals to the environment by 53% (from 6 to 3 million pounds)
- increased transfers of toxic chemicals off-site for further waste management by 3% (from 25 to 25.5 million pounds).

Table 1
2007 CORE GROUP DATA: 2007-2013 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
2007	792.3	75.3	271.9	6.2	24.8
2008	774.8	75.6	257.4	5.2	27.6
2009	708.8	66.7	244.3	4.3	25.6
2010	754.1	74.2	252.6	4.2	29.2
2011	742.2	67.2	242.7	3.4	24.7
2012	693.0	66.5	238.6	3.1	24.0
2013	704.0	66.1	264.0	2.9	25.5
Percent Change 2007-2013	11% Reduction	12% Reduction	3% Reduction	53% Reduction	3% Increase

Figure 3 – 2007 Core Group Toxics Use Reduction Progress 2007-2013
(Excludes Trade Secret Data)



IV. 2013 TURA Chemical Data

Table 2 summarizes the 2013 data for all TURA filers, including trade secret data, rounded to the nearest million pounds. These filers reported using 901 million pounds of chemicals and generating 73 million pounds of byproduct.

Table 2 - 2013 Data for All TURA Filers (in pounds; includes trade secret data)		
Total Use	901,000,000	
Generated as Byproduct	73,000,000	• 8% of total chemical use
Shipped in Product	339,000,000	• 38% of total chemical use • the remaining 54% of total use is "consumed" (transformed into another chemical in the production process)
On-Site Releases (to air or water)	3,000,000	• 0.4% of total chemical use • 4% of total byproduct • the remaining 96% of byproduct was destroyed through treatment on-site (54%) or shipped off-site for treatment or disposal (see below)
Transfers Off-Site (for treatment or disposal)	31,000,000	• 3% of total chemical use • 43% of total byproduct

Trade Secret

Under certain circumstances facilities have the right to claim that the amount of chemical they use and generate as byproduct is a trade secret. As long as the regulatory standards for making such a claim are met, MassDEP may not share that information, or information that could be used to back calculate trade secret reports. In 2013, seven companies made trade secret claims on a combined total of:

- 198 million pounds of chemical use
- 7 million pounds of byproduct generation
- 77 million pounds shipped in product

Chemical Use by Use Category

Chemical use is reported in three categories: manufactured, processed, or otherwise used.

Manufactured Chemicals

TURA defines "manufacture", in part, as: "to produce, prepare, import or compound a toxic or hazardous substance". For example, intentional manufacture of a chemical substance such as formaldehyde or the "coincidental" (unintentional) manufacture of acid gases such as hydrochloric acid during combustion of fossil fuels.

Figure 4 below shows that relatively little manufacturing of TURA chemicals occurs in Massachusetts. Chemicals reported as "manufactured" accounted for 13% in 2013 of the total use statewide. A significant amount of these chemicals are coincidentally manufactured as a result of some other activity rather than

manufactured intentionally. Examples include the creation of sulfuric acid from fuel combustion for power generation and the production of nitrate compounds as a result of using nitric acid to treat wastewater.

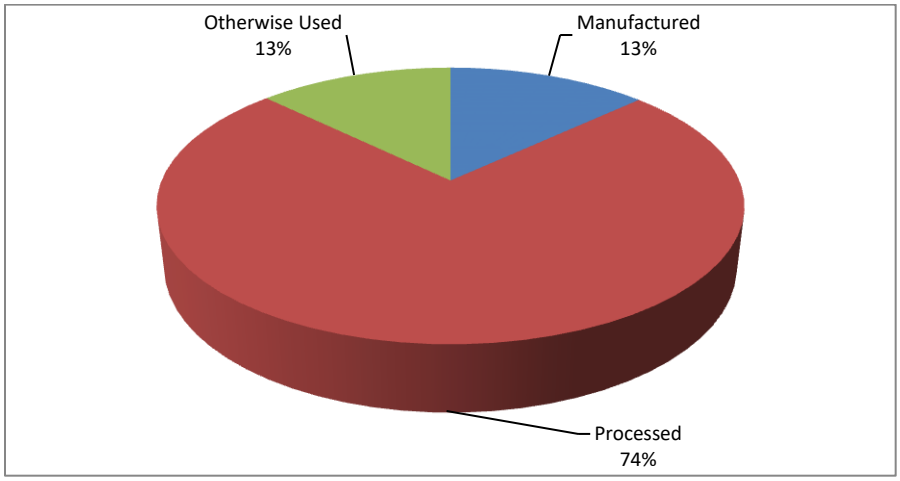
Processed Chemicals

TURA defines "process", in part, as: "the preparation of a toxic or hazardous substance. For example, toxic chemicals added to the formulation of paints or coatings or conversion of styrene monomer to polystyrene to create plastic products. Most chemical use in Massachusetts is processed. Chemicals reported as processed accounted for 74% in 2013 of total chemical use.

Otherwise Use Chemicals

"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". For example, chemicals used to clean parts prior to plating, chemicals contained in fuels that are combusted, chemicals used as catalysts in production, or chemicals used to carry a coating but that evaporate off as the coating dries. Chemicals "otherwise used" accounted for 13% in 2013 of total use.

Figure 4 – 2013 Chemical Use (includes trade secret data)



Top 20 Chemicals

In 2013, filers reported using 145 out of the 1,416 TURA-listed chemicals in amounts above the reporting threshold. The raw data was analyzed by chemical to identify the top 20 chemicals in each of the following reported amounts: used, generated as a byproduct, shipped in product, released onsite as pollution, and shipped offsite for treatment or disposal.

Chemical Use

As shown in Table 3 below, the 2013 top 20 chemicals in total use accounted for 88%, (620 million pounds) of the total reported statewide use. (Trade secret data was excluded to protect confidentiality claims.) Styrene Monomer was the chemical with greatest reported use. Nine facilities (or 2% of the total number of filers) reported using 221 million pounds of styrene monomer to make plastic. This represented 31% of total reported use and a 14 million pound decrease from the prior year.

Sodium hydroxide was the second most highly used chemical. At 70 million pounds, it accounted for 10% of total reported use. Two million more pounds were used in 2013 than in 2012. One hundred fifty-eight facilities (or 34% of the total number of filers) reported using sodium hydroxide to treat wastewater, neutralize acids, or make sodium salts, rayon, plastics, paper, cellophane, laundering, bleaching, and dishwashing materials.

Methanol ranked third on the list, representing 8% of total use reported (or 58 million pounds, 12 million pounds more than in 2012). Thirty-four facilities (or 7% of the total number of filers) reported its use. Methanol is used in the production of formaldehyde, acetic acid, chloromethanes, methyl methacrylate, methylamines, and dimethyl terephthalate. Facilities also use methanol as a solvent or antifreeze in the manufacturing of paint stripper, aerosol spray paints, wall paints, carburetor cleaners, and car windshield washer compounds.

Hydrochloric acid was the fourth highest used chemical on the list, representing 8% of total use reported, or 56 million pounds, approximately the same amount as used in 2012. Fifty-one facilities (or 11% of the total number of filers), reported using hydrochloric acid as a byproduct of combustion, to produce chloride production, in electroplating, to clean metal products, to remove scale from boilers, and to neutralize basic waste streams.

Generated as Byproduct and Shipped in Product

Table 4 below shows the Top 20 chemicals reported generated as byproduct and shipped in product in 2013. The top 20 chemicals accounted for 87% (or 63 million pounds) of the statewide total for byproducts. The top twenty chemicals shipped in product statewide accounted for 89% (or 232 million pounds) of total statewide shipments in product. (Note: The Shipped in Product table excludes trade secret data.)

Released On-Site and Transferred Off-Site for Management and Disposal

As shown in Table 5 below, the Top 20 chemicals reported as released on-site in 2013 totaled 3 million pounds, 93% of the total reported on-site releases. Hydrochloric acid was the top chemical, accounting for 20% (over 0.6 million pounds) of the statewide total on-site releases. Almost 0.4 million pounds (11%) of total on-site releases were from power plants. Over 99% of total on-site releases of lead were attributed to lead in ash disposed by one municipal waste combustor in an on-site lined landfill.

Table 5 also shows the Top 20 chemicals reported as transfers off-site in 2013, which totaled 89% (or 28 million pounds) of total transfers for waste treatment or disposal. Nitrate compounds was the top chemical, accounting for 18% of the total transfers off-site. Nitrate compounds was primarily coincidentally manufactured during neutralization of nitric acid in wastewater treatment, and were discharged to Publically Owned Wastewater Treatment Plants. Ninety-four percent of total transfers off-site of lead, the fourth chemical on the list, was attributed to six municipal waste combustors that transferred lead in ash to off-site lined landfills.

Table 3 – 2013 Top 20 Chemicals:

Total Use

These quantities do not include Trade Secret

Chemical Name (CAS #)	CAS #	Total Use (Lbs.)
Styrene Monomer	100425	220,943,652
Sodium Hydroxide	1310732	69,510,505
Methanol	**67561**	**57,596,633**
Hydrochloric Acid	7647010	56,469,840
Sodium Hypochlorite	7681529	35,862,805
Sulfuric Acid	7664939	25,086,213
Toluene	**108883**	**18,378,345**
Nitrate Compounds	1090	16,044,926
Ammonia	7664417	14,206,509
Methyl Methacrylate	80626	13,368,781
Chlorine	7782505	12,988,595
Acetone	**67641**	**11,775,578**
Potassium Hydroxide	1310583	10,570,854
Zinc Compounds	1039	10,320,997
Ethyl Acetate	**141786**	**10,311,381**
Methyl Ethyl Ketone	**78933**	**8,832,726**
Diisocyanates	1050	7,094,094
Ethylene Glycol	107211	6,962,674
Toluene Diisocyanate	26471625	6,863,475
Nitric Acid	7697372	6,511,742

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.

Table 4 – 2013 Top 20 Chemicals:
Reported Byproduct Generation and Shipped in Product

Byproduct Generation *These quantities include Trade Secret*			**Shipped in Product** *These quantities do not include Trade Secret*		
Chemical Name	**CAS #**	**Byproduct Generation (Lbs.)**	**Chemical Name**	**CAS #**	**Shipped in Product (Lbs.)**
Sodium Hydroxide	1310732	8,723,214	**Methanol**	**67561**	**55,490,522**
Ethyl Acetate	**141786**	**8,620,152**	Sodium Hydroxide	1310732	45,249,689
Toluene	**108883**	**6,273,019**	Sodium Hypochlorite	7681529	32,220,283
Nitrate Compounds	1090	5,955,943	Chlorine	7782505	12,905,948
Sulfuric Acid	7664939	5,867,678	**Toluene**	**108883**	**12,059,388**
Hydrochloric Acid	7647010	3,654,428	Ammonia	7664417	9,813,601
Formaldehyde	50000	2,794,566	**Acetone**	**67641**	**9,614,995**
Lead	7439921	2,703,324	Potassium Hydroxide	1310583	8,983,318
Methanol	**67561**	**2,631,159**	Sulfuric Acid	7664939	6,897,432
Methyl Ethyl Ketone	**78933**	**2,356,438**	**Methyl Ethyl Ketone**	**78933**	**6,442,297**
Ethylene Glycol	107211	2,228,350	Zinc Compounds	1039	5,946,341
Acetone	**67641**	**1,940,408**	Xylene Mixed Isomer	1330207	3,538,272
Dimethyl Formamide	68122	1,818,740	Ferric Chloride	7705080	3,320,113
1-Methyl-2-Pyrrolidone	872504	1,456,305	Methyl Methacrylate	80626	3,066,818
Zinc Compounds	1039	1,277,218	Dichloromethane	75092	3,065,688
Nitric Acid	7697372	1,190,006	Glycol Ethers	1022	3,037,536
Sodium Hypochlorite	7681529	1,182,335	Phosphoric Acid	7664382	2,857,607
Ammonia	7664417	952,036	Antimony Compounds	1000	2,658,110
Aluminum Sulfate	10043013	730,029	Zinc	7440666	2,643,969
Copper Compounds	1015	673,668	**Ethyl Acetate**	**141786**	**2,515,741**

NOTE: Bolded chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

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

Table 5 – 2013 Top 20 Chemicals:
Reported On-Site Releases and Transfers Off-site

On-Site Releases *These quantities include Trade Secret*			**Transfers Off-Site** *These quantities include Trade Secret*		
Chemical Name (CAS #)		**On-Site Releases (Lbs.)**	**Chemical Name (CAS #)**		**Transfers Off-Site (Lbs.)**
Hydrochloric Acid	7647010	648,428	Nitrate Compounds	1090	5,440,379
Acetone	**67641**	**401,532**	Formaldehyde	50000	2,655,159
Ammonia	7664417	342,009	Ethylene Glycol	107211	2,524,549
Ethyl Acetate	**141786**	**321,405**	Lead	7439921	2,504,393
Lead	7439921	281,509	**Methanol**	**67561**	**2,145,364**
Toluene	**108883**	**178,806**	**Toluene**	**108883**	**1,715,666**
Butyl Alcohol	71363	178,163	1-Methyl-2-Pyrrolidone	872504	1,442,780
Glycol Ethers	1022	142,028	Zinc Compounds	1039	1,294,477
Methyl Ethyl Ketone	**78933**	**89,081**	**Acetone**	**67641**	**1,256,987**
Methanol	**67561**	**79,813**	**Ethyl Acetate**	**141786**	**1,207,852**
Formaldehyde	50000	75,535	**Methyl Ethyl Ketone**	**78933**	**818,155**
Nitrogen Dioxide	10102440	50,205	Sodium Hydroxide	1310732	804,011
Trichloroethylene	79016	39,938	Hydrochloric Acid	7647010	634,440
Butyraldehyde	123728	27,718	Dimethyl Formamide	68122	533,942
Tetrachloroethylene	127184	27,036	Butyraldehyde	123728	524,873
Sulfuric Acid	7664939	24,895	Copper Compounds	1015	493,528
Xylene Mixed Isomer	1330207	21,757	Lead Compounds	1026	488,555
Dichloromethane	75092	21,477	Dichloromethane	75092	389,955
1-Methyl-2-Pyrrolidone	872504	18,340	Butyl Alcohol	71363	367,136
Styrene Monomer	100425	16,869	Nitric Acid	7697372	352,629

NOTE: Bolded chemicals are on the Top 20 Chemicals for Total Use, Byproduct Generation, Shipped in Product, On-Site Releases, and Transfers Off-Site.

V. 2013 Chemicals of Particular Interest

Certain toxic chemicals are of particular concern because of their higher potential for harm to 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) Chemical Trends

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 and, therefore, the use and release of these chemicals, even in relatively small amounts, warrants public reporting as well as toxics use reduction efforts. Because of these concerns, the threshold for PBTs was lowered 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, with the exception of lead and lead compounds (for reporting year 2001), as of reporting year 2000.

Table 6 below shows the 2013 reporting data on PBT chemicals. For 2013, Massachusetts facilities reported the use of nine PBT chemicals/chemical categories. Note that total use does not necessarily equal generated as byproduct, and shipped in product, and on-site releases, and transfers off-site. This is because the chemical may be recycled on-site, consumed or transformed in the production process, held in inventory, or is a compound (compound use is measured by the weight of the compound, whereas byproduct and releases are measured by the weight of the primary metal.)

Table 6
2013 Persistent Bioaccumulative Toxic (PBT) Chemicals Summary
(in pounds unless otherwise noted)
(excludes trade secret data)

Substance	Reporting Threshold	Number of Facilities	Total Use	Generated as Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site
Polycyclic Aromatic Compounds (PACs)	100 lbs.	25	513,627	2,914	44,138	417	2,492
Benzo[g,h,i]-perylene	10 lbs.	21	4,727	92	871	0	92
Mercury	10 lbs.	17	6,619	3,418	3,291	377	3,039
Mercury Compounds	10 lbs.	4	639	72	686	13	61
Poly-chlorinated biphenyls (PCBs)	10 lbs.	3	126,857	50,476	0	0	137,322
Dioxin & Dioxin-like Compounds	0.1 grams	9	1,847	1,847	0	126	1,722
Lead	100 lbs.	67	3,277,652	2,703,324	498,317	281,509	2,504,393
Lead Compounds	100 lbs.	61	775,641	486,944	259,356	3,378	488,555
Tetrabromo-bisphenol A	10 lbs.	2	5,881	46	5,835	0	46

Table 7
Pounds of PBTs Reported and Number of Facilities Reporting 2000 – 2013
(excludes trade secret data)

	Benzo[ghi]-perylene (191242)		Dioxin and Dioxin Compounds (1060)		Lead (7439921)		Lead Compounds (1026)		Mercury (7439976)		Mercury Compounds (1028)		Poly-Chlorinated Biphenyls (1336363)		Polycyclic Aromatic Compounds (1040)		Tetra-bromo-bisphenol A (79947)	
	Lbs Use	#	Grams Use	#	Lbs Use	#	Lbs Use	#	Lbs Use	#	Lbs Use	#	Lbs Use	#	Lbs Use	#	Lbs Use	#
1999	0	0	0	0	723,675	15	9,287,998	31	0		0	0	0	0	37,539,261	6	0	0
2000	**146,531**	**120**	**12**	**8**	1,261,842	15	9,855,146	33	**4973**	**11**	**90,009**	**6**	**118,160**	**2**	**14,171,986**	**158**	**332**	**1**
2001	180,326	127	12	8	**1,284,199**	**152**	**7,296,183**	**130**	9,315	13	676	5	83,890	2	13,849,697	151	115	1
2002	123,429	122	13	8	912,922	143	5,152,078	115	5,922	13	1,765	5	64,981	2	11,148,250	149	19,057	1
2003	*125,099*	*119*	*11,827*	*17*	*3,394,134*	*140*	*5,989,183*	*118*	*11,476*	*20*	*1,212*	*6*	*37,325*	*2*	*11,486,388*	*136*	*152*	*1*
2004	128,874	114	3,033	16	3,651,671	109	5,284,597	127	12,629	20	966	7	46,879	2	11,796,370	133	0	0
2005	128,809	109	6,696	17	3,763,242	114	3,694,150	127	10,444	22	1,031	6	21,741	2	11,128,163	127	0	0
2006	49,376	27	761	15	4,811,219	102	2,282,694	112	13,351	19	1,011	6	22,042	2	3,735,104	31	0	0
2007	49,412	28	1,155	13	4,172,982	90	1,418,897	105	13,744	20	1,101	5	110,303	3	5,051,904	29	0	0
2008	33,393	25	1,523	13	3,799,929	90	1,251,744	94	12,243	21	3,421	6	156,170	3	3,275,212	30	0	0
2009	12,403	24	1,951	11	4,130,556	73	988,660	85	10,515	17	1,610	5	42,757	3	1,168,637	28	4,596	1
2010	4,275	21	1,980	9	3,208,423	75	751,103	73	11,434	16	1,161	4	71,091	2	382,534	26	4,875	2
2011	3,177	23	2,811	9	3,071,224	74	584,506	66	15,826	17	1,307	5	72,654	2	283,498	27	7,235	3
2012	2,625	23	2,650	9	3,271,119	74	672,183	62	7,795	16	157	2	83,372	2	198,335	25	7,242	3
2013	4,727	21	1,847	9	3,277,652	67	775,641	61	6,619	17	639	4	126,857	3	513,627	25	5,881	2

NOTE: Bolded numbers indicate the first year that a chemical was designated as a PBT and the reporting threshold lowered.
2003 was the first year that municipal waste combustors were required to report

Table 7 above shows the 1999 or 2000-2013 reporting data on PBT chemicals reported and the numbers of facilities reporting PBTs. The data shows a fairly common trend. Lowering the reporting threshold for these chemicals typically leads to an initial increase in the number of facilities reporting the chemical (indicative of the fact that there were facilities that had reduced use below the 25,000/10,000 pound threshold). Over time, however, the number of filers trends downward, as facilities adopt TUR options in response to the reporting and planning requirements.

This trend is shown most clearly with lead and lead compounds. Lowering the reporting threshold in 2001 for these substances 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 130 in 2001. By reporting year 2013, the number of facilities reporting lead had decreased to 67, and the number of facilities reporting lead compounds had decreased to 61.

The number of facilities reporting mercury and mercury compounds rose from zero for both chemicals in 1999, to 11 and 6, respectively in 2000. When municipal waste combustors emissions were first reported in 2003, the number of facilities reporting mercury jumped to 20, and use increased from 4,973 pounds in 2000, to 11,476 pounds in 2003. As of 2013, reported mercury use has declined to 17 facilities and 6,619 pounds. Likewise, the number of facilities reporting mercury compounds decreased from six in 2000, to four in 2013. Total use was at its peak in 2000 at 90,009 pounds, then dropped to 676 pounds in 2001, and has dropped to 639 pounds in 2013, with occasional spikes. Ninety-nine percent of the 90,009 pounds reported in 2000 was due to a one-time shipment of waste from a hazardous waste transfer facility.

Dioxin use followed a similar pattern to mercury. The number of filers and amounts reported increased substantially when municipal waste combustion emissions were brought into the TURA program in 2003, and then the number of filers dropped to primarily the municipal waste combustors.

For benzo[ghi]perylene and polycyclic aromatic compounds (PACs), there was a dramatic drop in the number of facilities reporting, due to a statutory change in 2006 that limited reporting of these substances to facilities whose primary business is power production (e.g. electric utilities) and asphalt batch plants. For benzo[ghi]perylene, the number of facilities reporting dropped from 120 in 2000 to 21 in 2013. For PACs, the number of facilities reporting went from 158 in 2000 to 25 in 2013.

Higher Hazard Substances (HHS) Trends

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 lowered the reporting threshold for higher hazard substances (HHS) to 1,000 pounds for all uses. Effective reporting year 2008, the Council designated cadmium, cadmium compounds, and trichloroethylene as HHS. Effective reporting year 2009, the Council designated tetrachloroethylene as a HHS. Effective reporting year 2013, the Council designated formaldehyde and hexavalent chromium compounds as HHS. Table 8 summarizes 2013 HHS data.

Table 8
2013 Higher Hazard Substances (HHS) Summary (Amounts in pounds)
(Excludes Trade Secret Data)

Substance	# Facilities	Total Use	Generated as Byproduct	Shipped in Product	On-Site Releases	Transfers Off-Site
Cadmium	6	20,447	1,396	15,343	17	1,387
Cadmium Compounds	6	210,550	16,467	21,464	18	16,451
Trichloroethylene	15	176,891	122,671	98,060	39,938	15,870
Tetrachloroethylene	17	102,960	49,092	46,061	27,036	22,056
Formaldehyde	27	4,101,572	507,863	323,131	69,231	374,760
Hexavalent Chromium Compounds	16	113,466	25,831	73,101	125	17,584

Table 9 shows the pounds of HHS chemicals reported and the number of facilities reporting higher hazard substances from 2007 to the present. The data shows a similar trend as that seen with PBTs: a gradual decline in use from 2007, the year before the substance was designated as an HHS, an initial increase in the number of facilities reporting, and the pounds of chemical reported after designation as an HHS, followed by a drop in both measures.

This pattern held true for all substances, except cadmium compounds. Cadmium compounds use declined between 2007 and 2008, the year cadmium compounds was classified as an HHS; although the number of filers jumped from 1 to 6 in 2008. Use declined in 2009, and then increased in 2010, to levels just above those seen in 2006. Some of these changes could have been due to changes in economic activity, since the HHS data presented has not been normalized for production.

The more typical trend is shown with trichloroethylene. The number of facilities reporting this chemical jumped from 9 in 2007, to 27 in 2008 (the year the reporting threshold was lowered), and has since declined to 15 in 2013. Use dropped dramatically between 2007 and 2013, from 604,671 pounds in 2007, to 536,073 pounds in 2008, and to 176,891 pounds in 2013.

Table 9
Pounds of High Hazard Chemicals Reported and Number of Facilities
(Excludes Trade Secret Data)

Reporting Year	Cadmium # Facilities (HHS as of 2008)		Cadmium Compounds # Facilities (HHS as of 2008)		Trichloroethylene # Facilities (HHS as of 2008)		Tetra-chloroethylene # Facilities (HHS as of 2009)		Formaldehyde # Facilities (HHS as of 2012)		Hexavalent Chromium # Facilities (HHS as of 2012)	
	Lbs	*#*	*Lbs*	*#*	*Lbs*	*#*	*Lbs*	*#*	*Lbs*	*#*	*Lbs*	*#*
2007	0	0	184,400	1	604,671	9						
2008	**29,429**	**5**	**167,355**	**6**	**536,073**	**27**	230,345	4				
2009	28,969	4	145,324	7	556,457	23	**176,186**	**23**				
2010	23,970	4	242,702	7	294,836	16	151,918	18				
2011	26,878	4	180,654	5	303,076	17	163,773	19	4,027,188	9	0	0
2012	29,805	6	181,666	5	350,184	14	87,816	15	**4,119,113**	**25**	**115,504**	**15**
2013	20,447	6	210,550	6	176,891	15	102,960	17	4,101,572	27	113,466	16

NOTE: **Bolded** numbers indicate the first year that these chemicals were designated as an HHS and the reporting threshold lowered

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 who report under the Toxics Use Reduction Act (TURA) program (using 1990 to 2005 data). The report identified 335 chemicals that can cause or exacerbate asthma, of which 68 are reportable under TURA and of which 41 have been reported at some point during the program's history.

The TURA Program has begun working to better understand the uses of these chemicals in relation to potential exposures and toxics use reduction opportunities. Table 10 below summarizes 2013 data on some of the chemicals identified in the LCSP report that were reported under TURA. In 2013, 16 chemicals identified as asthmagens by the Association of Occupational and Environmental Clinics (AOEC) were reported under TURA. Styrene monomer and sulfuric acid had the largest amount of uses. Formaldehyde and sulfuric acid had the largest amount of releases.

Styrene monomer was used by 9 facilities, although the bulk of its use was by one facility. All reported releases of styrene were air releases. Sulfuric acid was used by 95 facilities (not including trade secret). Power plants had the largest amount of releases, which were all to air.

Table 10
Asthma-Related Toxics
(in pounds)
(excludes trade secret data)

Chemical Name (Number of facilities)	Use	On-Site Releases
Acetic Acid (18)	1,212,378	2,509
Aluminum (3)	166,250	459
Chlorine (4)	12,988,595	338
Chromium (2)	73,328	25
Ethylenediamine (1)	98,991	27
Ethylene Oxide (1)	288,568	457
Formaldehyde (27)	4,101,572	69,231
Hydrazine (2)	126,260	0
Maleic Anhydride (2)	601,533	469
Methylmethacrylate (7)	13,368,781	3,053
Nickel (2)	307,279	55
Nickel Compounds (5)	756,207	91
Phthalic Anhydride (1)	112,875	23
Styrene Monomer (9)	22,0943,656	16,869
Sulfuric Acid (95)	25,086,213	24,895
Toluene Diisocyanate (5)*	7,448,326	165

* 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). Table 11 shows that in 2013, seven IARC Group 1 carcinogens were reported under TURA. Formaldehyde and nickel compounds had the largest amounts of reported use. Formaldehyde had the largest amounts of reported releases. Of these chemicals, formaldehyde was reported by the most facilities. Releases were primarily air releases; however, there also were releases to water and land.

Table 11
IARC Group 1 Carcinogens
(in pounds unless otherwise noted)
(excludes trade secret data)

Chemical Name (Number of Facilities)	Use	On-Site Releases
Cadmium (6)	20,447	16.5
Crystalline Silica (1)	78,165	8
Hexavalent Chromium Compounds (16)	113,466	128
Dioxin (9)*	1847.2468 Grams	125.5708 Grams
Ethylene Oxide (1)	288,568	457
Formaldehyde (27)	4,101,572	69,231
Nickel Compounds (5)	756,207	91

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

VI. 2013 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.

Figure 5 shows the number of facilities by industrial sector in 2013. In 2013, the largest sector was the Chemical Manufacturing sector and the second largest sector was the Fabricated Metal Product Manufacturing sector. In 2013, the Chemical Manufacturing sector represented approximately 26% (89 facilities) of the filers and, as shown in Figure 6, used 68% of total use. The Chemical Manufacturing sector is a diverse group of industries, and includes companies that "manufacture" chemicals according to the TURA definition as well as companies that "process" chemicals to formulate adhesives, paints, pharmaceuticals, and plastic materials and resins. The second largest sector, Utilities, accounted for 16% of total use.

Figure 7 shows the two largest sectors of total byproduct generated were Chemical Manufacturing (26%) and Paper Manufacturing (21%). Utilities was the third largest sector, accounting for 17% of total byproduct generation. Figure 8 shows on-site releases to the environment by industrial sector. In 2013, the largest sector of total on-site releases was the Waste Management & Remediation Services sector (18%). The Chemical Manufacturing sector (which was the largest sector in chemical use) and the Utilities sector were each 17% of total on-site releases.

Figure 5 - 2013 Number of Facilities by Industrial Sector
Total Number of Facilities = 470
(Includes Trade Secret)

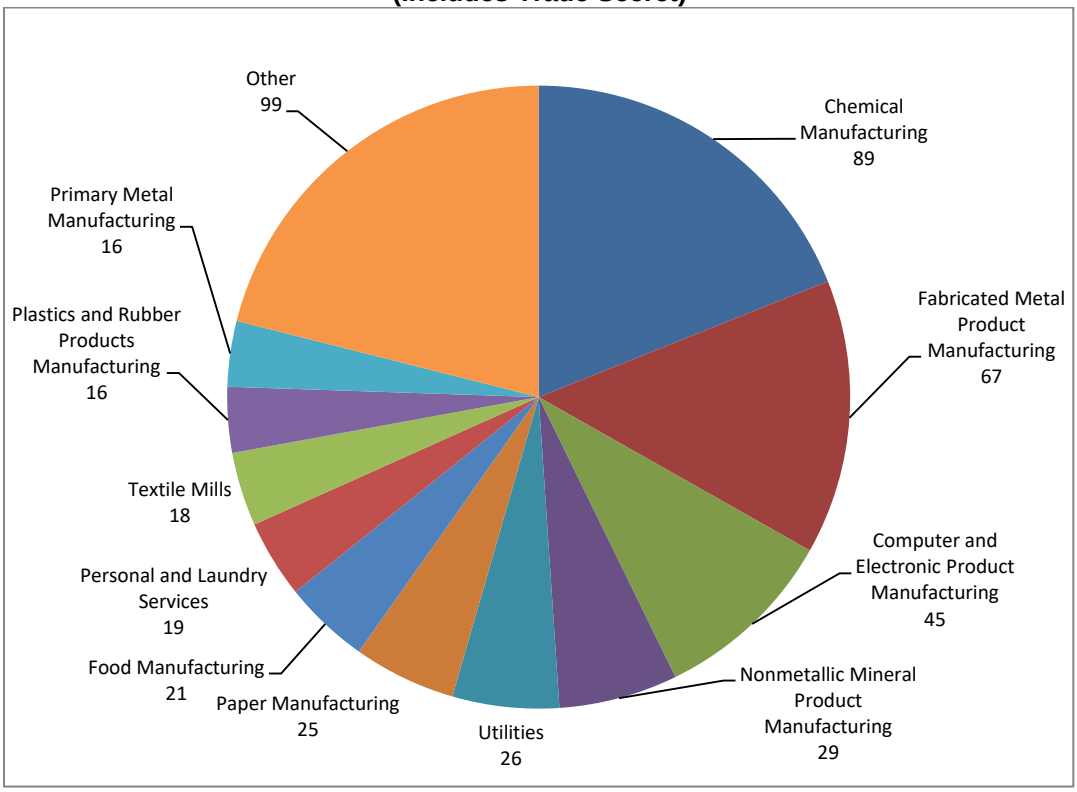


Figure 6 - 2013 Chemical Use by Industrial Sector
Total Use = 901 Million Pounds
(Includes Trade Secret Data)

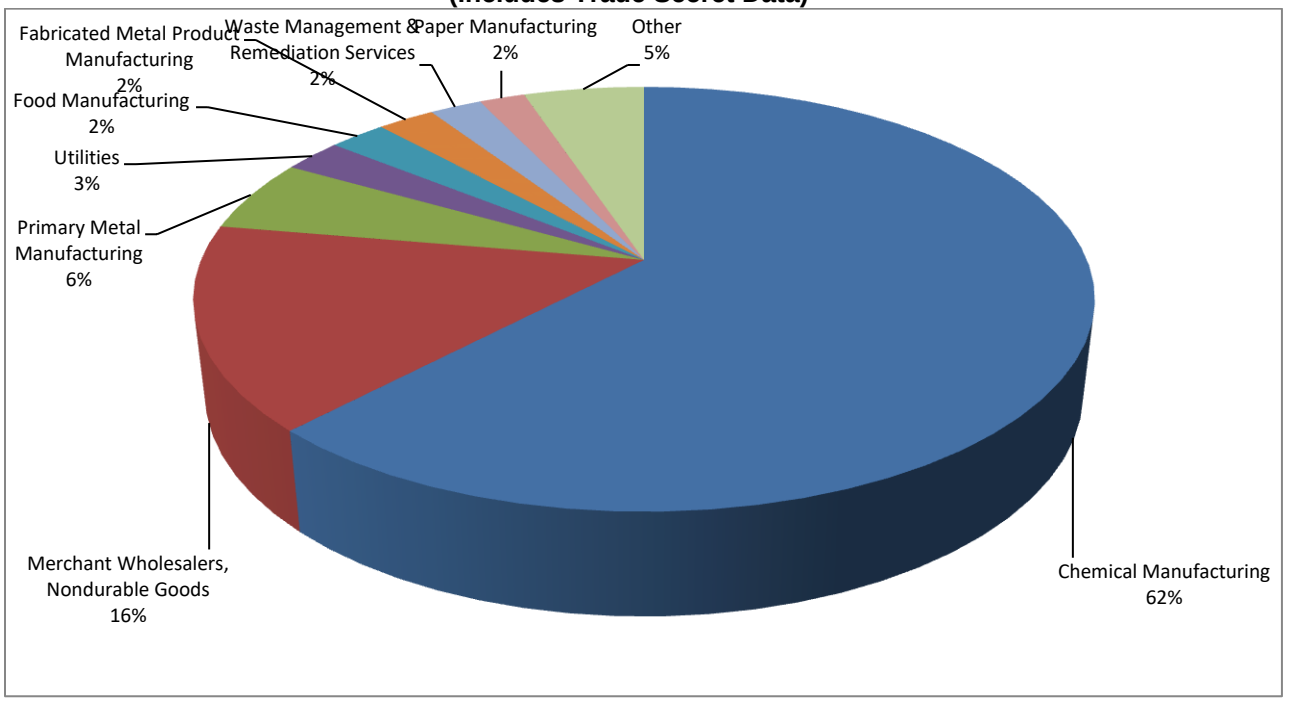


Figure 7 - 2013 Byproduct Generation by Industrial Sector
Total Byproduct = 73 Million Pounds
(Includes Trade Secret Data)

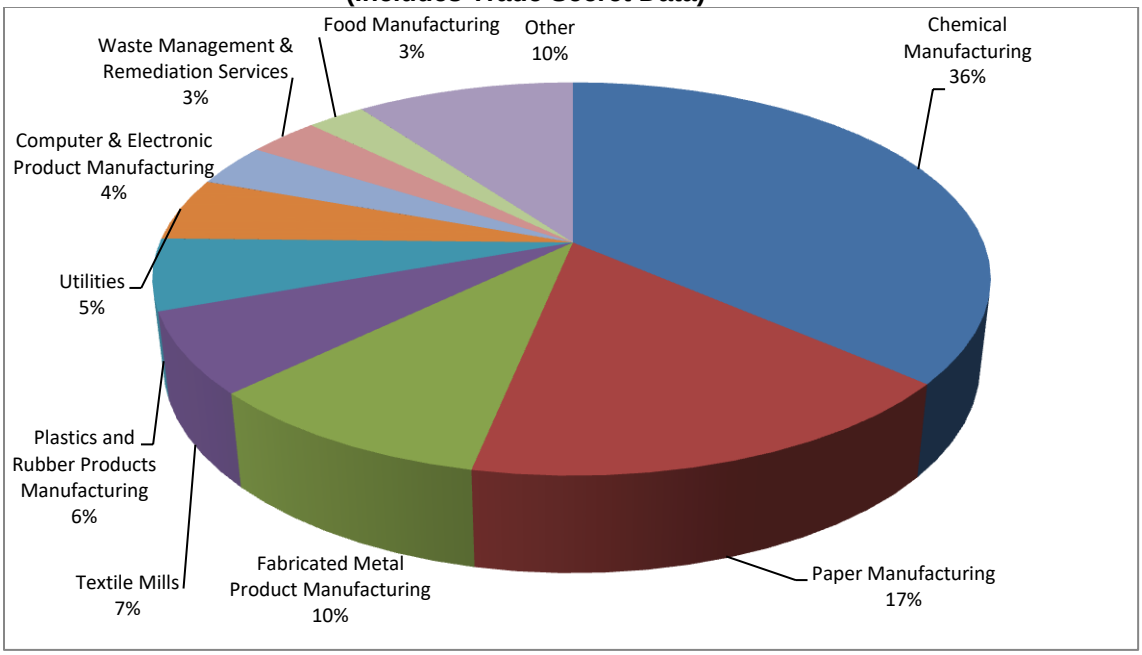
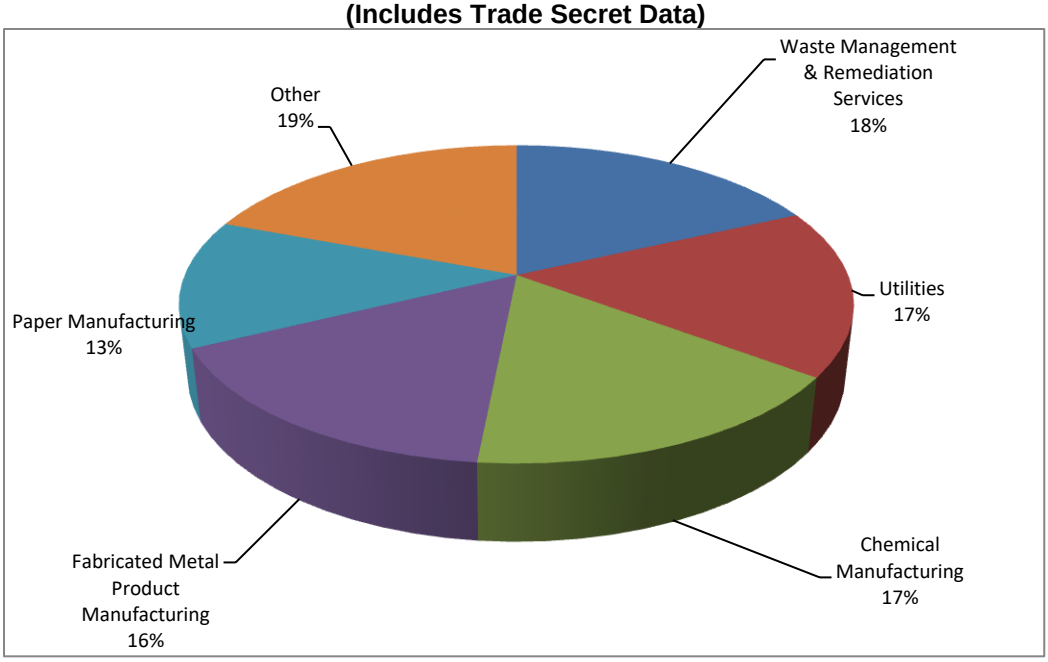


Figure 8 - 2013 On-Site Releases by Industrial Sector
Total On-Site Releases = 3 Million Pounds
(Includes Trade Secret Data)



VII. 2013 Major TURA Facilities

Tables 12 through 14 show the top 20 facilities for the quantities of reported chemical use, generated as byproduct, shipped in or as product, on-site releases, and transfer off-site.

Top 20 Facilities: Reported Total Chemical Use

Table 12 lists the 20 facilities that reported used the largest total quantity of TURA chemicals. These 20 facilities used 702 million pounds, or 78% of total statewide use.

Table 12
2013 Top 20 Facilities: Total Use
These quantities include Trade Secret Data

Facility Name	Town	Total Use (Lbs.)
Styrolution America LLC Indian Orchard	Springfield	221,716,512
Solutia Inc. - Indian Orchard Plant	Springfield	112,639,606
Borden & Remington	Fall River	99,040,433
Holland Company Inc.	Adams	39,366,700
Ineos Melamines LLC	Springfield	39,023,294
Rousselot Peabody Inc.	Peabody	35,621,887
Southwin Ltd.	Leominster	24,163,528
James Austin Co.	Ludlow	16,391,025
Camco Manufacturing Inc.	Leominster	13,821,920
Omnova Solutions Inc.	Fitchburg	13,098,493
Astro Chemicals Inc.	Springfield	11,529,390
Semass Partnership	Rochester	11,198,647
Henkel Corp.	Springfield	10,148,180
Roberts Chemical Co. Inc.	Attleboro	9,015,834
Metalor Technologies USA	North Attleborough	8,954,590
Nexeo Solutions LLC	Tewksbury	8,433,955
Univar USA Inc.	Salem	7,913,219
Advanced Urethane Technologies Inc.	Newburyport	6,712,449
Covanta Haverhill Inc.	Haverhill	6,460,898
Nyacol Products Inc.	Ashland	6,327,483

Top 20 Facilities: Reported Byproduct Generation and Shipped in Product

Table 13 lists the 20 facilities that generated the largest reported quantity of byproduct generated and shipped in product. These facilities generated 41 million pounds of byproduct or 57% of the statewide total.

The 20 facilities with the largest quantity shipped in product, shipped 296 million pounds in product, or 87% of the statewide total.

Table 13
2013 Top 20 Facilities: Reported Byproduct Generation and Shipped in Product

Byproduct Generation *These quantities include Trade Secret Data*			Shipped in Product *These quantities include Trade Secret Data*		
Facility Name	**Town**	**Byproduct Generation (Lbs.)**	**Facility Name**	**Town**	**Shipped in Product (Lbs.)**
Solutia Inc. Indian Orchard Plant	Springfield	7,723,250	Borden & Remington	Fall River	99,019,205
Rousselot Peabody Inc.	Peabody	4,605,273	Holland Company Inc.	Adams	37,684,700
3M	Rockland	4,107,143	Solutia Inc. Indian Orchard Plant	Springfield	31,041,356
Flexcon Company Inc.	Spencer	3,822,295	Southwin Ltd.	Leominster	24,157,113
Ineos Melamines LLC	Springfield	3,712,219	James Austin Co.	Ludlow	16,215,274
Crane & Co. Inc. Pioneer Mill	Dalton	2,221,222	Camco Manufacturing Inc.	Leominster	13,819,020
Ideal Tape Company	Lowell	1,578,781	Astro Chemicals Inc.	Springfield	10,919,646
ITW Foils	Newburyport	1,496,626	Roberts Chemical Co. Inc.	Attleboro	9,015,794
Madico Inc.	Woburn	1,386,437	Nexeo Solutions LLC	Tewksbury	8,421,885
Genzyme Corp.	Allston	1,111,063	Univar USA Inc.	Salem	7,899,283
Semass Partnership	Rochester	1,095,118	Webco Chemical Corp.	Dudley	5,830,588
Barnhardt Manufacturing Co.	Colrain	1,083,113	ITW Polymers Sealants North America	Rockland	5,797,611
Koch Membrane Systems Inc.	Wilmington	1,045,133	Houghton Chemical Corp.	Boston	5,784,293
Thermo Fisher Scientific	Bedford	1,044,917	Henkel Corp.	Springfield	4,353,145
Covanta Springfield LLC	Agawam	961,056	Savogran Co.	Norwood	3,039,943
Metalor Technologies USA	Attleboro	916,404	Allcoat Technology Inc.	Wilmington	2,898,055
Henkel Corp.	Springfield	894,902	ITW Devcon Plexus	Danvers	2,831,437
Waters Corp.	Taunton	865,383	Alphagary Corp.	Leominster	2,579,662
Bradford Industries	Lowell	818,412	Callahan Co.	Walpole	2,427,359
Bostik Inc.	Middleton	807,187	CL Hauthaway & Sons	Lynn	2,351,603

Top 20 Facilities: On-Site Releases and Transfers Off-Site

Table 14 lists 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 2 million pounds, or 63% of total releases statewide. Five of the top 20 facilities of reported on-site releases were municipal waste combustors (MWCs) that also reported combustion-related emissions. Of the almost 0.8 million pounds of on-site releases reported by these MWCs, 62% was due to the coincidental manufacture of hydrochloric acid during combustion, and 37% was due to lead in ash disposed in an on-site lined landfill at one facility.

The 20 facilities with the largest reported quantity of transfers off-site transferred almost 21 million pounds, or 69% of the total statewide transfers off-site.

Table 14
2013 Top 20 Facilities: Reported On-Site Releases and Transfers Off-Site

On-Site Releases *These quantities include Trade Secret Data*			Transfers Off-Site *These quantities include Trade Secret Data*		
Facility Name	**Town**	**On-Site Releases (Lbs.)**	**Facility Name**	**Town**	**Transfers Off-Site (Lbs.)**
Covanta Haverhill Inc.	Haverhill	307,414	Solutia Inc. Indian Orchard Plant	Springfield	5,752,789
Crown Beverage Packaging USA	Lawrence	278,503	Ineos Melamines LLC	Springfield	3,294,187
Semass Partnership	Rochester	274,670	Genzyme Corp.	Allston	1,036,513
Solutia Inc. Indian Orchard Plant	Springfield	259,069	Koch Membrane Systems Inc.	Wilmington	1,036,030
Ideal Tape Co.	Lowell	117,709	Thermo Fisher Scientific	Bedford	953,185
AR Metallizing Ltd.	Franklin	115,015	Waters Corp.	Taunton	853,477
Mystic Station	Everett	75,475	Semass Partnership	Rochester	820,320
Wheelabrator Millbury Inc.	Millbury	68,362	Bostik Inc.	Middleton	785,534
Hazen Paper Co.	Holyoke	61,195	Henkel Corp.	Springfield	784,660
Wyman Gordon Co.	North Grafton	53,151	PCI Synthesis Inc.	Newburyport	652,106
3M	Rockland	52,452	Electronic Recyclers International Mass.	Holliston	643,684
Wheelabrator North Andover Inc.	North Andover	52,434	Clean Harbors Of Braintree Inc.	Braintree	642,276
Wheelabrator Saugus Inc.	Saugus	48,499	V&S Taunton Galvanizing LLC	Taunton	626,694
Jen Mfg. Inc.	Millbury	47,806	Ideal Tape Co.	Lowell	622,658
Sunco Inc.	South Easton	47,804	Metalor Technologies USA	North Attleborough	510,020
Flexcon Co. Inc.	Spencer	39,273	Wheelabrator Saugus Inc.	Saugus	490,080
Hollingsworth & Vose Co.	West Groton	37,802	Genzyme Corp.	Framingham	462,668
Callaway Golf Ball Operations Inc.	Chicopee	36,037	Wheelabrator Millbury Inc.	Millbury	456,148
Millennium Power	Charlton	33,772	Flexcon Co. Inc.	Spencer	439,892
Fore River Energy Center	Weymouth	33,647	Johnson Matthey Pharma Services	Devens	410,038

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Commonwealth of Massachusetts
Charles D. Baker, Governor

Executive Office of Energy and Environmental Affairs
Kathleen Theoharides, Secretary

Department of Environmental Protection
Martin Suuberg, Commissioner