new jersey department of environmental protection

INDUSTRIAL POLLUTION PREVENTION IN NEW JERSEY:

A Trends Analysis of Materials Accounting Data 1994 to 2004

Spring 2007

New Jersey Department of Environmental Protection
Lisa P. Jackson, Commissioner

TABLE OF CONTENTS

List of Figures

List of Tables

EXECUTIVE SUMMARY

Overview of Findings

1) **Overall, New Jersey facilities have achieved substantial reduction statewide for Nonproduct Output (NPO) and releases of hazardous substances.** The most notable findings from assessing trends for hazardous substances statewide is that facilities substantially decreased hazardous substances generated as NPO and released into the environment, even though production levels increased. For the Historic Core Universe 1994-2004, NPO decreased by 45% while production increased by 25%. For the Recent Core Universe 2000-2004, NPO decreased by 43% while production increased by 7%. This indicates that facilities achieved statewide reductions by improving efficiency and implementing pollution prevention measures.

2) **New Jersey facilities have made substantial progress in reducing On-Site Releases of hazardous Substances.** For the Historic Core Universe 1994-2004, On-Site Releases decreased by 80% when adjusted for production. The Recent Core Universe 2000-2004 decreased On-Site Releases by 44% when adjusted for production. Because these reductions occurred after treatment, it is difficult to determine if these regulated New Jersey facilities have become more efficient or if the control technology has improved. Regardless of why these reductions occurred, New Jersey residents and its environment have benefited by these reductions.

3) **Overall, New Jersey facilities have made less progress reducing the Use of hazardous substances compared to NPO and releases.** For the Historic Core Universe 1994-2004, Use decreased by only 4%. For the Recent Core Universe 2000-2004, Use decreased by 13%.The lack of progress for reducing hazardous substance Use is due to the fact that Use is dominated by the quantity of chemicals shipped as (or in) product. In 2004, hazardous substances shipped as (or in) product accounted for over 77% of all hazardous substance Use. Industries such as petroleum refineries and metal fabrication account for over 90% of the quantities in products. These types of facilities have limited options for reducing Use compared to other types of industries.

I. Scope and Purpose of the Report

The New Jersey Department of Environmental Protection (NJDEP) published a report entitled "*Industrial Pollution Prevention in New Jersey: A Trends Analysis of Material Accounting Data From 1994 to 2001 and An Annual Report for 2001*" in the Spring of 2004. That report presented an in- depth analysis of the Release and Pollution Prevention Report (RPPR) data submitted by facilities under the Worker and Community Right to Know (W&CRTK) Act and the Pollution Prevention (P2) Act from 1994 through 2001. The scope of this report is to update various sections of the 2004 report to include the most up to date data set; an additional three years of data (2002-2004). This report reviews statewide trends for the Historic Core Universe 1994-2004 for Use, NPO and Releases for several different universes of hazardous substances, and also analyzes statewide trends for the Recent Core Universe 2000-2004, which includes additional standard industrial classification (SIC) codes and hazardous substances not previously included in the 2004 report.

The primary purpose of this report is to provide public information to the residents of New Jersey on the Use, generation, and release of hazardous substances. People living and working in communities across the state have a right to know how facilities manage these chemicals because an informed community can provide meaningful input in developing ways to reduce potential risks posed by these chemicals. In

addition to making information accessible to the public, the NJDEP has an obligation to use this information to design and implement effective policies to protect human health and the environment. The NJDEP is committed to working with community members to keep the public informed of our progress on these important policy initiatives.

One of the goals of this report is to determine if reductions are due to pollution prevention and to do that, impacts from changes in economic activity must be considered. To estimate impacts from changes in economic activity, the report quantifies Use, NPO and Releases using two different metrics. The first tracks the sum of the "unadjusted" data as it is reported by the facilities. The second uses a Production Index (PI) to adjust the reported quantities for changes in production. Tracking both quantities presents a more complete picture for hazardous substance trends. The unadjusted quantities are needed to address concerns of potential risks and exposure from hazardous chemicals in communities regardless of production levels at the facilities. The adjusted quantities are useful for assessing if changes are due to increases or decreases in production, or whether they are more likely attributed to improvements in process efficiency and pollution prevention.

II. Summary of Methods

Data submitted by facilities under the W&CRTK Act, normally referred to as facility-level "materials accounting data," provides a complete view of hazardous substances as they flow through communities and facilities' manufacturing operations. This unique information provides insight into pollution prevention accomplishments that cannot be seen by analyzing other data such as the federal Toxic Chemical Release Inventory (TRI). For materials accounting, facilities report approximately 20 different quantities that make up a complete accounting of their hazardous substances. Data is reported annually in pounds to the NJDEP on a form known as the Release and Pollution Prevention Report (RPPR). See Appendix A for a sample copy of this reporting form. This trend report focuses on three separate quantities related to the data on the RPPR to assess statewide trends. These include:

Use:	Use is the quantity of hazardous substances processed at the facility. Use is not directly reported in materials accounting data. It is calculated by adding together three quantities that are reported: the quantity consumed, shipped as (or in) product, and generated as NPO.
Nonproduct Output (NPO):	NPO is the quantity of the reported substance that was generated prior to storage, out-of-process recycling, treatment, control or disposal, and that was not intended for use as a product. NPO is calculated by adding on-site releases, managed on-site and off-site transfers.
On-site Releases:	On-site Releases include those quantities of hazardous substances that were released as stack emissions and fugitive air emissions, discharged to surface waters and ground waters, and on-site land disposal.

This report evaluates trends for all hazardous substances required to be reported on the RPPR and tracks three separate groups of "chemicals of concern." These three groups include Carcinogens; Persistent, Bioaccumulative, Toxic (PBT) substances; and Extraordinarily Hazardous Substances (EHS). These chemicals pose significant risks to human health and the environment. Tracking these substances separately helps keep the public informed of the trends for these important chemicals.

Due to changes in reporting requirements over the years, this report evaluates different “universes” of facilities to ensure that decreases or increases from year to year reflect actual changes at facilities, not just changes in the reporting requirements. The primary or “Core” universe is used as the best measure of statewide trends. This universe is based on a subset of chemicals from the original chemical list, and the core regulated Standard Industrial Classification (SIC) codes. This report summarizes data for the Historic Core universe that was required to report each year between 1994 and 2004. This Core universe captures a minimum of 80% of the total facilities that report each year. Also this report evaluates data for the Recent Core Universe 2000-2004. This universe has additional hazardous substances and SIC codes and reflects a more updated universe to track over time.

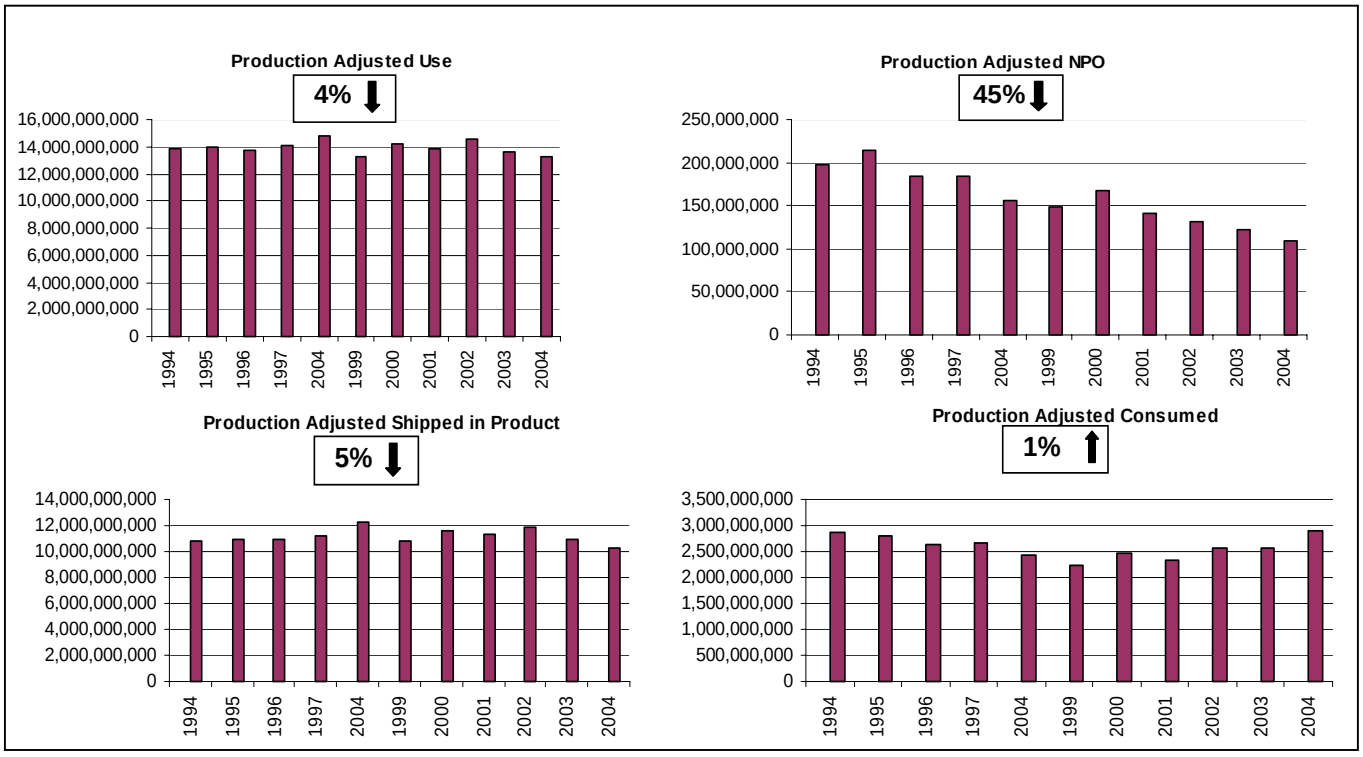
Summary of Statewide Trends

Findings for Use on Historic Core Universe 1994-2004 (Adjusted)

- **Use decreased by 4%**
- **NPO decreased by a 45%**
- **Shipped as/in Product decreased by 5%**
- **Consumed increased by 1%**
- **Production increased by 25%**

Table ES - 1. Historic Core Universe 1994-2004

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
Year	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cumu-lative
1994	13,824,668,372	13,824,668,372	196,750,865	196,750,865	10,789,458,963	10,789,458,963	2,856,458,544	2,856,458,544	1.00	1.00
1995	13,986,931,760	14,714,252,211	214,009,052	225,137,523	10,958,141,654	11,527,965,020	2,814,781,053	2,961,149,668	1.05	1.05
1996	13,705,028,142	15,398,092,499	185,098,955	207,965,340	10,878,917,429	12,222,855,373	2,641,011,758	2,967,271,786	1.07	1.12
1997	14,059,087,782	15,874,870,706	184,519,221	208,350,557	11,192,854,369	12,638,452,700	2,681,714,192	3,028,067,449	1.01	1.13
2004	14,836,340,108	18,092,708,673	156,189,281	190,470,637	12,248,581,693	14,936,973,581	2,431,569,134	2,965,264,455	1.08	1.22
1999	13,208,421,615	15,849,765,145	147,987,986	177,581,765	10,828,195,999	12,993,555,818	2,232,237,631	2,678,627,563	0.98	1.20
2000	14,263,420,791	16,294,181,563	167,518,895	191,369,471	11,643,509,650	13,301,259,428	2,452,392,246	2,801,552,664	0.95	1.14
2001	13,837,860,214	15,175,710,348	141,580,299	155,268,342	11,368,340,118	12,467,436,013	2,327,939,797	2,553,005,994	0.96	1.10
2002	14,517,174,326	15,533,376,529	131,050,220	140,223,735	11,825,823,064	12,653,630,679	2,560,301,042	2,739,522,115	0.97	1.07
2003	13,567,864,309	15,738,722,599	122,848,746	142,504,545	10,877,313,066	12,617,683,156	2,567,702,498	2,978,534,898	1.08	1.16
2004	13,273,630,830	16,592,038,538	109,062,103	136,327,629	10,277,173,340	12,846,466,675	2,887,395,382	3,609,244,227	1.08	1.25
Total Change	-551,037,542	2,767,370,166	-87,688,762	-60,423,236	-512,285,623	1,677,977,050	30,936,838	752,785,683	25% increase	
Percent Change	4% reduction	20% increase	45% reduction	31% reduction	5% reduction	16% increase	1% increase	26% increase		

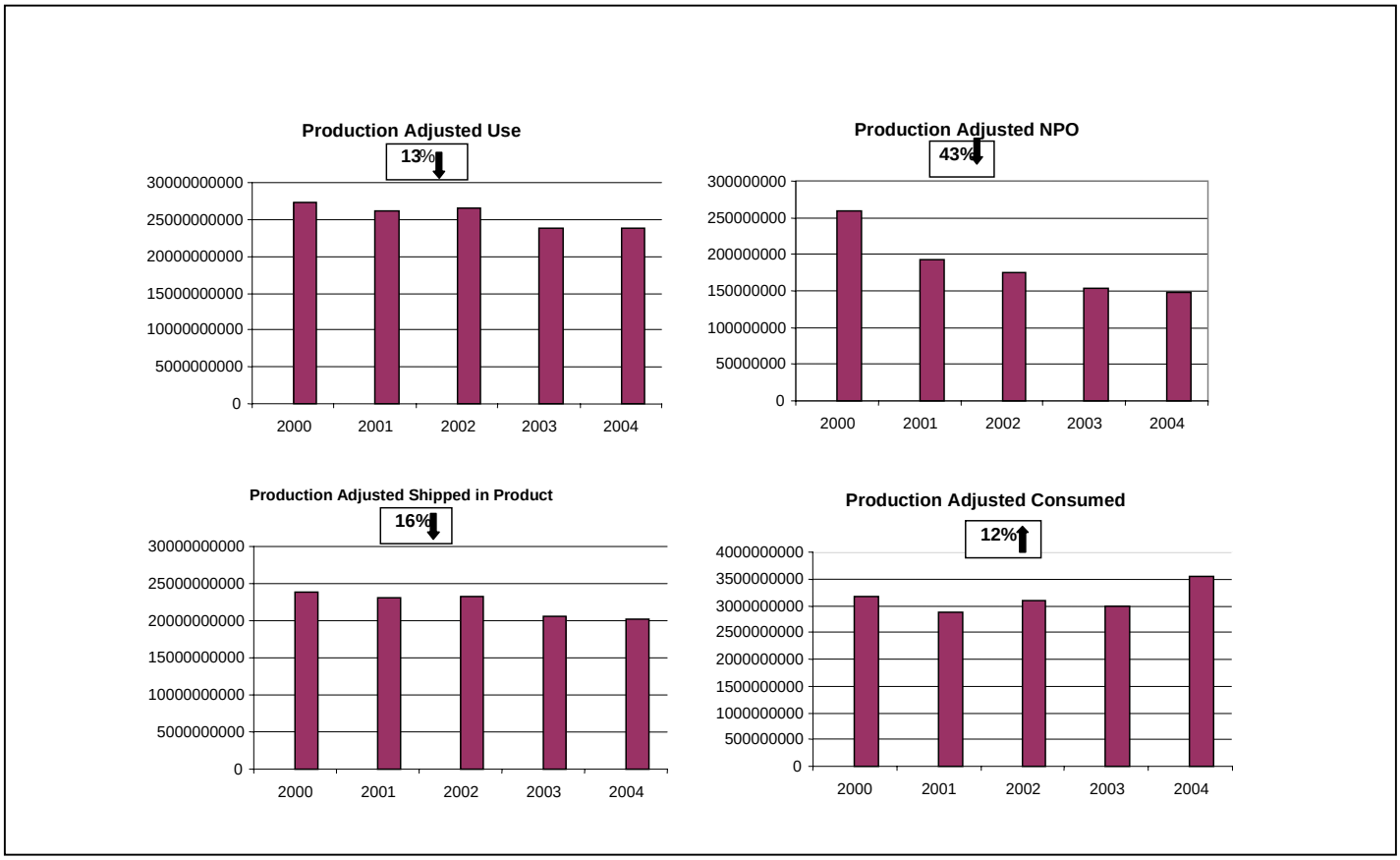


Findings for Use of Recent Core Universe 2000-2004 (Adjusted)

- **Use decreased by 13%**
- **NPO decreased by 43%**
- **Shipped as/in Product decreased by 16%**
- **Consumed increased by 12%**
- **Production increased by 7%**

Table ES- 2. Use of Recent Core Universe 2000-2004

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
Year	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cumu-lative
2000	27,325,987,157	27,325,987,157	258,745,969	258,745,969	23,892,175,999	23,892,175,999	3,175,065,189	3,175,065,189	1.00	1.00
2001	26,194,550,971	26,194,550,971	193,386,468	193,386,468	23,111,599,097	23,111,599,097	2,889,565,406	2,889,565,406	1.00	1.00
2002	26,522,035,669	26,256,815,312	176,225,310	174,463,057	23,254,244,773	23,021,702,325	3,091,565,587	3,060,649,931	0.99	0.99
2003	23,768,941,352	25,908,146,074	153,644,403	167,472,399	20,627,493,791	22,483,968,232	2,987,803,159	3,256,705,443	1.10	1.09
2004	23,801,056,140	25,467,130,070	148,112,290	158,480,150	20,098,719,092	21,505,629,428	3,554,224,759	3,803,020,492	0.98	1.07
Total Change	-3,524,931,017	-1,858,857,087	-110,633,679	-100,265,819	-3,793,456,907	-2,386,546,571	379,159,570	627,955,303	7% increase	
Percent Change	13% reduction	7% reduction	43% reduction	39% reduction	16% reduction	10% reduction	12% increase	20% increase		

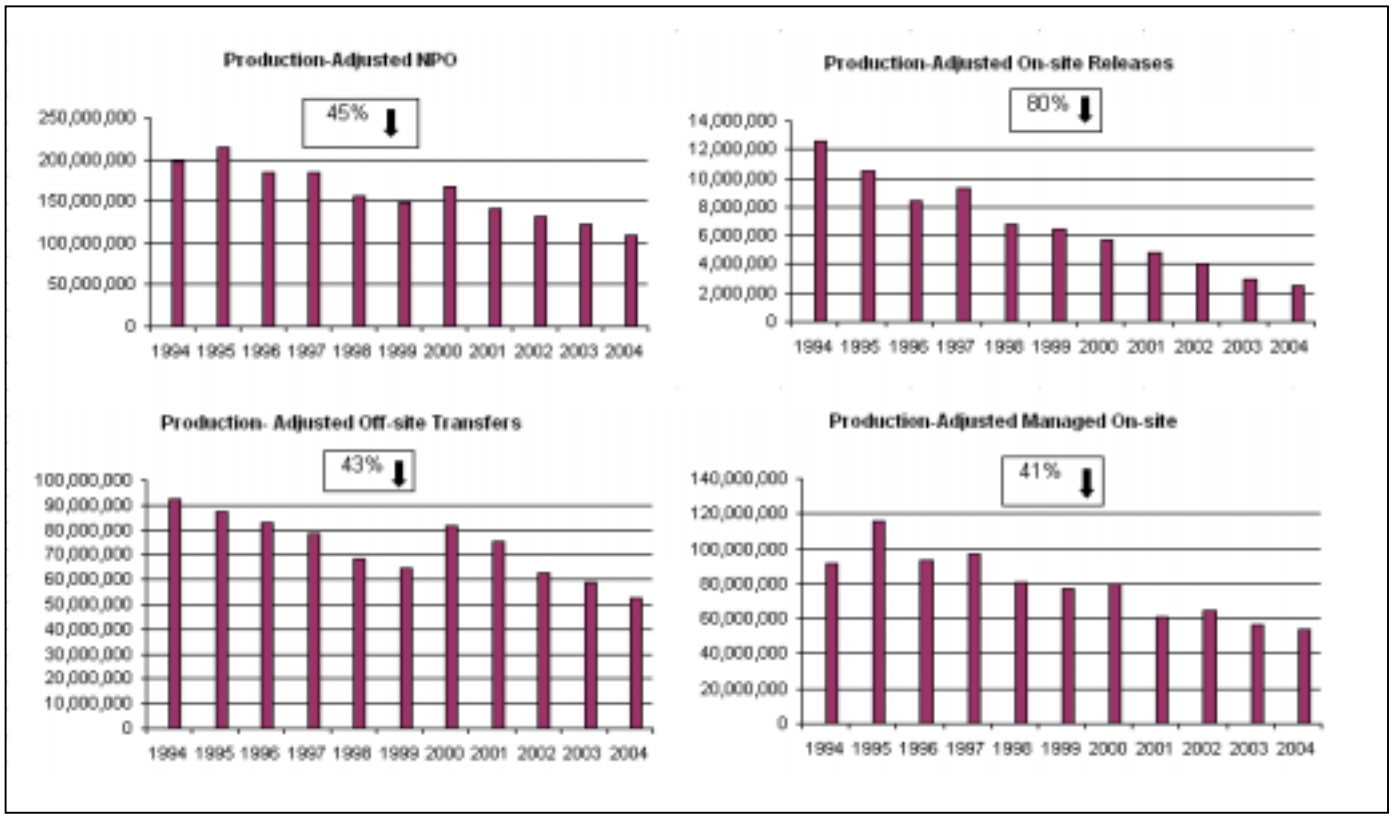


Findings of NPO for Historic Core Universe 1994-2004 (Adjusted)

- **NPO decreased by 45%**
- **On-Site Releases decreased by 80%**
- **Off-Site Transfers decreased by 43%**
- **Managed On-Site decreased by 41%**
- **Production increased by 25%**

Figure ES 3 Components of NPO for Historic Core Universe 1994-2004

	Nonproduct Output		On-site Releases		Off-Site Transfers		Managed On-Site		Weighted Production Index	
Year	NPO (Adjusted)	NPO	On-site Releases (Adjusted)	On-site Releases	Off-Site Transfers (Adjusted)	Off-Site Transfers	Managed On-Site (Adjusted)	Managed On-Site	Yearly	Cumu-lative
1994	196,750,865	196,750,865	12,567,920	12,567,920	92,294,306	92,294,306	91,888,639	91,888,639	1.00	1.00
1995	214,009,052	225,137,523	10,507,746	11,054,149	87,444,625	91,991,745	116,056,682	122,091,629	1.05	1.05
1996	185,098,955	207,965,340	8,422,801	9,463,320	83,181,151	93,457,018	93,495,003	105,045,002	1.07	1.12
1997	184,519,221	208,350,557	9,251,070	10,445,880	78,359,565	88,479,991	96,908,586	109,424,686	1.01	1.13
1998	156,189,281	190,470,637	6,754,476	8,236,989	68,437,064	83,458,040	80,997,741	98,775,609	1.08	1.22
1999	147,987,986	177,581,765	6,496,151	7,795,214	64,699,614	77,637,868	76,792,220	92,148,683	0.98	1.20
2000	167,518,895	191,369,471	5,674,398	6,482,293	81,528,946	93,136,665	80,315,839	91,750,842	0.95	1.14
2001	141,580,299	155,268,342	4,815,233	5,280,772	75,521,588	82,823,047	61,243,478	67,164,523	0.96	1.10
2002	131,050,220	140,223,735	4,000,381	4,280,408	62,569,010	66,948,841	64,480,828	68,994,486	0.97	1.07
2003	122,848,746	142,504,545	2,990,499	3,468,979	58,969,593	68,404,728	56,504,671	70,630,839	1.08	1.16
2004	109,062,103	136,327,629	2,552,101	3,190,126	52,455,531	65,569,414	54,054,471	67,568,089	1.08	1.25
Total Change	-87,688,762	-60,423,236	-10,015,819	-9,377,794	-39,838,775	-26,724,892	-37,834,168	-24,320,550	25% increase	
Percent Change	45% reduction	31% reduction	80% reduction	75% reduction	43% reduction	29% reduction	41% reduction	26% reduction		

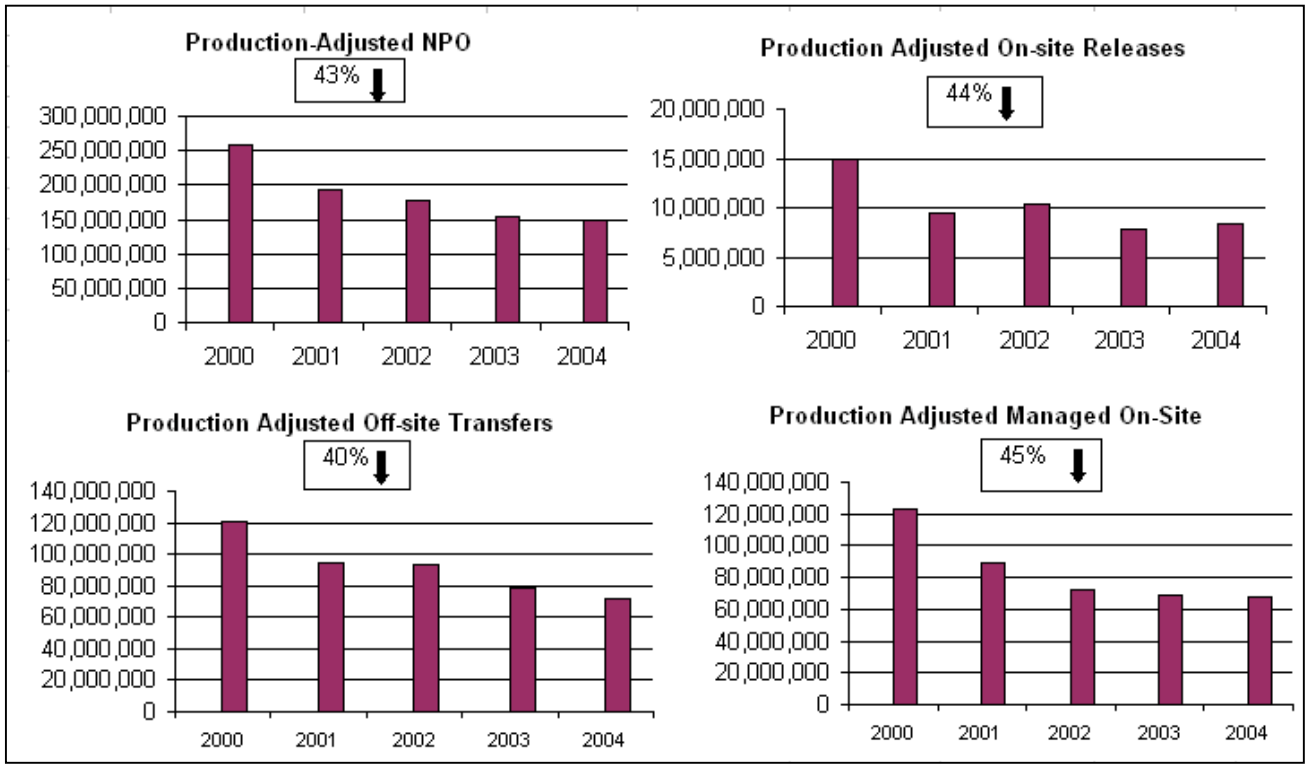


Findings of NPO for Recent Core Universe 2000-2004 (Adjusted)

- **NPO decreased by 43%**
- **On-Site Releases decreased by 44%**
- **Off-Site Transfers decreased by 40%**
- **Managed On-Site decreased by 45%**
- **Production increased by 7%**

Figure ES 4 NPO Adjusted for Production Recent Core Group 2000-2004

	Nonproduct Output		On-site Releases		Off-Site Transfers		Managed On-Site	
Year	NPO (Adjusted)	NPO	On-site Releases (Adjusted)	On-site Releases	Off-Site Transfers (Adjusted)	Off-Site Transfers	Managed On-Site (Adjusted)	Managed On-Site
2000	258,745,969	258,745,969	14,902,161	14,902,161	120,634,680	120,634,680	123,209,128	123,209,128
2001	193,386,468	193,386,468	9,538,232	9,538,232	94,899,095	94,899,095	88,949,141	88,949,141
2002	176,225,310	174,463,057	10,401,509	10,297,494	93,392,141	92,458,220	72,431,661	71,707,344
2003	153,644,403	167,472,399	7,763,150	8,461,833	78,490,574	85,554,726	68,650,319	73,455,841
2004	148,112,290	158,480,150	8,403,841	8,992,110	71,945,038	76,981,191	67,763,409	72,506,848
Total Change	-110,633,679	-100,265,819	-6,498,320	-5,910,051	-48,689,642	-43,653,489	-55,445,719	-50,702,280
Percent Change	43% reduction	39% reduction	44% reduction	40% reduction	40% reduction	36% reduction	45% reduction	41% reduction



I. Background

A. Worker and Community Right to Know Act

New Jersey was one of the first states in the country to require public reporting of chemical inventory and environmental release data. In passing the New Jersey Worker and Community Right to Know Act (W&CRTK Act) in 1983,[1] the New Jersey Legislature determined that:

> "…it is in the public interest to establish a comprehensive program for the disclosure of information about hazardous substances in the workplace and the community, and to provide a procedure whereby residents of this State may gain access to this information."

The W&CRTK Act established two separate public reporting programs. The first program requires covered facilities to report data on the quantity of hazardous substances stored in inventory at their facilities. This program covers approximately 20,000-30,000 facilities. Industrial facilities have been reporting information on the quantity of hazardous substance in inventories since 1985. The second program requires a smaller group of covered facilities to report additional information on the Use, generation, treatment and release of hazardous substances—more commonly called "materials accounting" data. This second program currently covers approximately 500 facilities. Materials accounting data have been collected since reporting year 1987. This report focuses on the materials accounting data submitted under the second program.

B. Pollution Prevention Act

The Pollution Prevention Act (P2 Act)[2] of 1991 requires covered facilities to investigate pollution prevention opportunities and report additional information to the public on their Use and generation of hazardous substances. The P2 Act established a statewide goal for reducing Use and generation of hazardous substances[3] by requiring covered facilities to prepare detailed pollution prevention plans every five years and make summaries of those plans publicly available.

Covered facilities are also required to annually report progress on achieving pollution prevention reductions outlined in their plans. Most of the facilities covered by the P2 Act have gone through two planning and reporting cycles. This means most facilities have prepared two pollution prevention plans to date. This report evaluates materials accounting data submitted by facilities between 1994 and 2004. Data submitted from 1987 to 1994 was previously evaluated by the NJDEP in a prior trends report.[4]One of the findings of that report determined that New Jersey facilities decreased NPO by at least 50% between 1987 and 1994, which was the statewide policy goal in the P2 Act. This report covers the next eleven years to determine if these reductions have continued and where these reductions occurred.

C. What is Materials Accounting Data?

---

[1] N.J.S.A. 34:5A L.1983, c. 315, s. 1, effective Aug. 29, 1984

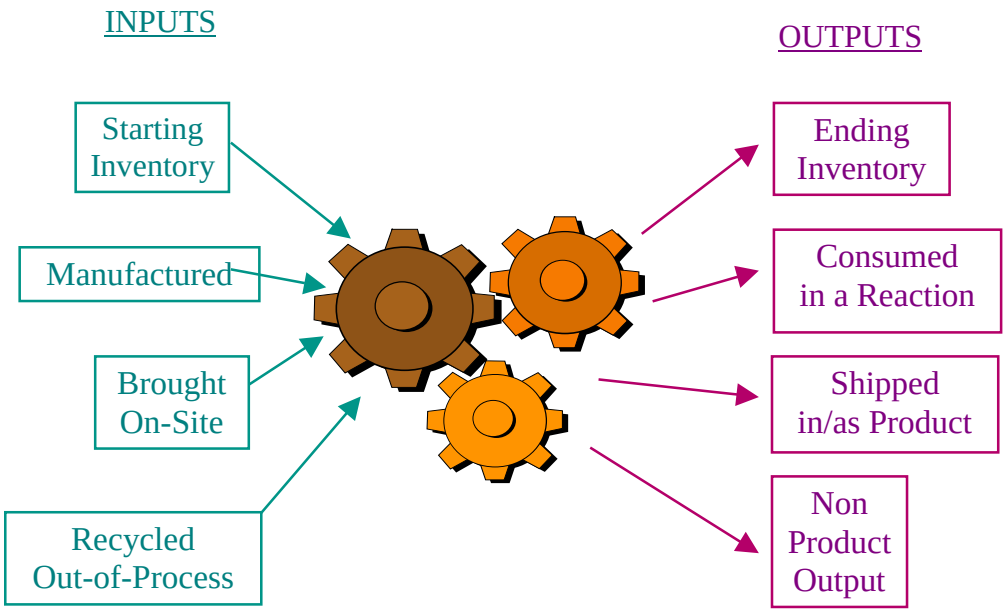
[2] N.J.S.A. 13:1D-35, 1991, c.25; 1991, c.235, s.17

[3] "…a significant reduction over five years after the preparation of the pollution prevention plans required by this act, calculated on the basis of 1987 amounts, in the Use of hazardous substances at industrial facilities, and a 50% reduction over five years after the preparation of the pollution prevention plans required by this act, calculated on the basis of 1987 amounts, in the generation of hazardous substances as nonproduct output"

[4] Aucott, Michael et al., "Industrial Pollution Prevention Trends In New Jersey," December 1996.

Materials accounting is a practical application of the chemical mass balance theory. Materials accounting is based on the simple scientific principal of the conservation of matter where all chemical inputs at a facility should balance with the outputs. Materials accounting data provide a complete picture on the Use of hazardous substances at many of New Jersey's larger manufacturing facilities. Figure 1 below outlines the basic structure for materials accounting data showing the flow of hazardous substances as they move through a facility. Public reporting based on this simple concept opens the door for a broader understanding of the various uses of toxic chemicals at industrial facilities and how they might impact area residents.

Figure 1. Overview of Materials Accounting Data



Facilities submit materials accounting data to the NJDEP on a form known as the Release and Pollution Prevention Report (RPPR). The RPPR includes a suite of over 20 specific data elements providing a complete picture for the flow of substances through a facility. In assessing and presenting data on trends for hazardous substances in the state, three measures were used throughout this report, either directly reported on the RPPR or calculated from data on the RPPR. These measures are:

Use: Use is the quantity of hazardous substances processed at the facility. Use is not directly reported in materials accounting data. It is calculated by adding together three quantities that are reported: the quantity consumed, shipped as (or in) product, and generated as NPO.

Nonproduct Output (NPO): NPO is the quantity of the reported substance that was generated prior to storage, out-of-process recycling, treatment, control or disposal, and that was not intended for use as a product. NPO is calculated by adding on-site releases, managed on-site and off-site transfers.

On-site Releases: On-site releases include those quantities of hazardous substances that were released as stack emissions and fugitive air emissions, discharged to surface waters and ground waters, and on-site land disposal.

See Appendix A for a more detailed description of materials accounting data. This includes a listing and definition for all of the individual data elements reported on the RPPR and a sample of the RPPR reporting form.

There is also a report published by NJDEP (Community Right to Know Annual Report for Reporting Year 2004). This report summarizes the 2004 hazardous substance inventory data and facility chemical throughput, environmental release, on-site waste management and off-site transfer data reported by New Jersey companies. This report is available on our web site: http://www.state.nj.us/dep/opppc

D. How is This Information Useful to NJDEP?

The NJDEP uses trends in materials accounting data to help design policies and implement programs to reduce potential risks posed by the use and release of hazardous substances. Data are used in two basic ways:

(1) to identify priorities for programs by conducting analyses of significant contributors to releases, variations over time, geographic patterns and other analyses; and

(2) to provide a better understanding of facility operations during permit reviews and compliance inspections.

Overall, NJDEP has made significant progress in upgrading its information technology infrastructure through the implementation of the New Jersey Environmental Management System (NJEMS). This new central computer system has improved our ability to compile and analyze materials accounting data and make the data available to NJDEP staff and the public. NJDEP will continue to make greater use of the information it receives to ensure that its programs and policies focus on priority issues and provide accountability to track progress over time. Below, we have outlined a few key uses of materials accounting information that we plan to build on in the future.

Chemical	Unit Risk Factor
2,3,7,8-Tetrachlorodibenzo(p)dioxin	3.3E+01
Chromium VI (total)	1.2E-02
Asbestos	7.7E-03
Hydrazine	4.9E-03
Arsenic (inorganic)	4.3E-03
Benzo(a)pyrene	1.1E-03
1,3-Butadiene	2.8E-04
Ethylene oxide	8.8E-05
Formaldehyde	1.3E-05
Benzene	7.8E-06
Tetrachloroethylene	5.9E-06
Styrene	5.7E-07
Dichloromethane	4.7E-07

Risk Screening to Identify Priority Facilities

The NJDEP is using the environmental information submitted in the materials accounting data to evaluate facilities and assess priorities for compliance inspections, permit reviews and technical assistance. NJDEP is using simple risk screening techniques to help target the work of our current resources and design new programs. NJDEP will be inspecting new facilities not previously given a high priority, or looking more closely at permit limits for specific chemicals based on potential risk.

Risk screening goes beyond evaluating the pounds of each chemical released to the environment and begins to consider the potency of each chemical. NJDEP is assessing air emissions of known or suspected carcinogens. This analysis uses chemical-specific Unit Risk Factors (URFs),[5] a toxicity factor that quantifies the relationship between the level of exposure and the lifetime probability of contracting

[5] Many of the Unit Risk Factors are taken from EPA's Integrated Risk Information System (IRIS)

cancer from an air toxics compound. The box highlights URFs for some common chemicals reported by New Jersey companies. This table illustrates the large differences in potency of chemicals released to the environment. For example, if exposures were similar, it would take 100,000,000 pounds of dichloromethane to create the same risk as only one pound of 2, 3, 7, 8-tetrachlorodibenzo (p) dioxin. Even small releases of certain chemicals can create potential impacts. It is important to consider these differences in potency when identifying priorities and developing regulatory requirements.

A similar analysis of air toxics data developed by the federal USEPA known as the National-Scale Air Toxics Assessment (NATA) showed that releases of hydrazine from Fairmount Chemical in a densely populated area in Newark could potentially cause significant impacts. A closer review by NJDEP enforcement staff showed that the company was using and releasing hydrazine in equipment that had not received the necessary permits. NJDEP initiated enforcement actions to correct the violations. The final resolution of these actions is that the company is no longer using the equipment that processed hydrazine.

Expanding Multi-Media Reviews

The Multimedia Release Report (MMRR) was developed assist Department staff and public stakeholders in evaluating the complete range of impacts a facility can have on the environment and public health. The MMRR compiles and integrates facility- and chemical-specific data across multiple programs and environmental media. This integration process also converts data into common units (lb/yr) making it easier to compare quantities and impacts across environmental media

Site: 99999 ABC MANUFACTURING *All data in lbs/year

		Air: Source Releases			Air: Fugitive Releases		NPO
Pollutant	CAS #	Air Permits	Emission Statement	Right to Know	Emission Statement	Right to Know	Right to Know
1,3-Butadiene	106-99-0			0		11	11
Acetaldehyde	75-07-0	8,880					
Ammonia	7664-41-7		216,760	10,530	4,140	99,990	729,472
Antimony	7440-36-0			160		3	1,462
Benzene	71-43-2		8,747.26	4,700		3,500	16,663
Chloroform	67-66-3		0.6				
Toluene	108-88-3	8,880		3,700		8,200	30,133

The report can be used to identify potential areas of concern. For the example above, it is clear that more ammonia is being released as a fugitive emission than as a permitted stack release. This should lead a permit writer, or enforcement officer to question if this release is truly a fugitive release or should it be incorporated in the stack emissions; or if leak detection and repair (LDAR) is applicable?

Permit writers and inspectors have been trained to use the MMRR to assess some of the following issues and opportunities: Pollution Prevention, Inconsistent Data, Under-permitting, Missed Thresholds, Cross-media Shifts, and Risk Assessment.

One facility in Paterson, New Jersey was found to be emitting over 600,000 pounds of methanol without having obtained a permit from the NJDEP's Air Quality Permitting Program (see below). The NJDEP's enforcement and permitting programs are working to get this facility into full compliance.

Site: 23428 CHART CORP
*All data in lbs/year

		Air: Source Releases			Air: Fugitive Releases	
Pollutant	CAS #	Air Permits	Emission Statement	Right to Know	Emission Statement	Right to Know
Carbon Monoxide	630-08-0	1,860	360		0	
Lead	7439-92-1				0	
Methyl alcohol (Methanol)	67-56-1			478,736		143,919
Oxides of Nitrogen (NOx) (Total)		7,400	420		0	
PM-10 (Total)			40		0	
Sulfur Dioxide	2025-88-4	15,980			0	
Total Suspended Particulates (TSP)		740	40		0	
Volatile Organic Compounds (VOC) (Total)		320	488,560		141,140	

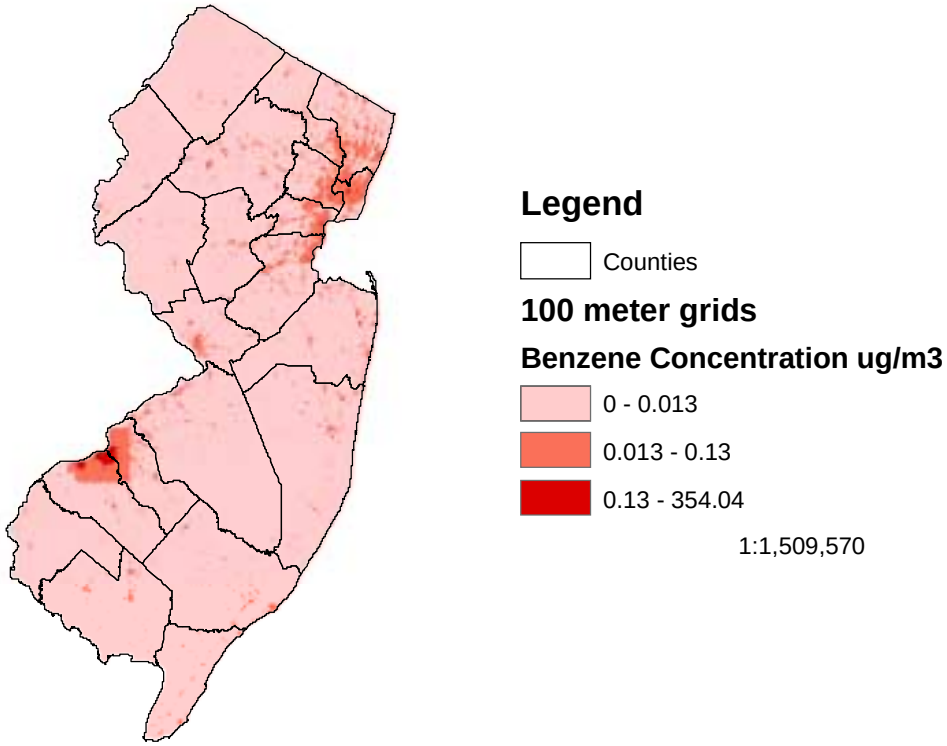
Since the data is linked to the Department's Geographical Information System (GIS), the Department has the capability to review and compare the data where it is geographically represented. This capability will give the Department the ability to aggregate releases and discharges, and usage of hazardous substances on a regional or statewide basis.

Data in the RPPR and MMRR are being used in pilot projects linking environmental data with health outcome data. The NJDEP and the New Jersey Department of Health and Senior Services (DHSS) received funding from the federal Centers for Disease Control and Prevention (CDC) under the "Environmental Public Health Tracking Program" (EPHT) to implement these pilots. Three separate projects include linking:

- cancer incidence with air and drinking water exposure;
- birth defects with environmental exposures;
- childhood blood lead levels with environmental exposure.

The RPPR/MMRR data have been used to develop estimates of air exposure. The release data were used as inputs to air dispersion modeling to estimate ambient air concentrations. The NJDEP then used GIS analysis to estimate cumulative concentrations and assess statewide variation. Figure 2 shows results for benzene between 1993 to 2004. DEP and DHSS received additional funding from CDC in July 2006 to continue this work.

Figure 2. Estimated Average Benzene Concentration 1993 – 2004 (ug/m3)



Quality Assurance/Quality Control (QA/QC) Review for Data Accuracy

The NJDEP reviews the "raw" data reported by facilities to identify mistakes and improve the quality of the data. From the reported data, total input and output quantities are calculated. Using these two calculated values, an assessment is made of the balance, or closure, achieved in the materials accounting process. The resultant discrepancies in materials accounting are then addressed as either a quantitative difference or a percent error. Facilities are only required to provide their best estimates of reported values; not necessarily an exact accounting of every pound for every chemical. That is, they are not required to measure or monitor for any value beyond the requirements of existing federal or state permitting requirements or conditions.

The department annually investigates such discrepancies, especially large ones, to gain a better

understanding of the underlying reasons for any errors. Facilities that report large quantitative or percent errors are contacted and NJDEP staff discuss the calculated discrepancies. These discussions prove to be beneficial in at least three ways. First, facility personnel receive direct technical guidance from department staff. Second, revised reports may then have been submitted, improving the overall quality of the database. Third, NJDEP staff is alerted to misunderstandings or misinterpretations of the instructions and in the completion of the reporting form. While most facilities revise data to correct discrepancies, a few facilities do not so the database does contain data that is inaccurate. Facilities that report inaccurate data may contribute to limited confidence of some of the data contained in this report.

Beginning in reporting year 2000, the NJDEP developed an electronic reporting system for submission of the RPPR. Initially, electronic reporting was optional; however, with the readopting of the Community Right to Know regulations in 2005, electronic submission became mandatory starting with reporting year 2004. In the earlier versions of the electronic submittal, some QA/QC protocols were developed. Mass balances of inputs and outputs had to be resolved within 10%. This QA/QC issue was further refined with the rule readoption whereby the difference between input and output quantities could not exceed 5 percent. Given the recent changes in the regulations, the throughput data has become much more accurate in recent years and will continue to get better as facilities strive to quantify chemical throughput.

II. Who is required to report materials accounting information?

A. Regulatory requirements

The New Jersey reporting requirements are closely linked to the requirements for the federal Toxic Chemical Release Inventory (TRI) Reporting Form (Form R) pursuant to the federal Emergency Planning and Community Right To Know Act of 1986 (EPCRA) Section 313. Any New Jersey facility required to complete at least one federal TRI Form is also subject to the materials accounting reporting requirements and must submit an RPPR. Owners and operators of facilities that meet all three of the following criteria must file the Form R and the RPPR:

- the facility's business activity is included in Standard Industrial Classification (SIC) codes 20 through 39, 4911 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4931 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4939 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4953 (limited to facilities regulated under RCRA subtitle C, 42 U.S.C. section 6921 et seq.), 5169, and 5171; and

- the facility has 10 or more full-time employees (or the equivalent; that is, the facility's payroll includes 20,000 or more work-hours for the year); and

- the facility manufactures (defined to include imported), processes, or otherwise uses any listed chemical in quantities equal to or greater than the established threshold (for most substances the thresholds are 25,000 pounds for manufacture or process, and 10,000 pounds for otherwise use; however, for persistent, bioaccumulative and toxic (PBT) substances the threshold may be 100 or 10 pounds, or even 0.1 gram for "Dioxins and dioxin-like compounds").

Facilities are not required to monitor or sample the various processes and or waste streams that comprise their materials accounting report. Instead, quantities reported are often based on best estimates rather than actual measurements. If a facility is required to test a waste stream or discharge pipe under other federal or state laws, regulations, or permits, they will often use those results in developing their materials accounting data. There are four methods by which industry can report these hazardous substance quantities: 1) an estimate based on monitoring data or measurements for the substance; 2) an estimate based on mass balance calculations; 3) an estimate based on published emission factors; and 4) an estimate based on other approaches such as engineering calculations or best engineering judgment. Inherently, different methods for reporting may introduce some level of variation into the data set. Different methods of calculating releases and transfers may also be employed and affect the final estimates. Similar to Form R reporting, these estimated figures might be rounded to two significant integers, although the NJDEP does not encourage the practice of rounding in the materials accounting process.

Reporting facilities are required to provide on the RPPR estimated quantities of the on-site releases and off-site transfers for each toxic chemical meeting the state's 10,000-pound annual threshold or the lower PBT threshold, as appropriate. One report is required for each toxic chemical that was manufactured, processed or otherwise used in excess of the thresholds. A release is an on-site discharge of a toxic chemical to the environment. An off-site transfer is a transfer of a toxic chemical as, or in, a waste to a facility that is geographically or physically separate from the facility that is submitting the RPPR. Off-site transfers include discharges to publicly owned treatment works (POTWs).

New Jersey's Community Right to Know and Pollution Prevention programs allows facility owners and operators to claim some materials throughput data as trade secret, thereby protecting sensitive and confidential business information. Trade secret information is not entered into the computerized database and is therefore not part of these analyses. Environmental release, on-site management of non-product output and off-site transfer data, however, may not be claimed as confidential. For 2004, seven facilities claimed throughput confidentiality for 48 of their reported chemicals. Therefore, the materials accounting data summaries in this report exclude certain data elements from these facilities and reported chemicals.

B. How have the Reporting Requirements Changed Over Time?

The RPPR reporting requirements have changed over the years. These changes have mirrored modifications to the federal TRI reporting program. Changes were made in three areas: addition/deletion of specific substances, adding new SIC codes, and lowering of chemical reporting thresholds.

Several changes (i.e., additions, deletions, and modifications) have occurred to the list of reportable substances over the reporting period. The biggest expansion occurred in 1995 with the addition of over 283 new chemicals, including hydrochlorofluorocarbon (HCFC) compounds. Because of these and other changes, it is necessary to follow trends for only those substances (Core Chemicals) that were consistently reported from 1994 to 2004. This list of Core Chemicals is found in Appendix B.

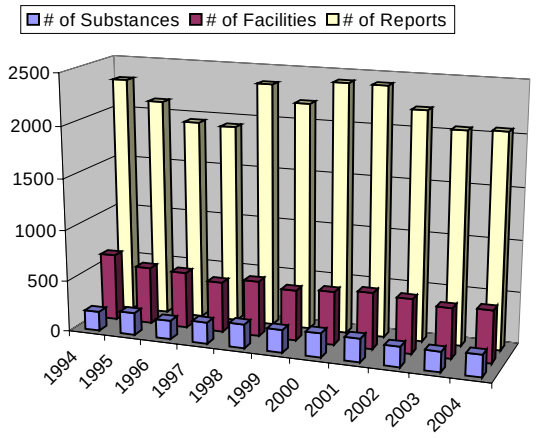
The SIC codes have also changed over the reporting period. For reporting year 1998 EPA expanded TRI to include facilities in SIC code major groups 10 and 12 and industry numbers 4911, 4931, 4939, 4953, 5169, 5171, and 7389. Facilities in these SIC codes began submitting TRI reports for all TRI substances that exceed the annual reporting thresholds.

On October 29, 1999, EPA published a final rule under Section 313 of EPCRA, which lowered the thresholds for certain persistent, bioaccumulative and toxic (PBT) chemicals and added certain other PBT chemicals to the list of toxic chemicals effective reporting year 2000. These PBT chemicals are of particular concern not only because they are toxic, but also because they remain in the environment for long periods of time, are not readily destroyed, and build up or accumulate in body tissue. See section V. of this report for full details of PBT trends in New Jersey.

Up until reporting year 2003, facilities that reported only TRI Form As, were not required to submit RPPRs. This policy changed beginning in reporting year 2004 and required that any facility that submits a TRI form must also submit an RPPR.
Figure 3 shows how these reporting changes impacted reporting from 1994 through 2004. The number of different hazardous substances has increased by 13%. The number of facilities reporting during this

same time period has decreased by 22%. The number of Section B substance-specific reports of the RPPR submitted by these facilities has decreased by 11%.

Figure 3. Number of Substances, Facilities and Reports



Year	# of Substances	# of Facilities	# of Reports
1994	188	651	2,314
1995	216	559	2,122
1996	183	548	1,946
1997	208	490	1,927
1998	232	539	2,358
1999	222	491	2,198
2000	235	519	2,413
2001	229	549	2,414
2002	198	529	2,209
2003	195	485	2,048
2004	212	506	2,064

C. Tracking Different Universes of Facilities and Chemicals

As reporting requirements changed through time, it became necessary to develop a strategy to make valid comparisons from year to year. We do not want to count new chemicals being reported for the first time as an "increase" or to count chemicals being deleted as a "decrease". To account for these changes and to present as complete a picture as possible, the NJDEP currently track trends in four separate reporting "universes" that include different lists of chemicals and industry types.

First, the broadest universe (All Facilities) tracks all facilities and chemicals required to report in any given year. This universe tracks the quantities of hazardous substances reported by every facility each year. While this has the advantage of providing the public with the most complete information available, it has the disadvantage that increases or decreases over time may be the result of simply adding or deleting chemicals or facilities. We excluded certain data from the analysis to ensure that our analysis captures true and actual changes in hazardous substances. During our analysis, we identified three types of changes that were large enough to affect statewide trends, but are more accurately characterized as reporting changes or errors by specific facilities. These changes include:

1) *Combining the Amerada Hess refinery and bulk terminal as a single facility.* From 1994 to 2000, the company reported data for two separate but adjacent sites—their petroleum refining operations at one site, and a bulk petroleum storage terminal at another. During this period, the transfer of product from the refinery to the terminal was essentially being "double counted" towards use. In 2001, the company combined these sites into one facility. With only one site reporting, this eliminated the double counting. This change would appear as a large Use reduction if it were included in the analysis;

2) *Excluding propylene and ethylene from the Valero and Coastal refineries.* From 1994 to 1997, these refineries reported ethylene and propylene as "burned for energy recovery." In 2001, the NJDEP met with the refineries to establish consistent reporting requirements and agreed

to have these data reported as "consumed." This change means that these chemicals are no longer considered NPO. This change in reporting would appear as large reductions if they were not excluded from the analysis, when in fact, no actual changes in operation took place at these facilities.

3) *Excluding trade secret information from the analysis.*

The second universe (Historic Core Universe 1994-2004) tracks the Core SIC codes and Core Chemicals. This universe is comprised of the Core Chemicals consistently reported from 1994-2004 and Core SIC codes 20-39.

The third universe (Recent Core Universe 2000-2004) tracks that Core SIC codes and Core chemicals, excluding trade secrets that were consistently reported from 2000 through 2004. There were several chemicals and SIC codes (e.g. power generating stations and bulk terminals) that were added to TRI reporting since 1994. This universe essentially updates the Historic Core Universe 1994-2004 and provides a more accurate representation of current SIC codes and chemicals. This universe will be used to track trends in New Jersey in the future.

The fourth universe (Core Minus Refineries) includes the core universe minus the six petroleum refineries in the state. The refineries use large quantities of hazardous substances compared to other facilities in the state and dominate the statewide trends for Use. Their data can mask important trends in the other industry sectors.

Table 1 shows how the number of facilities in these separate universes changed between 1994 and 2004. The total number of facilities has decreased over time from 651 to 506. The number of facilities covered in the Historic Core Universe 1994-2004 has dropped from 585 to 420 from 1994 to 2001; a net decrease of 165 facilities. Some factors that contribute to this reduction include 1) facilities reducing their annual hazardous substance usage below the regulatory threshold; 2) delisting of chemicals; 3) implementation of pollution prevention; and 4) the discontinuance of operations. Some factors that could contribute to facilities becoming newly covered include new businesses, facilities exceeding thresholds, or enforcement actions.

Table 1. Number of Reporting Facilities in Universes

YEAR	ALL FACILITIES	HISTORIC CORE 1994-2004	CORE MINUS REFINERIES*	RECENT CORE 2000-2004
1994	**651**	**538**	**531**	
1995	**559**	**486**	**479**	
1996	**548**	**501**	**494**	
1997	**490**	**462**	**455**	
1998	**539**	**459**	**452**	
1999	**491**	**417**	**410**	
2000	**519**	**424**	**417**	**499**
2001	**549**	**463**	**456**	**532**
2002	**529**	**444**	**437**	**511**
2003	**485**	**398**	**391**	**466**
2004	**506**	**408**	**400**	**492**

The remainder of this report summarizes and presents materials accounting data for these separate universes. Data used for this report was updated on January 31, 2006, and has since been locked to ensure that the data set remains consistent.

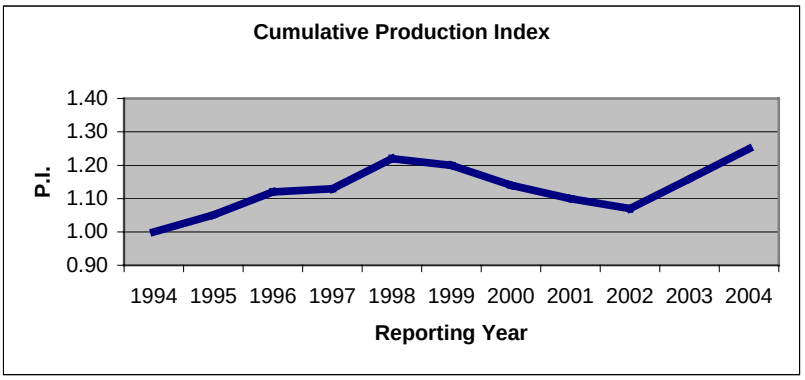
D. Meaningful Metrics--Adjusting for Changes in Production

Another important factor to consider when analyzing and presenting trends in industrial Use of hazardous substances is how to account for changes in economic activity--typically measured as the quantity of products produced by a facility. Changes in hazardous substance Use, generation of NPO or releases to the environment can be the result of many different factors. For example, a decrease in chemical Use may be caused by a slowdown in production. Fewer products produced one year simply requires the Use of less hazardous substances compared to the previous year. Alternatively, a decrease in chemical Use may be the result of improvements to operations allowing a facility to produce each unit of product using a smaller quantity of chemical. The goal of our data analysis is to identify whether reductions in Use or NPO are the result of economic changes or true process efficiency improvements (pollution prevention).

While it is difficult to be certain of the true cause for a change in chemical Use, there are quantitative methods available to adjust reported quantities to account for changes in production from year to year. We used the Production Index (PI) reported by facilities for each chemical on EPA's TRI Form R to adjust for production. The PI is a ratio of the quantity of products produced the current year compared to the previous year. If the PI is greater than one, production has increased relative to the previous year. Conversely, if the PI is less than one, production has decreased compared to the previous year.

The PI is typically used to measure facility/chemical specific changes. However, we needed a method to help measure statewide trends and adjust for production. To accomplish this, the individual PI's reported by each facility had to be aggregated and weighted to account for the differences in Use reported by each facility.[6] The result of this aggregation and weighting is a statewide average production index that can be used to adjust statewide Use and NPO quantities. The remainder of this report uses both the adjusted quantities and unadjusted quantities to present trends in statewide Use, NPO generation, and release of hazardous substances.

Figure 4. Trends in Cumulative Production Index



Reporting Year	Cumulative Production Index
1994	1.00
1995	1.05
1996	1.12
1997	1.13
1998	1.22
1999	1.20
2000	1.14
2001	1.10
2002	1.07
2003	1.16
2004	1.25

[6] The method used to calculate the statewide, weighted average production index is similar to the method used by the State of Massachusetts, Toxics Use Reduction Program. Please see "Measuring Progress in Toxic Use Reduction and Pollution Prevention," Technical Report No. 30, 1996, p. 7-5.

Figure 4 above demonstrates the trend of the cumulative production index from 1994-2004. Overall the graph demonstrates a typical sine wave with increases and decreases every four years. Production for the regulated manufacturing sector peaked in 1998, decreased until 2002 and then began to increase again.

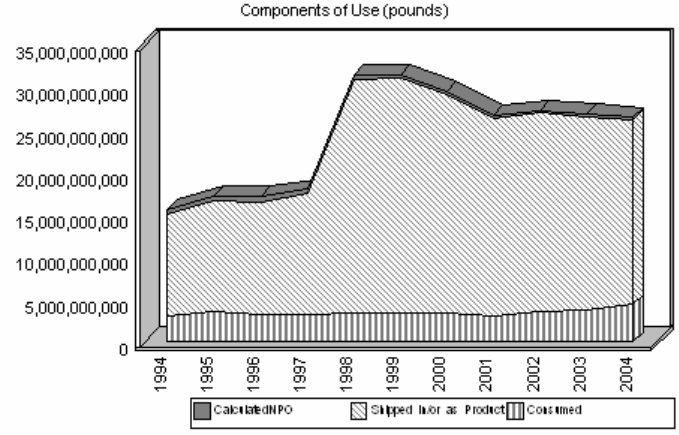
III. Statewide Trends in Use, NPO and Release

A. Use

Tracking the quantity of hazardous substances used over time and adjusted for production can be a useful measure of pollution prevention progress providing insights that cannot be seen through tracking wastes or releases alone. Regardless of the function of a chemical in manufacturing operations—whether it is consumed in a process, repackaged into a product, or used as a cleaning solvent and becomes a waste—tracking the quantity of substance used can help document pollution prevention achievements. Facilities do not directly report quantities used on the RPPR. However, Use can be calculated by adding three data elements reported on the RPPR. These data elements are NPO, Shipped off-site as (or in) Product, and Consumed. The NJDEP has calculated Use quantities for each chemical record submitted by covered facilities.

Use Trends for All Facilities

Figure 5. Use Trends for All Facilities Universe



Year	Consumed	In Product	NPO	Calculated Use
1994	3,159,243,786	12,006,173,242	533,459,458	15,698,876,486
1995	3,546,828,519	13,146,437,271	517,076,350	17,210,342,140
1996	3,210,416,056	13,376,243,286	649,876,469	17,236,535,811
1997	3,218,170,915	14,299,979,240	518,714,943	18,036,865,098
1998	3,365,640,904	27,716,430,810	533,784,694	31,615,856,408
1999	3,429,101,981	27,752,542,901	434,485,433	31,616,130,314
2000	3,454,191,377	25,884,985,267	360,953,832	29,700,130,476
2001	3,137,871,324	23,382,490,449	285,556,623	26,805,918,396
2002	3,693,757,923	23,381,935,657	257,210,385	27,332,903,964
2003	3,840,784,714	22,828,525,671	253,207,645	26,922,518,030
2004	4,408,142,332	21,876,801,245	277,627,034	26,562,570,611

Figure 5 above presents the Use trends for all facilities, expanding beyond the Core Universe previously discussed. This analysis presents all data reported to NJDEP and includes data on new chemicals and SIC codes as they were added through changes in reporting requirements over time. Changes in this universe are largely driven by changes in reporting requirements, not changes in actual quantities at facilities. Figure 3 shows a significant increase in the shipped as (or in) product category beginning in 1998. This increase is due largely to USEPA adding SIC codes to the reporting universe particularly SIC code 5171; petroleum bulk storage facilities that store finished petroleum products and began reporting the RPPR in 1998. SIC code 5171 reported 10.2 billion pounds of Use of hazardous substances in 1998 and accounts for 80% of the increase for that year. There has been a decline in Use since 1998 with the exception of a small increase in 2002. Overall, Use increased by almost 11 billion pounds.

Use Trends for Historic Core Universe 1994-2004

Figure 6 presents trends in statewide Use of hazardous substances in pounds between 1994 and 2004, including the total annual pounds and production-adjusted quantities calculated by NJDEP. This trend shows that the quantities used increased gradually through 1997, increased sharply in 1998 and then fluctuated through 2003, ending with an increase in 2004. Overall for the period, quantities of hazardous substance Use increased by 20% or 2.7 billion pounds using unadjusted quantities.

When impacts from production are considered, the trend in Use is more gradual, and shows a slight decrease. This indicates that facilities are being more efficient in their Use of hazardous substances; however, production increases are outpacing these efficiency gains. Overall for the period, Use of hazardous substances decreased by 4% when production adjustments are considered.

Toxics in product comprise the majority of hazardous substances used, accounting for approximately 77% of all substances used in 2004. Therefore, the trend for quantities shipped as (or in) product closely follows the trend in Use. Quantities of hazardous substances shipped in products increased by 16%. However, hazardous substances shipped as (or in) product were reduced by 5% between 1994 and 2004 using adjusted quantities. An initial analysis of the Core Universe shows that refinery products (gasoline, fuel oil, etc) account for 90% of the toxics in products. While some of the remaining toxics may be in products where exposure to the public is not likely—such as metal fabrication—others may be contained in products where potential exposures do exist. It is important to use New Jersey's unique materials accounting data to take a closer look at trends and potential exposures from toxics contained in products.

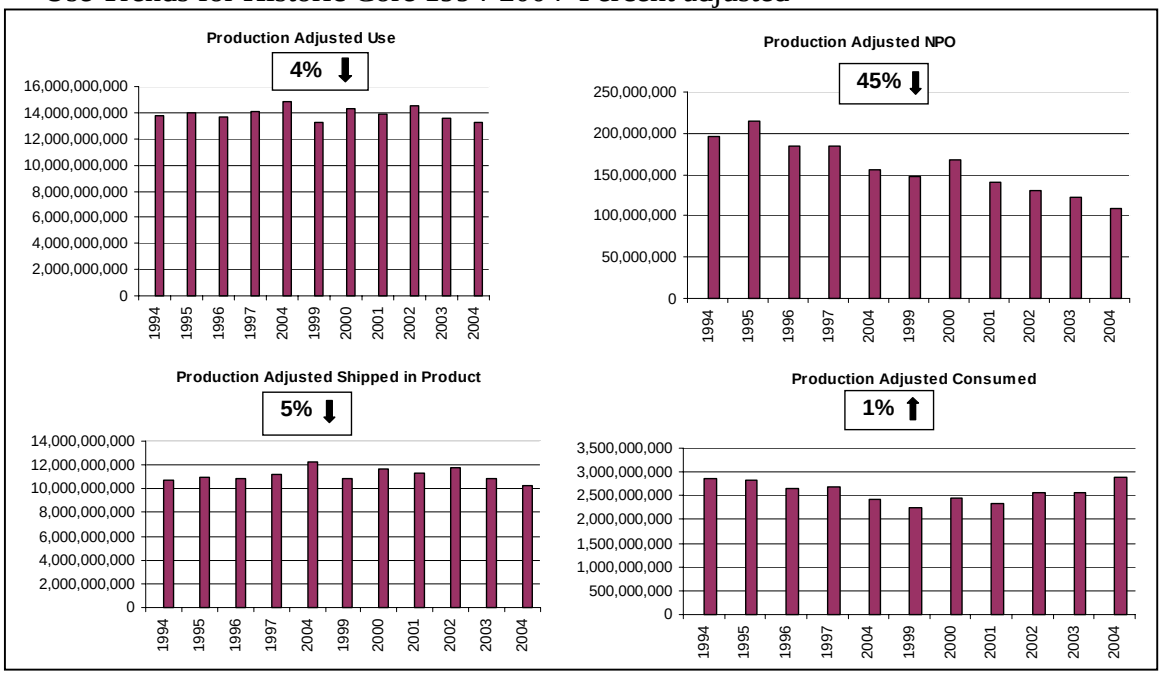
Quantities consumed in manufacturing operations increased by 26% for unadjusted quantities and 1% when adjusted for production. Quantities consumed showed over a 700 million pound increase for the reporting period.

Quantities of hazardous substances generated as NPO showed the biggest percentage declines for the period—achieving a 45 % reduction using adjusted quantities. However, since NPO is a much smaller component of Use, accounting for only 1% of Use in 2004, reductions in NPO do not drive trends in Use reduction.

Figure 6 Use Trends for Historic Core 1994-2004

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
Year	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cum
1994	13,824,668,372	13,824,668,372	196,750,865	196,750,865	10,789,458,963	10,789,458,963	2,856,458,544	2,856,458,544	1.00	1.00
1995	13,986,931,760	14,714,252,211	214,009,052	225,137,523	10,958,141,654	11,527,965,020	2,814,781,053	2,961,149,668	1.05	1.05
1996	13,705,028,142	15,398,092,499	185,098,955	207,965,340	10,878,917,429	12,222,855,373	2,641,011,758	2,967,271,786	1.07	1.12
1997	14,059,087,782	15,874,870,706	184,519,221	208,350,557	11,192,854,369	12,638,452,700	2,681,714,192	3,028,067,449	1.01	1.13
1998	14,836,340,108	18,092,708,673	156,189,281	190,470,637	12,248,581,693	14,936,973,581	2,431,569,134	2,965,264,455	1.08	1.22
1999	13,208,421,615	15,849,765,145	147,987,986	177,581,765	10,828,195,999	12,993,555,818	2,232,237,631	2,678,627,563	0.98	1.20
2000	14,263,420,791	16,294,181,563	167,518,895	191,369,471	11,643,509,650	13,301,259,428	2,452,392,246	2,801,552,664	0.95	1.14
2001	13,837,860,214	15,175,710,348	141,580,299	155,268,342	11,368,340,118	12,467,436,013	2,327,939,797	2,553,005,994	0.96	1.10
2002	14,517,174,326	15,533,376,529	131,050,220	140,223,735	11,825,823,064	12,653,630,679	2,560,301,042	2,739,522,115	0.97	1.07
2003	13,567,864,309	15,738,722,599	122,848,746	142,504,545	10,877,313,066	12,617,683,156	2,567,702,498	2,978,534,898	1.08	1.16
2004	13,273,630,830	16,592,038,538	109,062,103	136,327,629	10,277,173,340	12,846,466,675	2,887,395,382	3,609,244,227	1.08	1.25
Total Change	-551,037,542	2,767,370,166	-87,688,762	-60,423,236	-512,285,623	1,677,977,050	30,936,838	752,785,683	25% increase	
Percent Change	4% reduction	20% increase	45% reduction	31% reduction	5% reduction	16% increase	1% increase	26% increase		

Use Trends for Historic Core 1994-2004 Percent adjusted



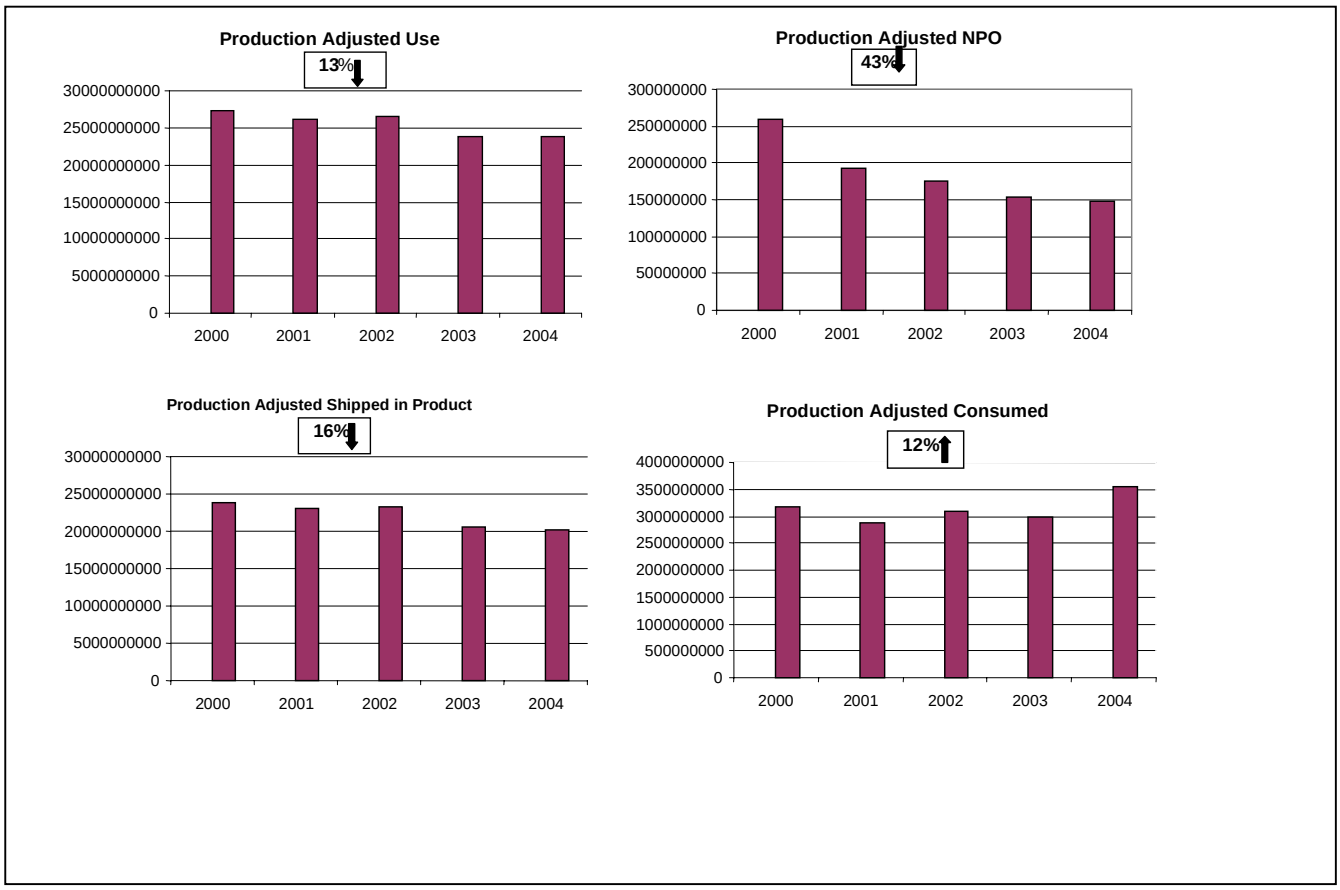
Use Trends for Recent Core Universe 2000-2004

Figure 7 demonstrates the changes in the Recent Core Universe (includes additional chemicals and SIC codes) from 2000 through 2004. This universe more accurately reflects the current reporting requirements and environmental conditions compared to the Historic Core Universe. For example in reporting year 2000, the Recent Core Universe of 2000-2004 indicates an adjusted Use of over 23 billion pounds versus the Core Universe of 1994-2004 of almost 14 billion pounds for the same reporting year. This 9 billion pound descrepancy is largely due to the added chemicals and SIC codes that were consistently reported after 1994 that could not be included in the Core Universe of 1994-2004. Overall, hazardous substance Use by the Recent Core Universe 2000-2004 declined by 7%, and when adjusted

for production, declined further to 13%. Of the three components of Use, NPO realized the greatest reduction of 39% and 43% for unadjusted and adjusted, respectively. Shipped as (or in) Product was reduced by 10% and when adjusted for production, was reduced further to 16%. Consumed, on the other hand increased by 20%, however, when adjusted for production, only increased by 12%.

Figure 7 Use Trends for Recent Core Universe 2000-2004

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
Year	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cum
2000	27,325,987,157	27,325,987,157	258,745,969	258,745,969	23,892,175,999	23,892,175,999	3,175,065,189	3,175,065,189	1.00	1.00
2001	26,194,550,971	26,194,550,971	193,386,468	193,386,468	23,111,599,097	23,111,599,097	2,889,565,406	2,889,565,406	1.00	1.00
2002	26,522,035,669	26,256,815,312	176,225,310	174,463,057	23,254,244,773	23,021,702,325	3,091,565,587	3,060,649,931	0.99	0.99
2003	23,768,941,352	25,908,146,074	153,644,403	167,472,399	20,627,493,791	22,483,968,232	2,987,803,159	3,256,705,443	1.10	1.09
2004	23,801,056,140	25,467,130,070	148,112,290	158,480,150	20,098,719,092	21,505,629,428	3,554,224,759	3,803,020,492	0.98	1.07
Total Change	-3,524,931,017	-1,858,857,087	-110,633,679	-100,265,819	-3,793,456,907	-2,386,546,571	379,159,570	627,955,303	7% increase	
Percent Change	13% reduction	7% reduction	43% reduction	39% reduction	16% reduction	10% reduction	12% increase	20% increase		



Impacts on Use from Petroleum Refineries

In any given reporting year, 7 to 9 facilities in SIC code 2911 (petroleum refining) have reported RPPRs to NJDEP. Of these, there are four major petroleum refineries in New Jersey that collectively report their Use of hazardous substances in the range of billions of pounds. A few other asphalt refining facilities and chemical manufacturers with much smaller Use quantities also report under SIC code 2911.

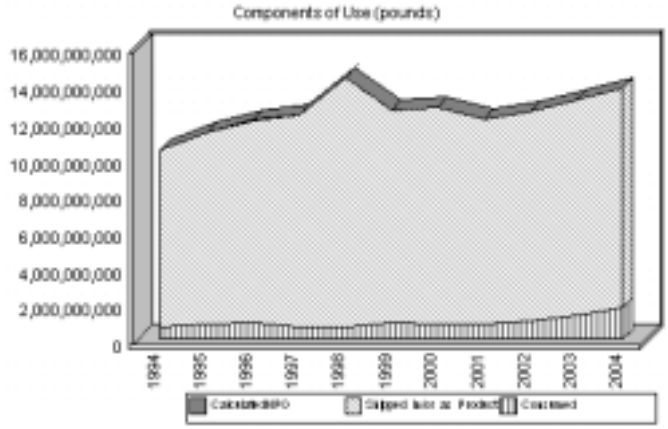
The Use of hazardous substances by these petroleum refineries represents 60% to 78% of the total Use

of all hazardous substances reported in the state. A small percentage change in the refining sector can represent a very large quantity in terms of the total pounds of hazardous substances used and can dominate statewide trends. Given the magnitude of this impact on statewide Use, and their potential to mask trends in all other SIC codes, it is useful to remove their contribution of Use from the data set in order to recognize trends from all other SIC codes.

Use

Figure 8 presents the trend for the components of Use in SIC code 2911. Use increased by 33% or 3.4 billion pounds. While Use has increased by 33%, NPO has decreased by 4% or slightly more than 375 thousand pounds, and Shipped as (or in) Product has increased by 24%. Consumed has increased by 150%. One interesting observation is the Shipped as (or in) Product to Use ratio in 1994 was 93%. In 2004 the Shipped as (or in) Product to Use ratio was 87%. This could imply that as an industrial sector, SIC code 2911 have become less efficient in terms of using hazardous substances that end up in their product. However, because of the lack of QA/QC protocols in the earlier reporting years, this difference in efficiency may be within the margin of error for self-reported data. Current QA/QC protocols require chemical specific facility level mass balance (inputs equal outputs) within 5%.

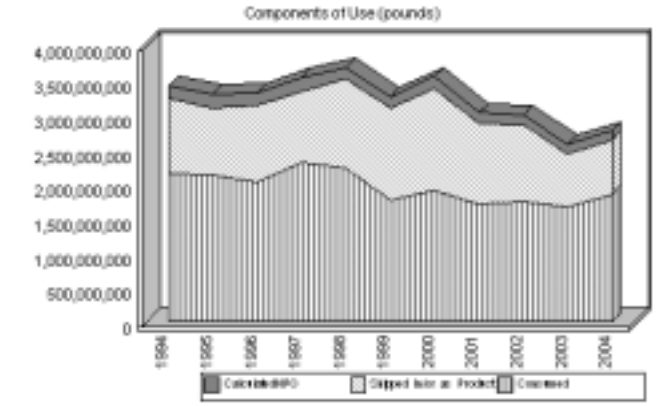
Figure 8 Components of Use for Historic Core SIC 2911



Year	Consumed	In Product	NPO	Calculated Use
1994	694,178,014	9,707,180,504	9,304,660	10,410,663,178.00
1995	825,500,978	10,562,749,441	9,150,575	11,397,400,994.00
1996	934,167,680	11,119,123,881	8,150,733	12,061,442,294.00
1997	717,936,229	11,595,530,903	8,628,596	12,322,095,728.00
1998	722,378,367	13,659,952,143	10,923,599	14,393,254,108.12
1999	916,883,548	11,658,986,916	10,626,535	12,586,496,999.00
2000	883,513,122	11,839,516,985	10,464,198	12,733,494,304.92
2001	849,717,563	11,279,208,666	8,241,271	12,137,167,500.09
2002	995,995,451	11,526,158,362	7,253,778	12,529,407,591.42
2003	1,300,884,500	11,852,566,497	8,894,664	13,162,345,660.49
2004	1,752,635,628	12,057,704,898	8,927,197	13,819,267,723.64

Figure 9 below presents the Use data for the Historic Core universe without refineries. Removing SIC code 2911 from the data set significantly changes the trends for hazardous substance Use. First, subtracting out SIC code 2911 from the Historic Core Group results in a 19% decrease or about 660 million pounds instead of an increase of 20%. Second, the percentage of hazardous substances shipped as or in product was significantly reduced (reporting year 2004) to only 28% versus 77% for the combined group. The category Consumed, which comprises 67% of total Use, now becomes the dominant component of Use for reporting year 2004.

Figure 9 Components of Use Historic Core Group (1994-2004) minus SIC 2911



Year	Consumed	In Product	NPO	Calculated Use
1994	2,162,260,530	1,082,278,459	187,446,205	3,432,005,194.00
1995	2,135,648,690	965,215,579	215,986,948	3,316,851,217.00
1996	2,033,104,105	1,103,731,492	199,814,607	3,336,650,205.14
1997	2,310,131,220	1,042,921,797	199,721,961	3,552,774,978.14
1998	2,242,886,088	1,277,021,438	179,547,039	3,699,454,565.22
1999	1,761,744,015	1,334,568,902	166,955,230	3,263,268,146.88
2000	1,918,039,542	1,461,742,443	180,905,273	3,560,687,258.49
2001	1,703,288,431	1,188,227,346	147,027,071	3,038,542,848.17
2002	1,743,526,664	1,127,472,317	132,969,957	3,003,968,938.29
2003	1,677,650,398	765,116,659	133,609,882	2,576,376,936.89
2004	1,856,608,599	788,761,777	127,400,432	2,772,770,807.83

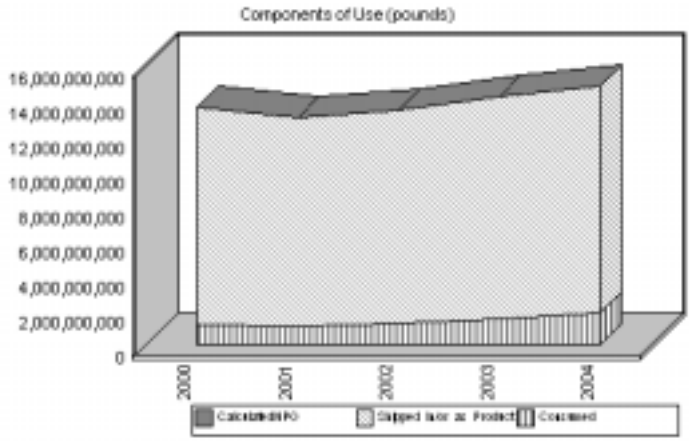
Figure 10 below demonstrates the difference between the Historic Core Group compared to the Historic Core Group minus SIC 2911 adjusted and unadjusted for production. It should be noted that the Historic Core Group has a cumulative weighted production index that increased by 25% and that the weighted production index for the Historic Core Group minus Core 2911 increased only 18%. When the refineries are excluded, facilities realized a 32% reduction in Use versus only a 4% reduction including the refineries when adjusted for production. NPO, the smallest component of Use shows similar reductions for both groups. Shipped as (or in) product demonstrated a substantial difference in reductions between the two groups with the Historic Core Group minus SIC 2911 realizing a 33% greater reduction that the Historic Core Group with SIC 2911. With respect to Consumed, again when the refineries are excluded, there is a 26% greater reduction in hazardous substances consumed compared to the Historic Core Group. This suggests that when the refineries are excluded from the data set, significant differences are observed in the percent reductions for Use, Shipped as (or in) Product and Consumed than if they are included. It is evident that it is necessary to exclude refineries from the analysis to better understand trends in the manufacturing sector of hazardous substance Use in New Jersey that could be masked by SIC 2911.

Figure 10 Historic Core Group (1994-2004) and Historic Core Group minus SIC 2911

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index
	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Cum
Core Group									
Total Change	-551,037,542	2,767,370,166	-87,688,762	-60,423,236	-512,285,623	1,677,977,050	30,936,838	752,785,683	25% increase
Percent Change	4% reduction	20% increase	45% reduction	31% reduction	5% reduction	16% increase	1% reduction	26% increase	
Core minus 2911									
Total Change	-1,087,603,251	-659,234,387	-79,728,027	-60,045,773	-415,373,485	-293,516,682	-592,501,739	-305,671,931	18% increase
Percent Change	32% reduction	19% reduction	43% reduction	32% reduction	38% reduction	27% reduction	27% reduction	14% reduction	

Figure 11 presents the data for the Recent Core for SIC 2911.. Use increased by 9% or 1.4 billion pounds. NPO was reduced by 16% or 1.3 million pounds. Shipped as (or in) Product increased by 4% or 550 million pounds and Consumed increased 59% or almost 700 million pounds.

Figure 11 Components of Use for Recent Core SIC 2911Group (2000-2004)



Year	Consumed	In Product	NPO	Calculated Use
2000	1,184,800,677	12,494,401,086	12,987,519	13,692,189,281.51
2001	1,109,922,962	11,957,114,509	10,584,543	13,077,622,014.63
2002	1,251,271,027	12,241,718,465	9,022,820	13,502,012,312.33
2003	1,522,642,320	12,726,118,552	10,878,216	14,259,639,088.07
2004	1,882,296,715	13,044,021,149	10,916,659	14,937,234,523.49

Figure 12 presents Use data for the Recent Core Universe 2000-2004 excluding both SIC codes 2911 and 5171. Previous discussions on page 22 have discussed the need to exclude SIC code 2911 (petroleum refineries). SIC code 5171 is facilities primarily engaged in wholesale distribution of crude petroleum and petroleum products. These facilities store and distribute the same petroleum products that are produced at the refineries, and therefore should be excluded as well from the analysis to determine how the rest of the manufacturing sectors are doing with respect to their use of hazardous substances.

Figure 12 Components of Use for Recent Core Universe 2000-2004 minus Core SIC 2911 and SIC 5171

Year	Consumed	In Product	NPO	Calculated Use
2000	1,990,356,451	1,710,015,507	251,766,304	3,952,138,262
2001	1,779,667,279	1,343,130,392	187,084,123	3,309,881,794
2002	1,809,423,929	1,274,369,811	170,313,884	3,254,107,623
2003	1,734,103,273	915,007,451	160,795,402	2,809,906,126
2004	1,922,427,193	955,035,496	189,742,461	3,067,205,150

Figure 13 compares the total change in pounds and percentages of the components of Use for the Recent Core Universe 2000-2004 to the Recent Core Universe 2000-2004 minus Core SIC 2911 and 5171.The weighted production indices are similar between the groups, however, many of the components of Use are quite different. For example, Use for the Recent Core Universe 2000-2004minus the petroleum sectors (SIC 2911 and 5171) had a Use reduction twice that (27% v. 13%) of the Recent Core Universe 2000-2004. Shipped as (or in) Product for the Recent Core Universe 2000-2004 minus the petroleum sectors again realized a reduction almost three times that of the Recent Core Universe 2000-2004 (47% v. 16%). Consumed also showed a much larger reduction in the Recent Core Universe 2000-2004 minus the petroleum sector, which realized a decrease of 9% versus an increase of 12% in the Recent Core Universe 2000-2004. NPO for the Recent Core Universe 2000-2004 demonstrated a larger reduction than the Recent Core Universe 2000-2004 minus the petroleum sectors (43% v. 29%).

Figure 13 Comparisons between Recent Core Group and Recent Core minus 2911 and 5171

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index
	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Cum
Core Group									
Total Change	3,524,931,017	1,858,857,087	110,633,679	100,265,819	3,793,456,907	2,386,546,571	379,159,570	627,955,303	7% increase
Percent Change	13% reduction	7% reduction	43% reduction	39% reduction	16% reduction	10% reduction	12% increase	20% increase	
Core minus 2911 and 5171									
Total Change	1,052,090,913	884,933,112	72,364,505	62,023,843	807,027,926	754,980,011	172,698,482	67,929,258	6% increase
Percent Change	27% reduction	22% reduction	29% reduction	25% reduction	47% reduction	44% reduction	9% reduction	3% reduction	

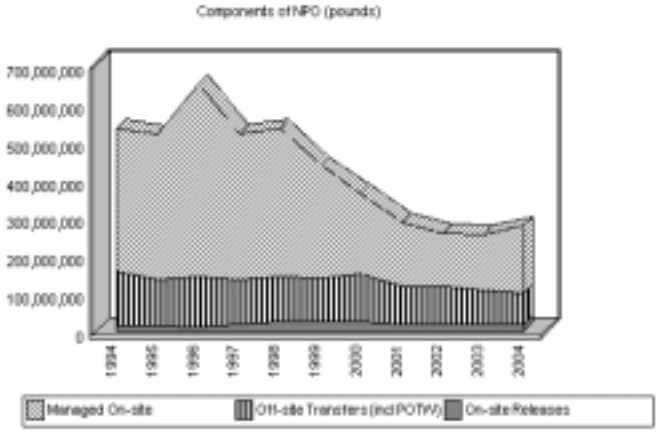
B. NPO

NPO Trends for All Facilities

NPO is a measure of hazardous substances generated prior to any treatment or control at industrial facilities. By measuring NPO quantities before treatment, it provides additional insight into whether reductions are due to pollution prevention (i.e., making production processes more efficient) or to the installation of more effective treatment or control devices. Much of the NPO generated at industrial facilities is subsequently treated in some way to reduce the amount of hazardous substances released to the environment.

Figure 14 illustrates the NPO trends for All facilities universe in New Jersey and includes the new SIC codes and chemicals as they were added through time. Even with the addition of these new facilities, the trend for NPO is decreasing through time. Off-Site Transfers and On-Site Management both have decreased; however, On-Site Releases have increased over time—increasing from 14.1 million pounds in 1994 to 17.1 million pounds in 2004 because of additional SIC codes and chemicals added over time.

Figure 14 Components of NPO All Facilities



Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
1994	533,459,458	14,101,323	143,873,859	375,484,276
1995	517,076,350	13,549,634	121,436,718	382,089,998
1996	649,876,469	11,475,660	130,081,759	508,319,050
1997	518,714,943	17,728,992	116,095,933	384,890,018
1998	533,784,694	24,120,971	119,175,185	390,488,538
1999	434,485,433	23,014,597	115,404,807	296,066,029
2000	360,953,832	22,944,519	127,640,883	210,368,430
2001	285,556,623	17,576,426	100,079,740	167,900,457
2002	257,210,385	18,279,783	98,062,872	140,867,731
2003	253,207,645	16,345,738	90,555,880	146,306,028
2004	277,627,034	17,161,985	83,652,654	176,812,394

NPO Trends for Historic Core Universe 1994-2004

Figure 15 below presents the trends in the Historic Core Universe statewide generation of NPO including adjusted and unadjusted quantities. This table shows that the generation of NPO peaked in 1995 and has shown consistent reductions each year from 1995 to 2001, with 2000 the only year with an increase. Overall, facilities reduced the generation of NPO by 45% or nearly 87.7 million pounds during the period when adjusted for production.

Figure 15 NPO Adjusted for Production Historic Core Universe 1994-2004

	Nonproduct Output		On-site Releases		Off-Site Transfers		Managed On-Site		Weighted Production Index	
Year	NPO (Adjusted)	NPO	On-site Releases (Adjusted)	On-site Releases	Off-Site Transfers (Adjusted)	Off-Site Transfers	Managed On-Site (Adjusted)	Managed On-Site	Yearly	Cum
1994	196,750,865	196,750,865	12,567,920	12,567,920	92,294,306	92,294,306	91,888,639	91,888,639	1.00	1.00
1995	214,009,052	225,137,523	10,507,746	11,054,149	87,444,625	91,991,745	116,056,682	122,091,629	1.05	1.05
1996	185,098,955	207,965,340	8,422,801	9,463,320	83,181,151	93,457,018	93,495,003	105,045,002	1.07	1.12
1997	184,519,221	208,350,557	9,251,070	10,445,880	78,359,565	88,479,991	96,908,586	109,424,686	1.01	1.13
1998	156,189,281	190,470,637	6,754,476	8,236,989	68,437,064	83,458,040	80,997,741	98,775,609	1.08	1.22
1999	147,987,986	177,581,765	6,496,151	7,795,214	64,699,614	77,637,868	76,792,220	92,148,683	0.98	1.20
2000	167,518,895	191,369,471	5,674,398	6,482,293	81,528,946	93,136,665	80,315,839	91,750,842	0.95	1.14
2001	141,580,299	155,268,342	4,815,233	5,280,772	75,521,588	82,823,047	61,243,478	67,164,523	0.96	1.10
2002	131,050,220	140,223,735	4,000,381	4,280,408	62,569,010	66,948,841	64,480,828	68,994,486	0.97	1.07
2003	122,848,746	142,504,545	2,990,499	3,468,979	58,969,593	68,404,728	56,504,671	70,630,839	1.08	1.16
2004	109,062,103	136,327,629	2,552,101	3,190,126	52,455,531	65,569,414	54,054,471	67,568,089	1.08	1.25
Total Change	-87,688,762	-60,423,236	-10,015,819	-9,377,794	-39,838,775	-26,724,892	-37,834,168	-24,320,550	25% increase	
Percent Change	45% reduction	31% reduction	80% reduction	75% reduction	43% reduction	29% reduction	41% reduction	26% reduction		

NPO and Components of NPO for Historic Core Universe 1994-2004

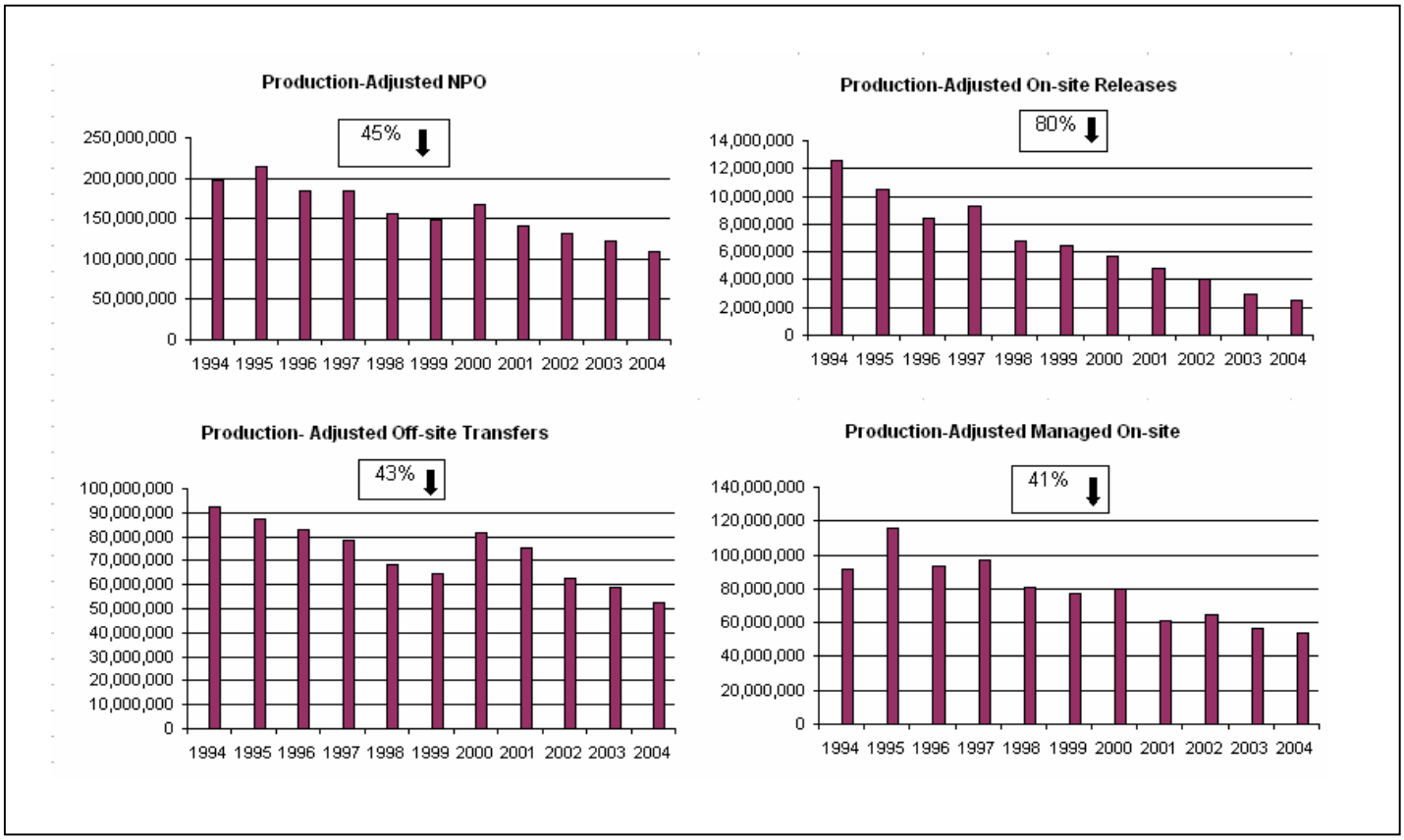


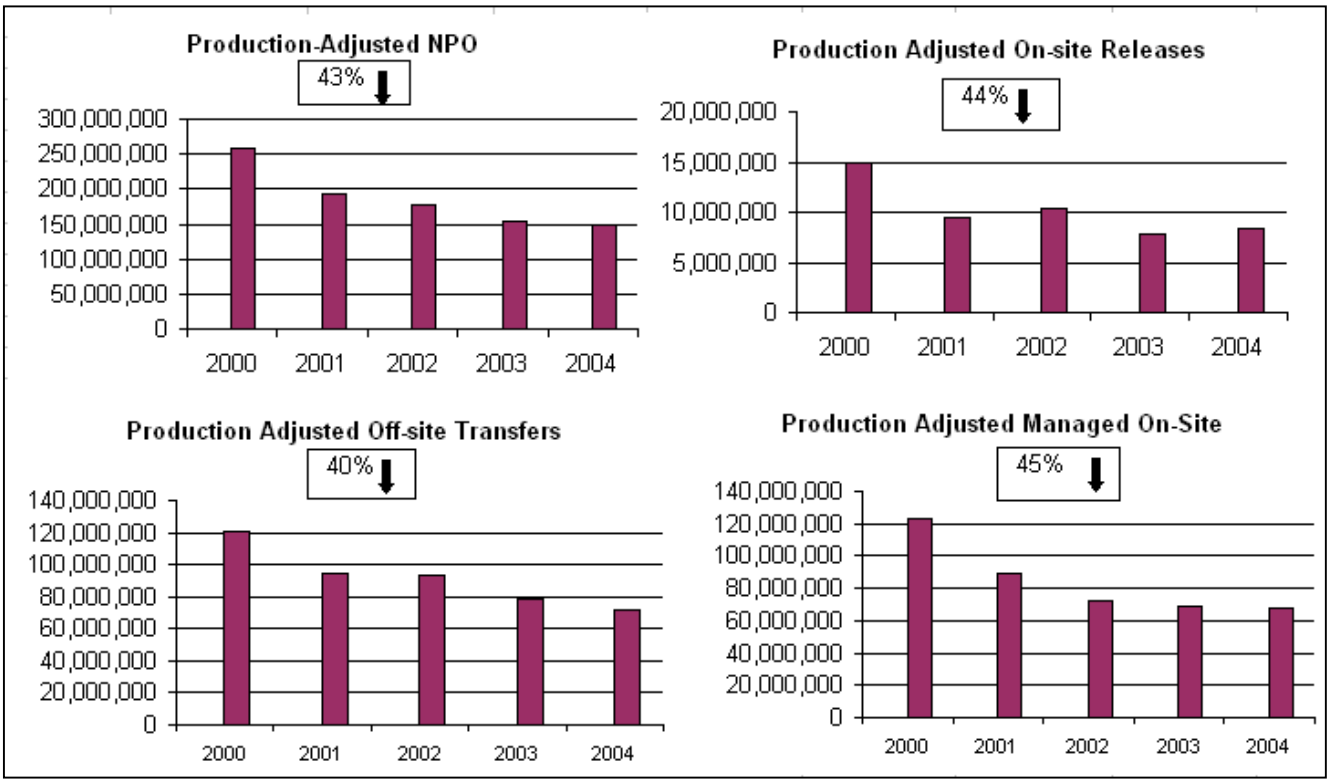
Figure 16 presents the trends in statewide generation of NPO and its components for the Recent Core Universe 2000-2004. Production adjusted quantities indicate an overall 43% reduction of NPO, or over

110 million pounds. On-Site Releases were reduced by 44%, r Off-Site Transfers by 40% and Managed On-Site by 45%.

Figure 16 NPO Adjusted for Production Recent Core Universe 2000-2004

	Nonproduct Output		On-site Releases		Off-Site Transfers		Managed On-Site	
Year	NPO (Adjusted)	NPO	On-site Releases (Adjusted)	On-site Releases	Off-Site Transfers (Adjusted)	Off-Site Transfers	Managed On-Site (Adjusted)	Managed On-Site
2000	258,745,969	258,745,969	14,902,161	14,902,161	120,634,680	120,634,680	123,209,128	123,209,128
2001	193,386,468	193,386,468	9,538,232	9,538,232	94,899,095	94,899,095	88,949,141	88,949,141
2002	176,225,310	174,463,057	10,401,509	10,297,494	93,392,141	92,458,220	72,431,661	71,707,344
2003	153,644,403	167,472,399	7,763,150	8,461,833	78,490,574	85,554,726	68,650,319	73,455,841
2004	148,112,290	158,480,150	8,403,841	8,992,110	71,945,038	76,981,191	67,763,409	72,506,848
Total Change	-110,633,679	-100,265,819	-6,498,320	-5,910,051	-48,689,642	-43,653,489	-55,445,719	-50,702,280
Percent Change	43% reduction	39% reduction	44% reduction	40% reduction	40% reduction	36% reduction	45% reduction	41% reduction

NPO and Components of NPO for Recent Core Universe 2000-2004

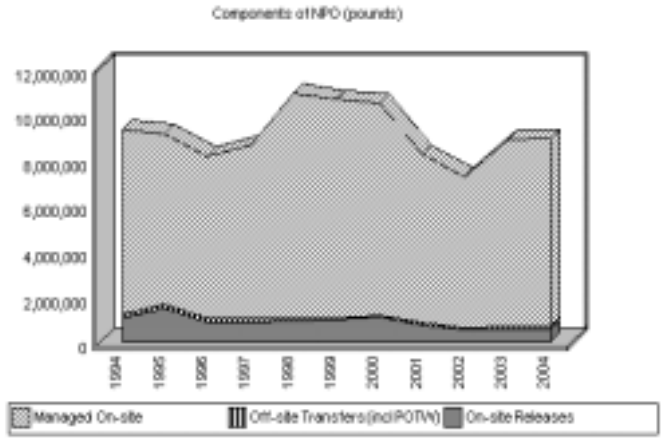


NPO and the Petroleum Refineries

Petroleum refineries do not have the dominant impact on trends for NPO as they do on USE; however, it is worthy of discussion. In 2004, the petroleum refineries accounted for about 5.4%, or 11 million pounds of NPO compared to the remainder of the regulated manufacturing sectors, which generated over 190 million pounds of NPO. Figure 17 presents the data for NPO and its components for the Historic Core Group SIC code 2911. As shown in Figure 15, NPO decreased by 4% or 375 thousand pounds.

On–Site Releases were reduced by 49%. Off-Site transfers decreased by 33% or almost 75 thousand pounds. Managed On-Site increased slightly by 2%.

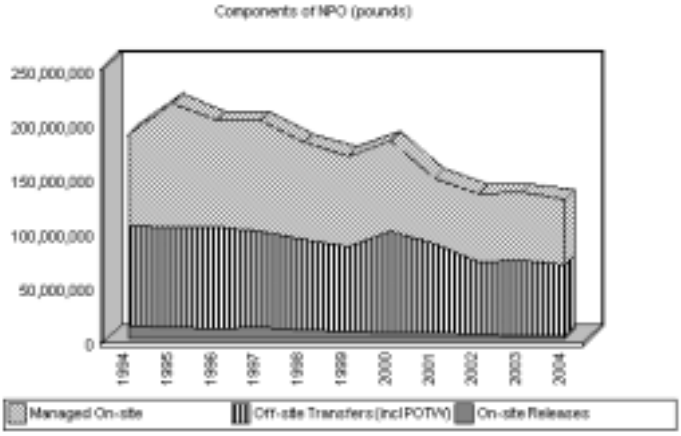
Figure 17 NPO for Historic Core Group SIC 2911



Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
1994	9,304,660	1,017,484	223,949	8,063,227
1995	9,150,575	1,442,406	199,539	7,508,630
1996	8,150,733	861,705	179,789	7,109,239
1997	8,628,596	882,132	133,342	7,613,122
1998	10,923,599	923,040	91,433	9,909,126
1999	10,626,535	946,862	65,610	9,614,063
2000	10,464,198	1,094,270	93,017	9,276,911
2001	8,241,271	724,298	142,401	7,374,571
2002	7,253,778	542,543	85,284	6,625,951
2003	8,894,664	547,375	100,305	8,246,984
2004	8,927,197	526,619	143,993	8,256,585

Figure 18 presents the data for the components of NPO for the Historic Core Group minus SIC 2911. NPO was reduced by 32% or 600 million pounds. On-Site Releases were also reduced by 77% or 8.9 million pounds. Off-Site Transfers were also reduced 29% or 26.6 million pounds. Managed On-Site decreased by 29% or 24.5 million pounds.

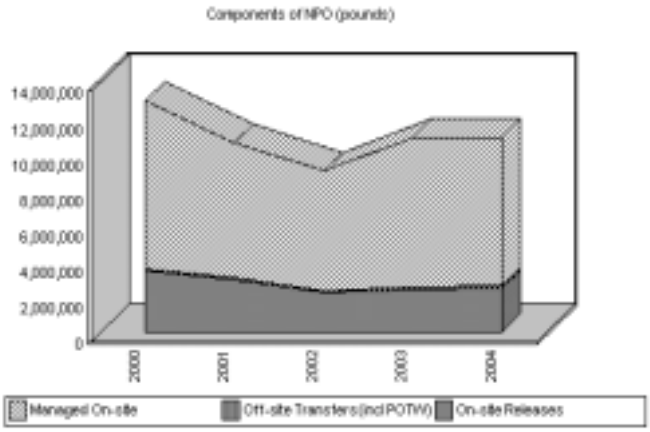
Figure 18 Components of NPO for the Historic Core Group minus SIC 2911



Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
1994	187,446,205	11,550,436	92,070,357	83,825,412
1995	215,986,948	9,611,743	91,792,206	114,582,999
1996	199,814,607	8,601,615	93,277,229	97,935,763
1997	199,721,961	9,563,748	88,346,649	101,811,564
1998	179,547,039	7,313,949	83,366,606	88,866,483
1999	166,955,230	6,848,352	77,572,258	82,534,620
2000	180,905,273	5,388,024	93,043,318	82,473,931
2001	147,027,071	4,556,474	82,680,645	59,789,951
2002	132,969,957	3,737,865	66,863,557	62,368,535
2003	133,609,882	2,921,604	68,304,423	62,383,855
2004	127,400,432	2,663,507	65,425,421	59,311,504

Figure 19 presents the data for the components of NPO for the Recent Core 2911 universe. Overall, there was a 16% or 2.1 million-pound reduction in NPO amongst petroleum refineries. On-Site Releases were reduced by 30% or 1 million pounds. Off-Site Transfers increased by 65% or about 64 thousand pounds. Managed On-site was reduced by 12% or 1.1 million pounds.

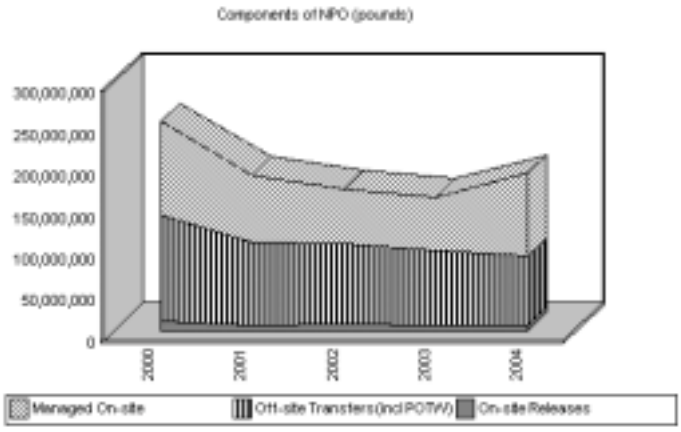
Figure 19 Components of NPO for Recent Core 2911



Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	12,987,519	3,428,634	98,104	9,460,781
2001	10,584,543	2,886,155	171,650	7,526,739
2002	9,022,820	2,196,096	90,479	6,736,246
2003	10,878,216	2,373,653	146,714	8,357,849
2004	10,916,659	2,411,932	162,008	8,342,719

Figure 20 presents the NPO data for the Recent Core Universe 2000-2004 without the petroleum refineries On-Site Releases decreased by 43% or about 4.9 million pounds. Off-Site Transfers decreased by 35% or 44 thousand pounds and Managed On-Site decreased by 11% or 13 million pounds.

Figure 20 Components of NPO for Recent Core minus SIC 2911



Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	252,294,967	11,477,407	127,251,373	113,566,187
2001	187,753,211	6,651,202	99,679,606	81,422,402
2002	170,785,214	8,105,711	97,708,405	64,971,098
2003	161,219,538	6,084,830	90,036,716	65,097,992
2004	190,128,323	6,586,258	83,029,713	100,512,352

C. Releases and Transfers

Hazardous substances released into the environment are of particular importance due to potential exposure to residents and impacts to the environment. This section presents trends for On-Site Releases to all environmental media; air, water, and land. This section also reviews trends for Off-Site Transfers of waste for treatment at other facilities. Reductions in On-Site Releases can be the result of pollution prevention or more effective treatment, but it is not possible to pinpoint the activity leading to the reduction.

Trends in Releases and Transfers - All Facilities

Table2 illustrates the components of On-Site Releases and Off-Site Transfers for All Facilities. Even with the expanded list of industries and chemicals covered by this reporting universe, many of the categories such as Fugitive Air Emissions, and Land Disposal On-site show reductions. However, stack air emissions

and surface water discharges are two categories that show increases compared to the earlier years. This indicates that the new reporting requirements are bringing previously unreported releases into public view.

Table 2. On-Site Releases All Facilities

Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal on-site
1994	7,057,370	5,977,741	606,096	6	460,110
1995	7,414,646	4,645,770	1,387,531	14	101,673
1996	6,706,094	3,224,110	1,174,910	25	370,521
1997	7,295,126	3,283,723	6,196,247	7	953,889
1998	13,790,108	3,360,937	6,379,804	14	590,108
1999	13,260,175	3,620,181	5,554,065	7	580,168
2000	14,330,498	2,836,850	5,614,064	10	163,097
2001	11,542,164	2,010,899	3,729,684	4	293,674
2002	10,924,942	1,970,273	4,862,732	1	521,835
2003	10,246,806	1,749,035	4,149,822	579	199,496
2004	10,112,899	1,770,892	5,166,835	3	111,357

Table 3 demonstrates Off–Site Transfers, which contributes to 30% of the total NPO for 2004. Trends for Total Off-Site Transfers for All Facilities have decreased by 42% or over 60 million pounds. POTW discharges for All Facilities have decreased by 23% or 6.3 million pounds. Total Waste Transfers were reduced by 46% or almost 54 million pounds.

Table 3. Off-Site Transfers and Components for All Facilities

Report Year	POTW Discharge	Total Waste Transfer	Total Off-site Transfers
1994	27,582,356	116,291,503	143,873,859
1995	37,299,667	84,137,051	121,436,718
1996	41,845,190	88,236,569	130,081,759
1997	35,836,879	80,259,054	116,095,933
1998	34,504,204	84,670,981	119,175,185
1999	36,979,272	78,425,535	115,404,807
2000	36,854,589	90,786,294	127,640,883
2001	22,079,931	77,999,809	100,079,740
2002	35,848,788	62,214,084	98,062,872
2003	28,313,951	62,241,929	90,555,880
2004	21,291,567	62,361,087	83,652,654

Trends in On-Site Releases in Historic Core Group 1994-2004

Table 4- presents statewide trends for On-Site Releases to air, water and land. Stack air emissions comprise most of the On-Site Releases in the state, accounting for 53% of all On-Site Releases in 2004. Stack air emissions decreased from 1994 to 1996, saw a slight increase in 1997 and then continued a steady decline from 1997 to 2004. Overall, stack air emissions decreased by 79% or almost 5 million pounds for the period when adjusted for production. Fugitive air emissions (adjusted) steadily decreased by 83% or 4.6 million pounds during this period.

Surface water discharges moved in the opposite direction and have generally increased. Surface water discharges comprise a smaller portion of On-Site Releases in the state, accounting for 7% of all On-Site Releases in 2004. Surface water releases increased from 1994 to 1996 then decreased in 1997 and 1998. Surface water discharges increased from 1998 to 2001, when surface water releases increased to their highest levels for the period. Surface water discharges fell drastically in 2002 and 2003 and then increased substantially in 2004. Overall, surface water discharges increased by 42% or 53 thousand pounds when adjusted for production. This large increase in 2004 is the result of E. I. Dupont De Nemours & Co. Inc. discharge of 128,000 pounds of Dinitorbenzene. Land Disposal On-Site was reduced by 87% or almost 400,000 pounds.

Table 4. Components of On-Site Releases Historic Core Universe 1994-2004

Year	Stack Air Emission (Adjusted)	Stack Air Emissions	Fugitive Air Emissions (Adjusted)	Fugitive Air Emissions	Surface Water Discharge (Adjusted)	Surface Water Discharge	Ground Water Discharge (Adjusted)	Ground Water Discharge	Land Disposal On-Site (Adjusted)	Land Disposal On-Site
1994	6,299,527	6,299,527	5,679,822	5,679,822	128,623	128,623	6	6	459,942	459,942
1995	6,231,558	6,555,599	4,021,474	4,230,591	158,053	166,272	13	14	96,647	101,673
1996	5,229,735	5,875,795	2,699,664	3,033,170	201,386	226,264	22	25	291,994	328,066
1997	5,574,484	6,294,449	2,698,361	3,046,864	194,812	219,973	6	7	783,407	884,587
1998	4,035,030	4,920,663	2,407,838	2,936,325	113,559	138,484	11	14	198,037	241,503
1999	3,548,926	4,258,620	2,648,381	3,177,989	164,966	197,955	6	7	133,871	160,642
2000	3,285,422	3,753,185	2,118,671	2,420,318	163,940	187,281	9	10	106,356	121,499
2001	2,840,369	3,114,977	1,489,559	1,633,570	250,319	274,520	4	4	234,982	257,700
2002	2,302,057	2,463,201	1,539,542	1,647,310	42,911	45,915	1	1	115,869	123,980
2003	1,775,124	2,059,144	1,058,378	1,227,719	61,177	70,965	499	579	95,321	110,572
2004	1,348,734	1,685,917	960,616	1,200,770	182,314	227,893	2	3	60,436	75,545
Total Change	-4,950,793	-4,613,610	-4,719,206	-4,046,252	53,691	99,270	-4	-3	-399,506	-384,397
Percent	79%	73%	83%	71%	42%	77%	60%	50%	87%	84%
Change	reduction	reduction	reduction	reduction	increase	increase	reduction	reduction	reduction	reduction

Trends in On-Site Releases in Recent Core Universe2000-2004

Table 5 presents statewide trends for On-Site Releases to air, water and land from 2000 to the present. Stack Air Emissions (adjusted) account for 25% of the total On-Site Releases in 2004. The adjusted Stack Air Emissions were reduced by 68% or about 4.5 million pounds. Fugitive Air Emissions contribute about 18% of the total On-Site Releases. Fugitive Emissions were reduced by 43% or almost 1.2 million pounds. Surface Water discharges contribute 55% of total On-Site Releases and were reduced by 14% or almost 750 thousand pounds. Normally ground water discharges are not an issue in New Jersey, however, in 2003 Amerada Hess Port Reading reported a discharge of 576 pounds of 1, 2.4-Trimethylbenzene to ground water. Land Disposal On-Site (adjusted) accounted for 1% of the total On-Site Releases and was reduced by 36%.

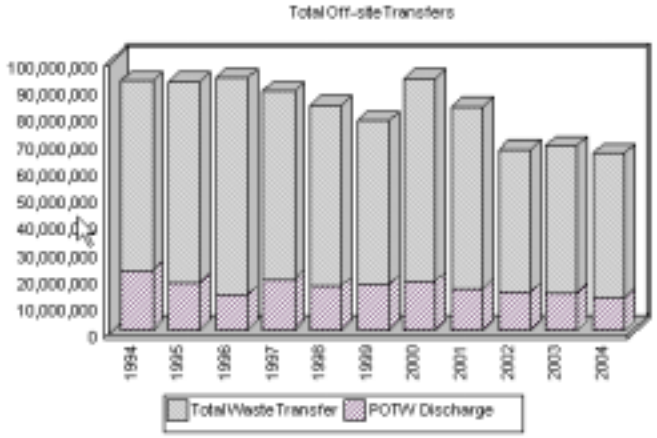
Table 5. Components of On-Site Releases Recent Core Universe 2000-2004

Year	Stack Air Emissions (Adjusted)	Stack Air Emissions	Fugitive Air Emissions (Adjusted)	Fugitive Air Emissions	Surface Water Discharge (Adjusted	Surface Water Discharge	Ground Water Dicharge (Adjusted)	Ground Water Discharge	Land Disposal on-Site (Adjusted)	Land Disposal on-Site
2000	6,656,244	6,656,244	2,715,303	2,715,303	5,367,507	5,367,507	10	10	163,097	163,097
2001	3,763,428	3,763,428	1,917,057	1,917,057	3,564,068	3,564,068	4	4	293,674	293,674
2002	3,165,392	3,133,738	1,904,491	1,885,446	4,810,446	4,762,342	1	1	521,179	515,967
2003	25,054,890	27,309,830	1,520,329	1,657,159	3,555,529	3,875,527	541	579	181,271	197,585
2004	2,140,084	2,289,890	1,538,672	1,646,379	4,621,339	4,944,833	3	3	103,744	111,006
Total Change	-4,516,160	-4,366,354	-1,176,631	-1,068,924	-746,168	-422,674	-7	-7	-59,353	-52,091
Percent	68%	66%	43%	39%	14%	8%	72%	70%	36%	32%
Change	reduction	reduction	reduction	reduction	reduction	reduction	reduction	reduction	reduction	reduction

Trends in Off - Site Transfers in Historic Core Universe 1994-2004

Figure 21 presents trends for components of Off-Site Transfers. Total Off-Site Transfers decreased by 29% or 26.7 million pounds. POTW Discharges were reduced 44% or 9.7 million pounds. Total Waste Transfers were reduced by 24%or almost 17 million pounds.

Figure 21. Off-Site Transfers (Historic Core Universe 1994-2004)

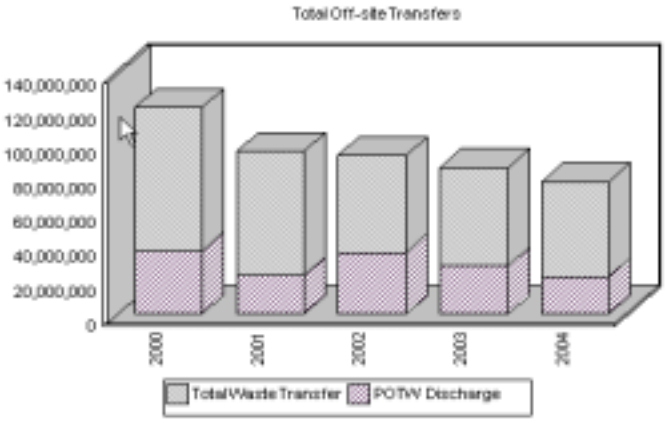


Report Year	POTW Discharge	Total Waste Transfer	Total Off-site Transfers
1994	21,973,636	70,320,670	92,294,306
1995	17,609,075	74,382,670	91,991,745
1996	13,021,073	80,435,945	93,457,018
1997	18,741,402	69,738,589	88,479,991
1998	16,254,409	67,203,630	83,458,040
1999	16,804,456	60,833,412	77,637,868
2000	17,934,345	75,201,990	93,136,335
2001	15,601,797	67,221,250	82,823,047
2002	13,994,730	52,954,111	66,948,841
2003	13,697,294	54,707,434	68,404,728
2004	12,230,284	53,339,130	65,569,414

Trends in Transfers in Recent Core Universe 2000-2004

The Recent Core Universe 2000-2004 demonstrated a reduction in total Off-Site Transfers of 36% or 43.6 million pounds. POTW discharges were reduced by 42% or 15.5 million pounds. Total Waste Transfers decreased by 33% or just over 28 million pounds.

Figure 22. Trends in Transfers for Recent Core Universe 2000-2004



Report Year	POTW Discharge	Total Waste Transfer	Total Off-site Transfers
2000	36,633,131	84,001,549	120,634,680
2001	21,960,114	72,938,981	94,899,095
2002	35,779,478	56,678,742	92,458,220
2003	28,105,206	57,449,520	85,554,726
2004	21,111,502	55,869,689	76,981,191

D. Summary of Statewide Trends

Historic Core Universe 1994-2004

The most obvious finding from assessing trends for the Historic Core Universe statewide is that these facilities substantially decreased hazardous substances generated as NPO and released into the environment. Even though production levels increased by 25%, these facilities decreased their NPO generation by 31% and decreased On-Site Releases of hazardous substances by 75%. When you adjust the quantities for production, NPO decreased by 45% and On-Site Releases decreased by 80%. This means that these facilities achieved statewide reductions by improving efficiency and implementing pollution prevention measures.

Overall, New Jersey facilities in the Historic Core Universe 1994-2004 made less progress reducing the Use of hazardous substances compared to NPO and On-Site Releases. These facilities actually increased the Use of hazardous substances by 20%, when using unadjusted quantities. When you adjust the quantities for production, Use decreased by 4%. This means that increases in production have outpaced any efficiency improvements. The lack of progress in reducing Use is caused by increases in the quantity of toxics shipped as (or in) product. The quantity of hazardous substances shipped as (or in) product increased by 16% during the period using annual pounds. However production-adjusted quantities actually decreased by 5%. Refinery products (gasoline, fuel oil, etc) account for 90% of the toxics in products and also account for most of the increases. The Historic Core Group minus the refineries decreased Shipped as (in) Product by 38% Consumed is the only category that increased in both unadjusted and adjusted quantities with increases of 26% and 1% respectively. Hazardous substances that are consumed during the manufacturing process do not become NPO and therefore are never released to the environment or have to undergo further treatment.

Recent Core Universe 2000-2004

The trends from the Recent Core Universe 2000 - 2004 mirror the trends for the Historic Core Universe 1994 - 2004, although somewhat less drastically. NPO decreased by 39% and On-Site Releases had a similar reduction of 40% even though production increased by 7%. When these quantities are adjusted for production, NPO reductions are 43% and On-site Releases reductions are 44%. Typically when production increases and NPO decreases, this is the result of facilities improving their production efficiency.

As witnessed with the Historic Core Universe 1994 - 2004, New Jersey facilities in the Recent Core Universe 2000 - 2004 have realized less progress in reducing the Use of hazardous substances compared to NPO and On-Site Releases. Use was reduced by 7%, which closely resembles the 10% reduction in Shipped as (or in) Product while production has increased by 7%. When these levels are adjusted for production, Use realized a 13% reduction and Shipped as (or in) Product was further reduced by 16%.

As discussed previously in the Historic Core Universe 1994 - 2004, refinery products reported as Shipped as (or in) Product accounts for roughly 90% of Use. The large numbers (roughly double) in Use and Shipped as (or in) Product for the Recent Core Universe 2000 - 2004 versus the Historic Core Universe 1994 - 2004 are attributed to the addition of SIC codes that include the bulk terminals that store and distribute the refined petroleum products. Thus the same gallon of gasoline that is refined is also stored at Bulk Storage Terminals and may be “double counted” as the same product. These facilities were not included in the Historic Core Universe 1994 - 2004. For further discussion of trends without refinery products, please see Appendix C

Consumed was the only component that increased using both annual pounds (20%) and production adjusted quantities (12%). Hazardous substance that are consumed (chemically changed) during production processes usually are not released and therefore do not pose a threat to human health or the environment.

IV. Chemical and Facility Analysis

Previous sections of this report analyzed trends broadly for the state as a whole by looking at the total quantity of hazardous substances for all facilities combined. This combined analysis showed significant downward trends at the state level for hazardous substance NPO generation and On-Site Releases, with less progress reducing Use. Trends seen at the state level are, of course, based on changes occurring at individual facilities located in communities throughout the state. This section begins to look at how changes at specific facilities relate to trends seen at the state level. This analysis looks at decreases and increases in NPO, On-Site Releases , and Use for specific chemicals and facilities to help highlight changes that are consistent with and may be driving statewide trends as well as changes that are moving in the opposite direction. The NJDEP uses this analysis and other information to help identify priorities to address in the future through actions such as new or modified regulations, changes to compliance inspection schedules, additional compliance and technical assistance or review of permit limits.

A. Chemical Specific Changes

In evaluating statewide trends for specific chemicals, this section of the report looks at how changes at multiple facilities impact a single chemical. Are increases or decreases for a chemical primarily the result of a single facility, or is the changes part of a broader trend where a larger number of facilities are making similar changes. This chemical specific analysis uses unadjusted quantities and is also limited to the Recent Core Universe 2000-2004 group of chemicals and SICS codes and includes all facilities that reported these chemicals.

Top 10 Chemical-Specific Changes in Use, NPO Generation, and On-site Releases

. Table 6 identifies chemicals with the top 10 increases and decreases in quantities used. Due to domestic security concerns, we will not discuss quantities of individual hazardous substances used by specific facilities. However, we can discuss broad categories of changes in Use.

Large decreases or increases are often caused by changes in the quantities used by a small group of large facilities, such as refineries or iron and steel mills. This is particularly the case for increases, where refineries and iron and steel mills are responsible for 7 out of the top 10 chemical increases. Vinyl Chloride increases are the result of increases at two facilities; Oxy Vinyl LP and Colorite Specialty Resins.

Reductions in Use for specific chemicals are similarly attributed to only a few facilities. Five of the top 10 reductions are largely attributed to decreases at refineries.

Table 6. Top Ten Chemical Increases and Decreases in Use (pounds, unadjusted)

Substance (Cas#)	Use (2000)	Use (2004)	Use Difference
INCREASES			
PROPYLENE [PROPENE] (115-07-1)	1,266,609,178	1,754,964,543	488,355,365
CYCLOHEXANE (110-82-7)	619,101,499	935,897,667	316,796,168
XYLENE (MIXED ISOMERS) (1330-20-7)	4,958,167,076	5,075,615,641	117,448,565
ETHYLBENZENE (100-41-4)	1,307,780,190	1,402,748,298	94,968,108
VINYL CHLORIDE (75-01-4)	500,161,469	561,188,913	61,027,444
CUMENE (98-82-8)	560,149,129	608,053,331	47,904,202
MANGANESE COMPOUNDS (N450)	9,492,932	47,968,571	38,475,639
ETHYLENE (74-85-1)	342,451,990	375,449,590	32,997,600
LEAD COMPOUNDS (N420)	82,309,539	94,640,987	12,331,448
ETHYLENE OXIDE (75-21-8)	62,649,982	73,042,000	10,392,018
Sum:			1,220,696,557
DECREASES			
METHYL TERT-BUTYL ETHER (1634-04-4)	5,947,115,824	3,591,031,639	-2,356,084,185
N-HEXANE (110-54-3)	2,374,142,352	1,719,780,254	-654,362,098
ZINC (FUME OR DUST) (7440-66-6)	280,622,904	4,298,225	-276,324,679
COPPER (7440-50-8)	379,481,687	197,438,787	-182,042,900
NAPHTHALENE (91-20-3)	827,813,383	659,934,288	-167,879,095
BENZENE (71-43-2)	1,284,262,877	1,122,278,051	-161,984,826
LEAD (7439-92-1)	98,362,743	8,268,428	-90,094,315
METHANOL (67-56-1)	161,112,932	83,712,190	-77,400,742
POLYCYCLIC AROMATIC COMPOUNDS (N590)	130,340,974	85,939,195	-44,401,779
NITRIC ACID (7697-37-2)	102,982,003	61,528,823	-41,453,180
Sum:			-3,127,504,434

Table 7 identifies the top 10 chemicals with increases and decreases in NPO generation. Similar to the Use trends, increases in NPO are often caused by a few large facilities. Zinc compounds contribute 80% of all increases and can be attributed to one facility Raritan River Steel Co. The increases in manganese and lead compounds can also be attributed to Raritan River Steel Co.

Decreases in NPO for toluene are the result of reductions on the part of many facilities. Three facilities Permacel A Nitto Denko Company, Safety-Kleen Inc. and ISP Van Dyk Inc. account for roughly half of the 22 million pound decrease. The remaining half of the reduction is the result of many facilities reducing toluene NPO. Methanol NPO decreased by almost 17 million pounds. The two facilities that generated the largest amount of methanol NPO in 2004, Ferro Corp. and Chem-Fleur Inc. actually increased their NPO generation from 2000 by over 2 million pounds. Several large facilities such as Safety –Kleen and E I Dupont De Nemours & Co. Inc., Merck & Co. Inc., and Ciba Specialty Chemicals and many other facilities account for the 17 million pound decrease for methanol. The decrease in nitric acid NPO can be attributed to two facilities, Hercules Incorporated and Greentree Chemical Technologies.

Table 7. Top Ten Chemical Increases and Decreases in NPO (pounds, unadjusted)

Substance (Cas#)	NPO (2000)	NPO (2004)	NPO Difference
INCREASES			
ZINC COMPOUNDS (N982)	5,006,034	48,251,610	43,245,576
MANGANESE COMPOUNDS (N450)	1,181,832	6,424,192	5,242,360
LEAD COMPOUNDS (N420)	13,837,389	14,976,016	1,138,627
COPPER (7440-50-8)	17,929,575	19,039,336	1,109,761
LEAD (7439-92-1)	2,881,071	3,913,967	1,032,896
ETHYLENE (74-85-1)	2,908,261	3,540,827	632,566
1,3-PHENYLENEDIAMINE (108-45-2)	219,132	673,764	454,632
CHLORODIFLUOROMETHANE [HCFC-22] (75-45-6)	214,395	624,872	410,477
M-DINITROBENZENE (99-65-0)	466,967	828,169	361,202
TERT-BUTYL ALCOHOL (75-65-0)	1,145,401	1,467,377	321,976
Sum			53,950,073
DECREASES			
TOLUENE (108-88-3)	30,785,817	8,576,580	-22,209,237
METHANOL (67-56-1)	36,416,841	19,621,015	-16,795,826
NITRIC ACID (7697-37-2)	22,821,992	6,133,320	-16,688,672
NITRATE COMPOUNDS (WATER DISSOCIABLE) (N511)	27,029,598	16,684,545	-10,345,053
HYDROCHLORIC ACID (7647-01-0)	75,113,994	65,838,776	-9,275,218
AMMONIA (7664-41-7)	14,575,800	6,357,638	-8,218,162
ZINC (FUME OR DUST) (7440-66-6)	10,860,258	3,810,253	-7,050,005
N,N-DIMETHYLFORMAMIDE (68-12-2)	6,398,500	354,097	-6,044,403
XYLENE (MIXED ISOMERS) (1330-20-7)	10,495,341	5,691,821	-4,803,520
N-BUTYL ALCOHOL (71-36-3)	3,392,190	1,225,403	-2,166,787
Sum			-103,596,883

Table 8 identifies the top 10 chemicals with increases and decreases in On-site Releases. Chlorodifluoromethane (HCFC-22) increased the most; over 300,000 pounds. This substance is typically used in cooling systems as a refrigerant with only 8-10 facilities reporting in any given year. National Refrigerants Inc. is responsible for over 80% of the increase in this hazardous substance. Sulfuric acid has increased by more than 600,000 pounds. These increases are mainly due to the electric generating stations and refineries. The increase in On-site Releases of monochloropentafluoroethane (CFC-115) is due to E. I. Dupont De Nemours & Co. Inc.

Table 8. Top Ten Increases and Decreases in On-site Releases (Releases (pounds, unadjusted)

Substance (Cas#)	Releases (2000)	Release (2004)	Release Difference
INCREASES			
CHLORODIFLUOROMETHANE [HCFC-22] (75-45-6)	153,901	471,672	317,771
SULFURIC ACID (7664-93-9)	591,967	857,377	265,410
MONOCHLOROPENTAFLUOROETHANE [CFC-115] (76-15-3)	43,662	274,535	230,873
O-DINITROBENZENE (528-29-0)	105	103,434	103,329
HYDROCHLORIC ACID (7647-01-0)	6,161,529	6,239,701	78,172
HYDROGEN CYANIDE [HYDROCYANIC ACID] (74-90-8)	0	47,424	47,424
VINYL ACETATE (108-05-4)	46,009	88,595	42,586
P-DINITROBENZENE (100-25-4)	93	28,155	28,062
CHLOROMETHANE (74-87-3)	20,376	42,571	22,195
TERT-BUTYL ALCOHOL (75-65-0)	11,834	31,465	19,631
Sum			1,155,453
DECREASES			
TOLUENE (108-88-3)	1,678,070	448,787	-1,229,283
XYLENE (MIXED ISOMERS) (1330-20-7)	1,379,286	270,564	-1,108,722
METHANOL (67-56-1)	676,195	118,925	-557,270
NITRATE COMPOUNDS (WATER DISSOCIABLE) (N511)	5,027,049	4,654,991	-372,058
N-HEXANE (110-54-3)	497,696	126,539	-371,157
CYCLOHEXANE (110-82-7)	299,723	39,299	-260,424
AMMONIA (7664-41-7)	1,259,693	1,013,362	-246,331
BENZENE (71-43-2)	284,513	51,662	-232,851
N-BUTYL ALCOHOL (71-36-3)	286,009	77,117	-208,892
GLYCOL ETHERS (EXCEPT SURFACTANTS) (N230)	303,987	102,701	-201,286
Sum			-4,788,274

Toluene is the hazardous substance with the largest decrease in On-site Releases with over 1.2 million pounds. Approximately half of that decrease is due to one facility, Coastal Technology Inc., a fossil fuel generating station that ceased reporting after 2003. Several other large facilities made substantial reductions: DSM Nutritional Products, Inc., Permacel A Nitto Denko Company, and ConocoPhillips Company. Xylene demonstrated the second largest decrease with 1.1 million pounds reduced. This decrease was the result of reductions made by 6-8 facilities that have stopped reporting or substantially reduced their releases. While methanol releases were reduced by over a half a million pounds, the largest releaser Chart Corp actually increased their releases by almost 200,000 pounds. A few large facilities and several smaller facilities were responsible for reductions in methanol releases.

B. Facility Specific Changes

The previous section of this report looked at changes to specific chemicals showing how multiple facilities impact statewide trends. In this section, we take a different look at the data and evaluate trends for multiple chemicals at individual facilities. Facilities often switch substances from year to year, or increase one chemical but decrease another, and it is important to evaluate the combined impacts of these changes. The facility-specific analysis is useful to highlight facilities with the biggest changes, and to pinpoint geographically where increases and decreases are taking place.

The facility-specific analysis evaluates total core hazardous substances reported by each facility and is limited to the Recent Core Universe 2000 -2004, and core chemicals and SIC codes. If a facility reported a chemical in 2000 but not in 2004, this would count as a reduction in this analysis. New facilities that began reporting after 2000 are not included in this analysis. Due to changes in facility ownership and minor differences in facility identification information reported in different years, it is sometimes difficult to match facilities through time and be certain it is the same facility. An attempt was made to match as many facilities as possible in completing this analysis. As NJDEP data systems improve over time, the ability to accurately match the total universe of facilities will also improve.

Top 10 Facility-specific changes in Use, NPO, and On-site Releases

NJDEP conducted a more detailed analysis to evaluate increases and decreases at specific facilities. We conducted a two-step analysis similar to the chemical analysis. First, NJDEP ranked the data to identify facilities with the top 10 increases and top 10 decreases for Use, NPO generation, and On-site Releases. These rankings are presented in Tables 9, 10, and 11. Second, NJDEP identified the specific chemicals that changed over time at these facilities. Table 13 identifies facilities with the top 10 increases and decreases in Use. Due to domestic security issues, NJDEP will not discuss the quantity of specific chemicals used at these facilities. However, a few general issues to highlight these changes deserve discussion. As expected, petroleum refineries are the top contributors to changes in Use throughout the state. Refineries account for a large percentage of both increases and decreases in Use. Four refineries increased Use (Coastal Eagle Point, ConnocoPhillips, Valero, and Chevron), while one decreased Use (Amerada Hess).

Total increases and decreases in Use for the top facilities decreased by 2.4 billion pounds. If these top facilities are excluded from the core universe, the trend for the remaining facilities shows a 10% decrease in Use instead of an 8% increase. This means that the top facilities in the state completely drive the trends for chemical Use. Increases in Use at these large facilities are masking decreases in Use reported by other facilities.

Table 9. Top Ten Facilities that Increased or Decreased Use (pounds, unadjusted)

SMF #	Site Name	Use(2000)	Use(2004)	Use Difference
	INCREASES			
15834	SUNOCO INC R&M EAGLE POINT REFINERY	3,063,817,412	4,802,346,351	1,738,528,939
14642	GULF OIL CORP	573,392,788	1,065,058,735	491,665,947
15900	AMERADA HESS CORP PENNSAUKEN TERMINAL	240,473,596	538,415,475	297,941,879
14720	GULF OIL CO	464,319,237	742,656,527	278,337,289
14376	VALERO REFINING CO	2,572,202,608	2,739,762,677	167,560,068
14360	BP PRODUCTS NORTH AMERICA CARTERET TERMINAL	680,404,019	792,659,009	112,254,990
15892	EXXONMOBIL OIL CORP PAULSBORO TERMINAL	589,921,254	675,710,672	85,789,418
5492	RARITAN RIVER STEEL CO	9,914,469	94,953,198	85,038,730
39144	OXYVINYLS PEDRICKTOWN FACILITY	330,721,820	383,741,487	53,019,667
15751	AMERADA HESS CORP NEWARK TERMINAL	37,951,756	59,525,060	21,573,304
	Sum			3,331,710,231
	DECREASES			
14854	AMERADA HESS PORT READING CORP	3,701,266,261	2,224,267,343	-1,476,998,918
14859	SHELL OIL CO	2,615,150,721	1,292,657,514	-1,322,493,208
971	VALERO LINDEN TERMINAL	1,124,014,091	0	-1,124,014,091
962	BAYWAY REFINNING CO.	6,448,098,076	5,924,308,847	-523,789,229
14851	GERDAU AMERISTEEL SAYREVILLE INC	375,324,675	18,637,304	-356,687,371
6520	EXXONMOBIL OIL CORP TRENTON TERMINAL #29005	332,871,891	0	-332,871,891
14931	MOTIVA ENTERPRISES NEWARK TERMINAL #13055	721,385,495	490,454,149	-230,931,346
14833	SUNOCO INC PISCATAWAY MARKETING TERMINAL	218,508,866	5,328,430	-213,180,436
20264	POLYONE CORP	93,014,587	284,437	-92,730,150
15748	AMROD CORP	219,013,938	127,090,750	-91,923,188
	Sum			-5,765,619,828
15770	AMERADA HESS CORP 1ST RESERVE TERMINAL	282,786,334	201,412,559	-81,373,775
15706	SEMMATERIALS GLOUCESTER CITY	53,329,097	13,171	-53,315,927
	Sum:			-134,689,702

Table 10. Top Ten Facilities that Increased or Decreased NPO (pounds, unadjusted)

SMF #	Site Name	NPO (2000)	NPO (2004)	NPO Difference
	INCREASES			
5492	RARITAN RIVER STEEL CO	7,731,278	50,735,518	43,004,241
15748	AMROD CORP	13,938	8,644,902	8,630,964
642	ACUPOWDER INTERNATIONAL INC	300,946	6,060,638	5,759,692
14687	AMSTED INDUSTRIES GRIFFIN PIPE PRODUCTS	77,353	2,730,838	2,653,485
15670	FERRO CORP	8,594,530	10,780,014	2,185,484
7369	ALPHA METALS INC	273,600	2,126,901	1,853,301
15645	EI DUPONT DENEMOURS & CO	51,717,703	52,797,890	1,080,187
7142	KEARNY SMELTING & REFINING CORP	586,151	1,649,841	1,063,690
14535	SIEGFRIED USA INC	552,836	1,578,009	1,025,173
14353	AIR PRODUCTS POLYMERS @ HELLER IND PK	1,355,215	2,183,269	828,054
	Sum			68,084,271
	DECREASES			
15896	BRIDGEPORT DISPOSAL	26,948,781	0	-26,948,781
15689	HERCULES INC	34,641,532	8,905,574	-25,735,958
14545	SOLVAY SOLEXIS INC	12,730,101	1,481,017	-11,249,084
38703	HUSSEY COPPER	10,004,284	0	-10,004,284
14721	MERCK & CO INC	12,616,389	3,007,313	-9,609,076
5593	PERMACEL CORP	10,620,918	3,527,825	-7,093,093
962	BAYWAY REFINNING CO.	23,985,819	16,989,235	-6,996,584
14243	HOFFMANN LA ROCHE INC	5,882,752	0	-5,882,752
3838	PRECISION ROLLED PRODUCTS INC	4,790,061	1,517,034	-3,273,027
14908	ISP VAN DYK INC	2,933,186	0	-2,933,186
	Sum			-109,725,825
8593	CWC INDUSTRIES	2,515,932	100,747	-2,415,185
15957	OLD BRIDGE CHEMICALS INC	2,274,625	649,540	-1,625,085
14856	FORD MOTOR CO EDISON ASSEMBLY PLANT	1,596,044	113,927	-1,482,117
15834	SUNOCO INC R&M EAGLE POINT REFINERY	5,037,027	3,874,015	-1,163,012
	Sum			-6,685,399

As previously discussed in Table 10, the substantial increase of NPO at Raritan River Steel Co can be attributed to three hazardous substances; zinc, manganese and lead. Amrod's NPO (on-site recycling) increase can be attributed to one hazardous substance; copper. Acupowder International's NPO increase can also be attributed to copper. Amsted Industries Griffin Pipe Product's NPO can be attributed to increases in zinc, manganese, and lead.

Bridgeport Disposal topped the list with the largest decrease in NPO because it stopped reporting after 2001 and essentially shut down its disposal business. Because there are four facilities (Bridgeport Disposal, Hussey Copper, Hoffmann LaRoche Inc., and ISP Van Dyk Inc) that are no longer reporting in 2004, the next four largest decreasers NJDEPre added to the list. Hercule's NPO reductions are due to reductions in nitric acid and nitrate compounds. Solvay Solexis Inc's NPO reductions NJDEPre the result of reducing hydrochloric acid. Merck's reductions were mainly due to methanol, toluene and N, N,-dimethylformamide.

PSE&G is the number one facility that increased their On-site Releases. This increase was mainly a result of an increase in On-site Releases of hydrochloric acid. Valero's increase in On-site Releases were the result of four different hazardous substances: ammonia, nitrates, sulfuric acid and hydrogen cyanide. National Refrigerants' increase in On-site Releases is mainly due to Chlorodifluoromethane, (HCFC-22). There were two facilities that did not report in 2000. Cogen Technologies first started reporting in 2001 for ammonia and therefore realized a large net increase in ammonia. Papetti Hygrade Egg Products started reporting in 2003 for chlorodifluoromethane and therefore realized an increase of 22,000. For those two facilities that did not report in 2000 and therefore had a large net increase, Table 13 lists the next two facilities with the largest releases to round out the top ten facilities that increased their releases.

Sunoco demonstrates the largest decrease of over 2 billion pounds but that reduction is the result of a reporting artifact because in 2000 Sunoco had two facilities reporting under the same Site Master File and in 2004 one of the facilities no longer reported. Bayway Refinning Co. reduced their releases by more than 1.1 million pounds. This is a result of reducing many compounds over the timeframe. DSM Nutritional Products realized a reduction of releases of over 600,000 pounds because they reduced their releases of toluene and methanol. Ford Motor Co. realized almost a half a million pound decrease in releases due to a substantial decrease in production.

Table 11. Top Ten Facilities that Increased or Decreased On-site Releases (in pounds unadjusted)

SMF #	Site Name	Releases (2000)	Releases (2004)	Release Difference
	INCREASES			
15746	PSE&G HUDSON GENERATING STATION	3,303,314	3,611,866	308,553
14376	VALERO REFINING CO	149,223	431,277	282,054
9477	NATIONAL REFRIGERANTS INC DEERFIELD FACILITY	118,408	395,209	276,801
32509	COGEN TECHNOLOGIES INC LINDEN VENTURE	0	232,380	232,380
14854	AMERADA HESS PORT READING CORP	75,979	168,353	92,373
14595	VINELAND CITY ELECTRIC UTIL HM DOWN GENERATING STATION	92,924	145,769	52,845
15913	COLORITE SPECIALTY RESINS	128,680	175,483	46,803
15779	FERRO CORP	97,573	130,160	32,587
14332	TYCO INDUSTRIES KENDALL BETHAM CORP	48,731	78,083	29,352
14361	MAUSER CORP	52,351	78,999	26,648
190537	PAPETTI HYGRADE EGG PRODUCTS	0	22,000	22,000
14557	MALLINCKRODT BAKER INC	283,877	303,603	19,726
	Sum			1,422,122
	DECREASES			
15834	SUNOCO INC R&M EAGLE POINT REFINERY	2,476,898	445,680	-2,031,218
962	BAYWAY REFINNING CO.	3,086,591	1,973,402	-1,113,189
15798	DSM NUTRITIONAL PRODUCTS INC	655,937	44,551	-611,386
14856	FORD MOTOR CO EDISON ASSEMBLY PLANT	527,489	29,212	-498,277
14351	REXAM BEVERAGE CAN CO	187,454	0	-187,454
14723	GENERAL MOTORS CORP ASSEMBLY GROUP	211,901	45,211	-166,690
15784	JOHNS MANVILLE CORP	166,599	2	-166,597
14685	SYBRON CHEMICALS INC	170,934	18,027	-152,907
15887	PSE&G MERCER GENERATING STATION	2,342,917	2,198,355	-144,562
5593	PERMACEL CORP	221,293	128,106	-93,187
18504	NYP CORP	84,651	8	-84,643
	Sum			-5,250,110

Facility Changes Indexed to Production

In the previous section NJDEP evaluated facility-specific changes using data that was not adjusted for production. Therefore, many of the changes identified could be due to changes in production at the facilities. Since one of our goals is to highlight pollution prevention accomplishments, it is useful to estimate impacts from changes in production. When a facility reduces Use or NPO relative to production it is likely that pollution prevention activities contributed to those reductions.

To determine impacts from production, NJDEP used the Production/Activity Index reported on TRI to calculate a weighted average production index for the site.[7] As discussed previously, a production index is a ratio of the quantity of products produced the current year compared to the previous year. An index greater than one indicates production levels increased. An index less than one indicates production levels decreased. This analysis is limited to a smaller universe of facility/chemical reports compared to the prior facility analysis. This smaller universe includes only facility-chemical combinations that have consistent non-zero reporting of production indices each year from 2000 to 2004 and includes a total of 246 facilities. The NJDEP is working to improve our ability to match facility records from year to year, which will increase the size of this universe and expand our ability to measure pollution prevention accomplishments.

After calculating site production indices (Site PI) for each site, NJDEP took a closer look at facilities previously identified as having the top 10 increases or decreases to determine if these changes were due to changes in production. NJDEP were specifically interested in determining if the decreases were the result of pollution prevention measures.

Table 12 below lists the production-adjusted data for Use for facilities previously identified in the top 10 increases or decreases (Table 10).Of the top 20 facilities, 16 of them could be matched. Thirteen of the 16 facilities are petroleum related. Amerada Hess Port Reading demonstrates a negative number for Use percent, which indicates that they increased Use relative to production. The remaining facilities listed under decreases reduced their Use relative to production. These reductions are likely the result of pollution prevention activities.

Table 12. Facility Increases and Decreases in Use (adjusted for production)

SMF #	Site Name	SitePI	USE 2000 (pounds)	USE 2004 (pounds)	USE CHANGE (pounds)	ADJUSTED USE (pounds)	ADJUSTED USE CHANGE (pounds)	USE PERCENT
	INCREASES							
15834	SUNOCO INC R&M EAGLE POINT REFINERY	0.92	2,666,435,318	4,360,304,002	1,693,868,684	2,462,783,654	1,897,520,348	77.00%
14642	GULF OIL CORP	1.16	573,368,963	969,021,465	395,652,502	662,775,487	306,245,979	46.00%
15900	AMERADA HESS CORP PENNSAUKEN TERMINAL	1.28	240,473,596	526,670,554	286,196,958	308,551,418	218,119,135	71.00%
14720	GULF OIL CO	1.89	448,834,803	620,779,010	171,944,206	846,849,299	226,070,289	26.70%
14376	VALERO REFINING CO	1.09	1,852,314,704	1,981,840,979	129,526,275	2,023,407,523	41,566,544	2.05%
14360	BP PRODUCTS NORTH AMERICA CARTERET TERMINAL	1.09	680,404,019	718,187,185	37,783,166	741,170,144	22,982,959	3.10%
5492	RARITAN RIVER STEEL CO	1.05	2	19	18	2	17	1104.49%
39144	OXYVINYLS PEDRICKTOWN FACILITY	1.17	330,721,820	383,741,487	53,019,667	387,096,926	3,355,439	0.87%
15751	AMERADA HESS CORP NEWARK TERMINAL	1.07	26,672,176	40,352,426	13,680,250	28,577,576	11,774,850	41.20%
	DECREASES							
14854	AMERADA HESS PORT READING CORP	0.98	1,956,534,627	2,224,209,002	267,674,375	1,912,773,365	311,435,637	16.28%
14859	SHELL OIL CO	0.80	2,615,150,721	1,271,154,179	-1,343,996,543	2,082,637,413	811,483,234	38.96%
962	BAYWAY REFINING CORP. CO	0.95	6,447,288,625	5,924,161,914	-523,126,711	6,143,315,491	219,153,577	3.57%
14931	MOTIVA ENTERPRISES NEWARK TERMINAL #13055	1.04	721,385,495	481,534,048	-239,851,447	748,650,404	267,116,356	35.68%
14833	SUNOCO INC PISCATAWAY MARKETING TERMINAL	0.07	216,624,708	5,301,213	-211,323,495	15,893,797	10,592,584	66.65%
15748	AMROD CORP	0.79	219,013,938	127,090,750	-91,923,188	172,998,715	45,907,965	26.54%
15770	AMERADA HESS CORP 1ST RESERVE TERMINAL	1.00	282,786,334	189,560,809	-93,225,525	283,834,589	94,273,780	33.21%

[7] Refer to the Release and Pollution Prevention Report Instructions on the methods used for calculating weighted average production indices. Also, please see additional details in Appendix D on the calculations used to adjust for production.

The large Use increases at facilities such as Gulf Oil Co., Valero Refining and BP Products are actually Use reductions when adjusted for production. This means these facilities likely achieved pollution prevention, but increases in production outpaced these improvements to drive Use up for the site using unadjusted data.

Table 13. Facility Increases and Decreases in NPO (adjusted for production)

SMF #	Site Name	SitePI	NPO 2000 (pounds)	NPO 2004 (pounds)	NPO CHANGE (pounds)	ADJUSTED NPO (pounds)	ADJUSTED NPO CHANGE	NPO CHANGE PERCENT
	INCREASES							
5492	RARITAN RIVER STEEL CO	1.05	2	19	18	2	17	1104.49%
15748	AMROD CORP	0.79	13,938	8,644,902	8,630,964	11,010	8,633,892	78421.48%
642	ACUPOWDER INTERNATIONAL INC	2.01	222	125	-97	447	322	72.03%
15670	FERRO CORP	1.23	7,818,697	10,763,414	2,944,717	9,600,937	1,162,477	12.11%
15645	EI DUPONT DENEMOURS & CO	1.15	50,679,738	52,037,508	1,357,770	58,401,972	6,364,464	10.90%
14535	SIEGFRIED USA INC	6.92	552,836	1,263,424	710,588	3,827,066	2,563,642	66.99%
14353	AIR PRODUCTS POLYMERS @ HELLER IND PK	0.90	1,353,482	2,182,743	829,261	1,216,271	966,472	79.46%
	DECREASES							
15689	HERCULES INC	1.28	21,439,434	5,770,400	-15,669,034	27,382,334	21,611,934	78.93%
14545	SOLVAY SOLEXIS INC	1.17	1,454,334	915,429	-538,905	1,701,629	786,200	46.20%
14721	MERCK & CO INC	0.65	6,494,335	2,940,105	-3,554,230	4,221,524	1,281,419	30.35%
5593	PERMACEL CORP	0.50	10,170,300	3,380,490	-6,789,810	5,041,279	1,660,789	32.94%
962	BAYWAY REFINING CORP CO.	0.95	23,916,368	16,875,602	-7,040,766	22,788,773	5,913,171	25.95%
3838	PRECISION ROLLED PRODUCTS INC	0.65	4,790,061	1,517,034	-3,273,027	3,124,499	1,607,465	51.45%
8593	CWC INDUSTRIES	0.63	100	947	847	63	-884	1410.04%
15957	OLD BRIDGE CHEMICALS INC	1.58	2,274,625	649,540	-1,625,085	3,588,300	2,938,760	81.90%
14856	FORD MOTOR CO EDISON ASSEMBLY PLANT	0.06	1,451,219	113,927	-1,337,292	87,845	26,082	29.69%
15834	SUNOCO INC R&M EAGLE POINT REFINERY	0.92	2,570,737	3,601,644	1,030,907	2,374,394	I20	51.69%

Table 13 above presents production-adjusted data for the top NPO changes previously identified. Seventeen of the 20 previously identified facilities could be matched. Data for the largest decreasers shows that these facilities all reduced NPO adjusted for production and these reductions are likely the result of pollution prevention measures.

Table 14. Facility Increases and Decreases in On-site Releases (adjusted for production)

SMF #	Site Name	SitePI	Releases 2000 (pounds)	Releases 2004 (pounds)	Release Change (pounds)	Adjusted to Base Year Release Change	Adjusted Release Change (pounds)	Release Change Percent
	INCREASES							
15746	PSE&G HUDSON GENERATING STATION	0.98	3,301,381	3,610,071	308,691	3,235,201	374,870	11.59%
14376	VALERO REFINING CO	1.09	126,859	307,583	180,724	138,577	169,007	121.96%
9477	NATIONAL REFRIGERANTS INC DEERFIELD FACILITY	1.20	116,333	394,957	278,624	140,076	254,881	181.96%
14854	AMERADA HESS PORT READING CORP	0.98	54,401	111,971	57,569	53,184	58,786	110.53%
14595	VINELAND CITY ELECTRIC UTIL HM DOWN GENERATING STATION	1.60	92,924	145,764	52,840	149,117	3,353	2.25%
15913	COLORITE SPECIALTY RESINS	1.26	128,680	175,483	46,803	162,651	12,832	7.89%
15779	FERRO CORP	1.01	97,573	130,160	32,587	98,143	32,017	32.62%
14332	TYCO INDUSTRIES KENDALL BETHAM CORP	0.87	48,731	78,083	29,352	42,633	35,450	83.15%
14361	MAUSER CORP	1.11	52,351	78,780	26,429	58,201	20,579	35.36%
14557	MALLINCKRODT BAKER INC	1.06	283,409	303,603	20,194	299,578	4,025	1.34%
	DECREASES							
15834	SUNOCO INC R&M EAGLE POINT REFINERY	0.92	215,062	224,603	9,541	198,636	25,967	13.07%
962	COGEN TECHNOLOGIES LINDEN VENTURE	0.95	3,044,908	1,954,345	1,090,563	2,901,348	947,004	32.64%
15798	DSM NUTRITIONAL PRODUCTS INC	1.36	265,108	22,054	243,054	361,338	339,284	93.90%
14856	FORD MOTOR CO EDISON ASSEMBLY PLANT	0.06	492,910	29,212	463,698	29,837	625	2.09%
14723	GENERAL MOTORS CORP ASSEMBLY GROUP	0.15	196,876	41,661	155,215	28,734	12,927	44.99%
15784	JOHNS MANVILLE CORP	0.95	2	2	0	2	0	4.95%
14685	SYBRON CHEMICALS INC	0.96	168,142	17,858	150,284	160,594	142,736	88.88%
15887	PSE&G MERCER GENERATING STATION	0.79	2,339,706	2,196,740	142,966	1,858,194	338,546	18.22%
5593	PERMACEL CORP	0.50	211,870	126,193	-85,677	105,021	21,172	20.16%

Table 14 above presents production-adjusted data for 19 of the 20 facilities that reported the top release changes. Cogen Technologies demonstrates the largest amount of hazardous substances avoided or

expected to be released normalized for production. Other facilities such as DSM Nutritional Products, and Sybron Chemicals demonstrated substantial reductions when adjusted for production.

V. Analysis of Important Chemicals of Concern

Three groups of hazardous substances are of particular concern in New Jersey and trends for these chemicals are tracked separately to inform the public and to help ensure appropriate regulations and policies are in place to reduce potential impacts from these chemicals. The first group of chemicals is known or suspected carcinogens. These chemicals are either proven to cause cancer in humans or animals, or suspected to cause cancer. The second group of chemicals is Persistent, Bioaccumulative, and Toxic substances (PBTs). This group of hazardous substances is of particular concern because they are toxic, remain in the environment for long periods of time, and accumulate in body tissue. The third group of chemicals is Extraordinarily Hazardous Substances (EHS) regulated by the Toxic Catastrophe Prevention Act (TCPA). These chemicals could cause serious and catastrophic public health impacts if accidentally released. The following sections discuss statewide trends for these important chemicals of concern.

A. Carcinogens

Cancer is the second leading cause of death in New Jersey.[8] A total of 45,248 cases of invasive cancer were diagnosed in 2003 among New Jersey residents. In New Jersey, between 1999 and 2003, overall age-adjusted total cancer incidence rates increased for men and women through 2001 and then declined, while national cancer incidence rates for both men and women remained stable through 2002. Comparing New Jersey and U.S. age-adjusted incidence rates using data published in *Cancer in North America* by the North American Association of Central Cancer Registries (NAACCR) for 1998-2002, New Jersey incidence rates for all cancers combined continued to be higher than U.S. rates.[9]

While it is difficult to make conclusive cause-effect associations between environmental releases and individual cases of cancer, many of the chemicals regulated by NJDEP and reported on the RPPR have known or suspected links to this disease. The NJDEP has compiled a list of 256 chemicals that have potential links to causing cancer. These chemicals have been identified through a review of toxicology research conducted by various federal and state agencies. Appendix C lists these 256 chemicals along with references and citations for scientific research on those chemicals. The NJDEP assesses cancer risks from releases of these chemicals into the environment in its regulatory decisions, such as developing air permit limits.

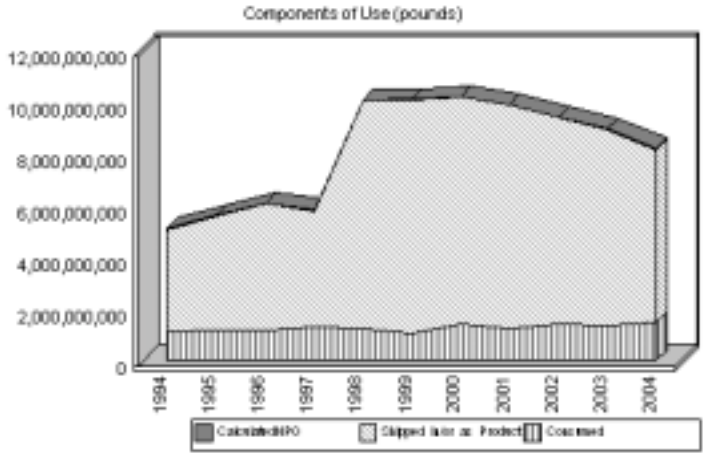
Use for Carcinogens All Facilities

Figure 23 presents the Use of carcinogens for All Facilities reporting RPPRs to NJDEP. Use essentially doubled in 1998, the first year that bulk storage terminals began reporting. There has been a slow and steady decrease (about 20% or 2 billions pounds) in the Use of carcinogens since peaking in 2000. Again, Shipped as (or in) Product represents approximately 75% of total Use. Consumed accounts for slightly less than 25% with the small remainder as NPO for any given year.

[8] New Jersey Cancer Facts and Figures 2002, New Jersey Department of Health and Senior Services and the American Cancer Society , 2002

[9] Cancer Incidence and Mortality in New Jersey 1999-2003, Cancer Epidemiology Services, New Jersey Department of Health and Senior Services, December 2005

Figure 23 Total Use for All Facilities Universe Carcinogens

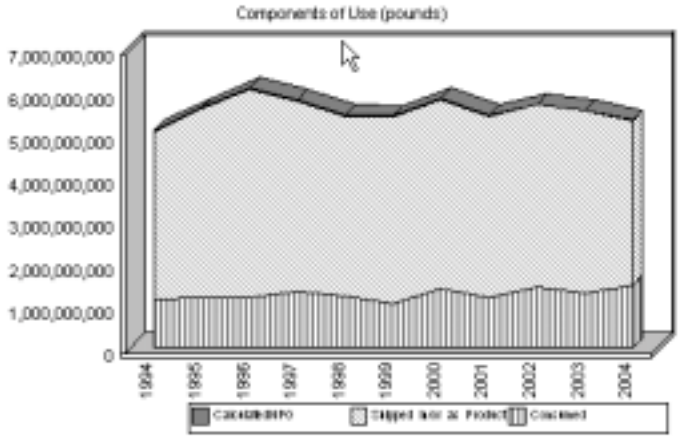


Year	Consumed	In Product	IIPO	Calculated Use
1994	1,142,770,045	3,961,939,646	33,609,657	5,128,319,348
1995	1,193,863,318	4,419,650,033	29,889,656	5,643,403,007
1996	1,197,021,078	4,881,595,699	32,589,704	6,111,206,481
1997	1,317,464,266	4,502,455,942	34,042,623	5,853,962,831
1998	1,228,176,064	8,862,510,024	39,277,369	10,129,963,457
1999	1,055,040,802	9,047,117,868	36,393,972	10,138,552,241
2000	1,416,884,442	8,784,333,161	42,105,177	10,243,322,780
2001	1,215,602,555	8,677,006,633	35,659,077	9,928,268,265
2002	1,450,583,174	7,955,543,804	28,123,857	9,434,250,835
2003	1,342,102,346	7,621,919,055	27,424,707	8,991,446,107
2004	1,516,385,632	6,670,799,256	29,880,346	8,217,065,234

Use of Carcinogens for Historic Core Universe 1994-2004

Figure 24 presents trends in the Use of carcinogens from 1994 through 2004 for the Historic Core Group 1994 - 2004. There was a gradual increase in the use of carcinogens until 1996 where their use declined for three years. Carcinogen Use peaked in 2000, fluctuated, and then realized a small decrease for the last two years. The majority of carcinogens Used are shipped in product, followed by consumed and finally NPO which is less than 1% of total Use.

Figure 24 Total Use for Historic Core 1994-2004 Carcinogens

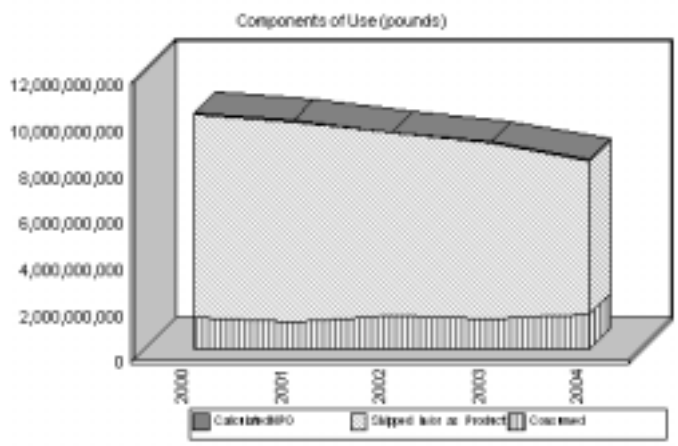


Year	Consumed	In Product	IIPO	Calculated Use
1994	1,142,756,891	3,950,520,272	33,590,128	5,126,867,291
1995	1,192,216,079	4,412,308,124	29,776,499	5,634,300,702
1996	1,196,969,078	4,869,083,264	32,588,264	6,098,640,606
1997	1,315,625,677	4,488,759,573	34,038,780	5,838,424,030
1998	1,226,649,381	4,205,535,364	28,648,647	5,460,833,392
1999	1,053,210,073	4,380,658,526	23,826,875	5,457,695,574
2000	1,389,415,318	4,435,031,044	34,035,750	5,858,482,112
2001	1,179,399,468	4,263,184,212	30,939,078	5,473,522,758
2002	1,417,143,190	4,290,164,742	27,128,094	5,734,436,026
2003	1,300,368,093	4,258,803,964	26,672,975	5,585,845,032
2004	1,468,095,103	3,853,503,995	29,155,915	5,350,755,013

Use of Carcinogens for Recent Core Universe 2000-2004

Figure 25 portrays the Use of carcinogens for the Recent Core Universe 2000 - 2004. As demonstrated by the graph, Use for this universe has decreased by 20% or slightly more than 2 billion pounds. In any given year, Shipped as (or in) Product accounts for over 80% of total Use with NPO accounting for less than 1%.

Figure 25 Use for Carcinogens for Recent Core Universe

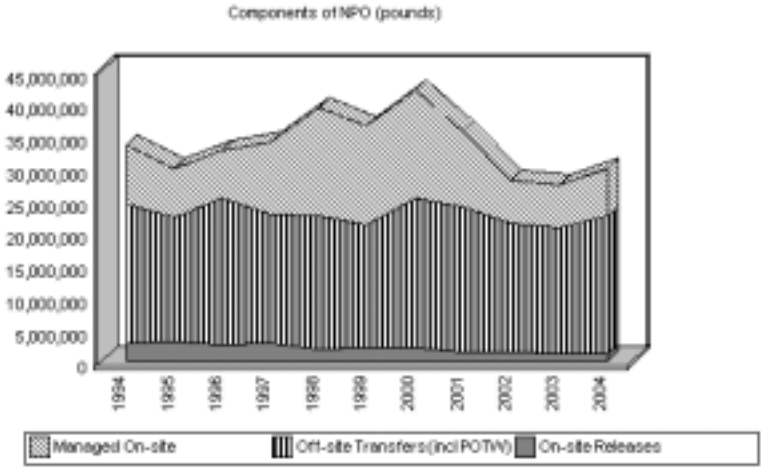


Year	Consumed	In Product	NPO	Calculated Use
2000	1,416,884,442	8,784,333,161	41,921,177	10,243,138,780
2001	1,211,602,205	8,677,006,633	35,659,027	9,926,267,865
2002	1,450,583,169	7,955,543,604	28,123,847	9,434,250,620
2003	1,341,942,171	7,621,919,055	27,424,176	8,991,285,401
2004	1,516,204,515	6,670,796,961	29,880,158	8,216,881,634

NPO for Carcinogens for All Facilities

Figure 26 presents the trends for NPO and its components for All Facilities. Overall there was an 11% reduction or 3.7 million pounds of carcinogens as NPO; however, there were significant increases in NPO from 1997 through 2000. On-Site Releases decreased by 64% or 1.8 million pounds. There were no significant reductions in Off-Site Transfers. Managed On-Site was reduced by 20% or 1.8 million pounds. There were significant increases in Managed On-Site from 1997 through 2001.

Figure 26 NPO Carcinogens for All Facilities

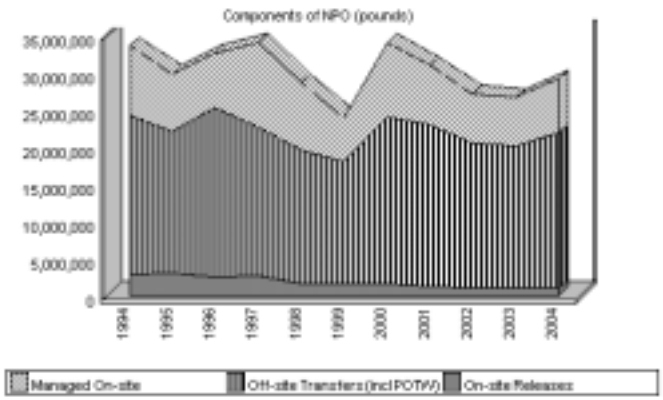


Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
1994	33,609,657	2,857,583	21,426,626	9,325,448
1995	29,889,656	2,913,482	19,310,990	7,665,184
1996	32,589,704	2,488,366	22,850,158	7,251,180
1997	34,042,623	2,679,221	19,966,026	11,396,576
1998	39,277,369	1,855,222	20,560,455	16,861,692
1999	36,393,972	1,944,843	19,057,593	15,391,537
2000	42,105,177	2,126,208	23,213,855	16,765,114
2001	35,659,077	1,436,137	22,327,679	11,895,260
2002	28,123,857	1,288,745	20,079,234	6,755,879
2003	27,424,707	1,127,903	19,617,060	6,679,744
2004	29,880,346	1,041,460	21,342,414	7,496,472

NPO for Carcinogens for Historic Core Universe 1994-2004

Figure 27 presents the trends for NPO data and components of NPO for carcinogens for the Historic Core Universe 1994 - 2004. Overall there was a 13% reduction in NPO. There was a substantial decrease between 1997 and 1999 followed by a sharp increase in 2000. A gradual reduction was realized through 2003 with an increase in 2004.The sharp reductions and increases are largely due to two components of NPO; Off-Site Transfers and Managed On-Site. These shifts are largely due to a few facilities reporting changes from one year to the next. On-site Releases were reduced by 68% or almost 2 million pounds. Off-Site Transfers were reduced by only 4% while Managed On-Site was reduced by 21% or almost 2 million pounds.

Figure 27 NPO for Carcinogens for Historic Core Universe 1994-2004

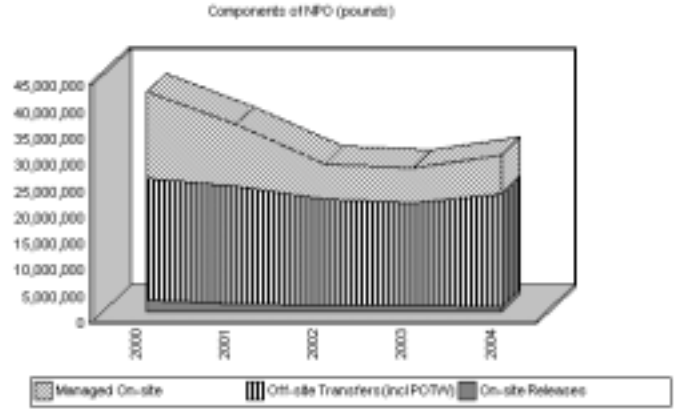


Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
1994	33,590,128	2,857,004	21,408,118	9,325,006
1995	29,776,499	2,912,621	19,198,696	7,665,182
1996	32,588,264	2,488,187	22,849,202	7,250,875
1997	34,038,780	2,679,085	19,963,123	11,396,572
1998	28,648,647	1,504,219	18,056,031	9,088,397
1999	23,826,975	1,568,587	16,371,906	5,886,482
2000	34,035,750	1,498,891	22,597,804	9,939,055
2001	30,939,078	1,208,899	21,754,600	7,975,579
2002	27,128,094	973,965	19,474,312	6,679,817
2003	26,672,975	926,267	19,195,778	6,550,930
2004	29,155,915	905,056	20,900,920	7,349,939

NPO for Carcinogens for Recent Core Universe 2000-2004

Figure 28 presents the trends for NPO data for the Recent Core Universe 2000 - 2004. Overall there was a 29% reduction in NPO. There was a gradual decrease from 2000 through 2003 followed by an increase in 2004. Managed On-Site realized the largest decrease of 55% or 9 million pounds. On-Site Releases were reduced by51% or just over 1 million pounds, and Off-Site Transfers were reduced by 8% or 1.8 million pounds.

Figure 28 NPO for Recent Core Universe 2000-2004 Carcinogens



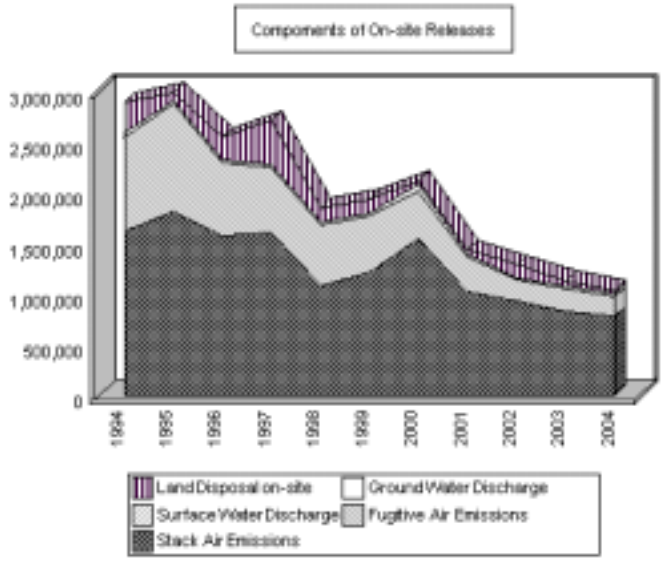
Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	41,921,177	2,124,368	23,213,855	16,582,954
2001	35,659,027	1,436,087	22,327,679	11,895,260
2002	28,123,847	1,288,736	20,079,234	6,755,879
2003	27,424,176	1,127,372	19,617,060	6,679,744
2004	29,880,158	1,041,272	21,342,414	7,496,472

Releases of Carcinogens All Facilities

Releases of carcinogens for the All Universe 1994-2004 is very similar to the releases of the Historic Core Universe 2000 - 2004. Changes in the two data sets begin in 1998 when the All Facilities is consistently higher than the Historic Core Universe 2000 - 2004. This is because the public utility sector started reporting in 1998 and they release carcinogens. Releases of carcinogens for the All Facilities is identical to the Recent Core Universe 2000 - 2004 in all components of On-site Releases. Because these data are similar or exactly the same as other data presented in this report, it was not necessary to report these data again.

Figure 29 represents the trends for the components for On-Site Releases. As previously discussed, On-site Releases were reduced by 68% or almost 2 million pounds for this universe. An analysis of the components reveals that stack air emissions were reduced by 57% or 920 thousand pounds. Fugitive emissions were reduced by 81% or 730 thousand pounds. Surface water discharges decreased by 30% or 16 thousand pounds. Land Disposal on-site decreased by 90% or 264 thousand pounds.

Figure 29 On-site Releases All Facilities 1994-2004 Carcinogens



Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal on-site
1994	1,618,769	932,287	52,968	3	294,824
1995	1,825,526	1,059,474	31,047	3	77,400
1996	1,573,053	727,399	31,725	18	218,251
1997	1,614,418	645,099	23,604	2	429,738
1998	1,079,927	602,547	25,686	2	147,080
1999	1,211,361	559,437	38,451	2	135,592
2000	1,547,986	471,039	65,831	5	41,347
2001	1,012,977	356,839	28,288	1	38,032
2002	934,004	207,545	16,664	0	130,531
2003	820,024	232,808	23,295	0	51,777
2004	773,423	196,450	41,016	0	30,570

Comparison of Top 10 On-site Releases (All Carcinogens)

Table 15 compares the top ten releases of all carcinogens for years 1994 compared to 2004. As discussed, there is a significant overall reduction in releases of all carcinogens. The list of hazardous substances is very similar between the two reporting years, with the exception of one substance on the 1994 list (1,2-dichloropropane) not on the 2004 list and one substance Vinyl Chloride on the 2004 list that is not on the 1994 list. Seven of the substances' releases were reduced. Only two carcinogens realized an increase in On-Site releases, styrene has seen an increase (65%) due to a change in emission factors because use actually decreased and MTBE, an additive to gasoline, increased 7% from 1994 through 2004.

Table 15. Comparison of Top 10 On-site Releases (All Carcinogens)

Reporting Year 1994

CAS Number	Chemical Name	On-site Releases
75-09-2	DICHLOROMETHANE	806,695
79-01-6	TRICHLOROETHYLENE	384,607
1634-04-4	METHYL TERT-BUTYL ETHER	232,639
N495	NICKEL COMPOUNDS	228,540
78-87-5	1,2-DICHLOROPROPANE	155,011
100-42-5	STYRENE	146,183
100-41-4	ETHYLBENZENE	131,870
71-43-2	BENZENE	110,994
108-05-4	VINYL ACETATE	103,055
74-87-3	CHLOROMETHANE	75,913
	Sum:	2,375,507

Reporting Year 2004

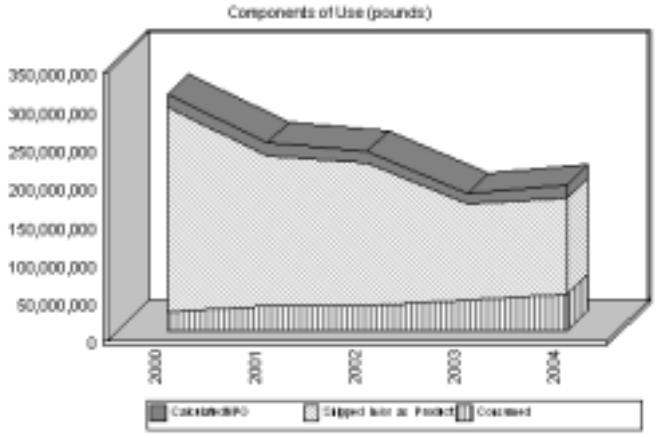
CAS Number	Chemical Name	On-site Releases
1634-04-4	METHYL TERT-BUTYL ETHER	248,262
100-42-5	STYRENE	241,140
75-09-2	DICHLOROMETHANE	89,422
108-05-4	VINYL ACETATE	88,595
71-43-2	BENZENE	51,662
74-87-3	CHLOROMETHANE	42,571
79-01-6	TRICHLOROETHYLENE	40,909
100-41-4	ETHYLBENZENE	40,597
75-01-4	VINYL CHLORIDE	38,440
N495	NICKEL COMPOUNDS	23,220
	Sum:	904,818

B. PBTs

Chemicals and compounds that are persistent, bioaccumulative and toxic are of particular concern not only because they are toxic, but also because they remain in the environment for long periods of time, and build up or accumulate in body tissue. On October 29, 1999, USEPA published a final rule under the Toxic Chemical Release Inventory (TRI), Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, which lowered the thresholds for certain PBT chemicals and added certain other PBTs to the EPCRA Section 313 list of toxic chemicals. This list contains 18 chemicals and chemical categories. New reporting requirements for these chemicals began in reporting year 2000 (see Appendix D). The following year, the reporting thresholds for lead and lead compounds were also reduced, making 2001 the first year companies reported using these new thresholds. Due to these changes in reporting requirements and the short time period that most of the chemicals have been reported, it is difficult to track a "core" universe of facilities for PBTs. The data presented below includes all reports submitted by facilities for chemicals classified as PBTs.

Figure 30 demonstrates an 117million pound reduction in Use for PBTs. This reduction is largely due to the combination of petroleum refineries (43 million pounds) and reporting on polycyclic aromatic compounds (PACs) and variations in production at facilities using lead and lead compounds. The use reductions are driven by the reductions in Shipped as (or in) Product. NPO remained relatively stable, while Consumed increased 90% or almost 23 million pounds.

Figure 30 Components of Use for All PBTs

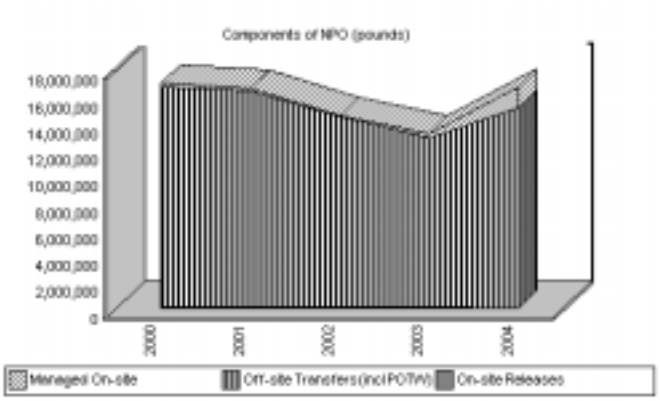


Year	Consumed	In Product	NPO	Calculated Use
2000	25,172,941	265,743,978	17,077,340	307,994,258.96
2001	33,429,194	195,415,921	16,629,999	245,475,114.59
2002	33,203,137	186,205,682	14,558,395	233,967,212.94
2003	41,441,727	125,177,530	13,173,852	179,793,108.73
2004	47,907,672	125,783,464	16,786,078	190,477,214.03

NPO for PBTs

Figure 31 presents the trends for the components of NPO for PBTs for the Recent Core Universe 2000-2004. Overall, NPO has decreased by 2% or 291 thousand pounds. There was a steady decline in NPO from 2000-2003 with a significant increase (3.5 million pounds) in 2004. On-site Releases were reduced by 20% or slightly over 3 thousand pounds. Off-site Transfers decreased by 9% or 1.5 million pounds, however there was a significant increase from 2003-2004 of over 2 million pounds. Managed On-site decreased for the first three years and then realized an increase of over 100% in 2003 and over 300% in 2004. Increases in 2004 for Off-site Transfers and Managed On-site can be attributed to one or two facilities (Delphi Corporation and Gerdau Amersteel Perth Amboy) reporting lead and lead compounds.

Figure 31 Components of NPO for the Recent Core Universe 2000-2004

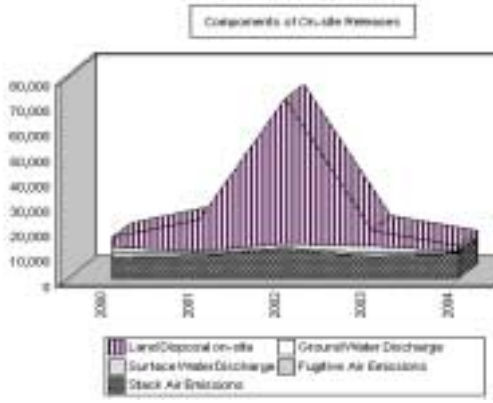


Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	17,077,340	16,123	16,713,217	348,000
2001	16,629,999	23,170	16,384,677	222,152
2002	14,558,395	71,486	14,386,886	100,023
2003	13,173,852	19,021	12,892,890	261,941
2004	16,786,078	12,830	15,154,779	1,618,468

Releases of PBTs

Figure 32 presents the trends for releases of PBTs for the Recent Core Universe 2000 - 2004. Stack air emissions increased by 18% or 1,500 pounds. Fugitive emissions were reduced by 56% or 900 hundred pounds. Surface water discharges were significantly reduced by 89% or almost 2,500 pounds. Land Disposal was reduced overall by 41% or 1,400 pounds; however, there was a significant spike in 2002 w hen E.I. Dupont De Nemours & Co disposed of over 45,000 pounds of PACs and PSE&G Fossil LLC disposed of over 10,000 pounds of lead compounds.

Figure 32 Components of On-site Releases for the Recent Core Universe 2000-2004



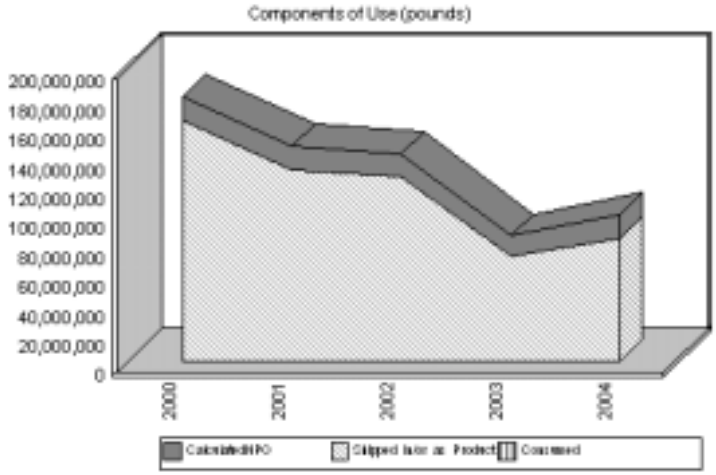
Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal on-site
2000	8,211	1,684	2,772	2	3,535
2001	9,834	556	1,142	0	12,436
2002	11,266	667	1,625	0	57,829
2003	8,540	1,072	3,045	0	6,364
2004	9,722	705	389	0	2,066

Lead

Lead is a PBT of special concern because of its adverse effect on children. Exposure to lead at very low levels can have lasting harmful effects in terms of learning disabilities, neurotoxic effects and other adverse health effects. Lead exposure is still among the most important environmental health problems for young children in the U.S. and worldwide.[10] According to NJDHSS (2004), nearly 3% of New Jersey children age 6 to 29 months are estimated to have blood lead levels greater than or equal to 10ug/dL[11]. Lead is listed as a known carcinogen (i.e., a cancer causing substance) in the U.S. Environmental Protection Agency's (EPA) Toxic Release Inventory.

Figure 33 presents the data for the components of Use for Lead for the Recent Core Universe 2000-2004. There has been a steady decline in lead use from 2000 through 2003 with an increase in 2004. Overall lead had decreased by 44% or 80 million pounds. Roughly 80% - 90% of the lead use is shipped in products for any given year. NPO remained relatively stable over the time period. Consumed decreased to zero, based on quality assurance/quality controls of the data because metals legitimately can not be consumed.

Figure 33 Components of Use for Lead for the Recent Core Universe 2000-2004



Year	Consumed	In Product	NPO	Calculated Use
2000	31,688	163,922,134	16,718,460	180,672,282
2001	21,234	130,735,099	16,373,767	147,130,100
2002	1,583	126,767,286	14,476,099	141,244,968
2003	0	72,521,218	13,124,702	85,645,919
2004	0	83,840,417	16,769,814	100,610,231

Table 16 presents the data on lead use by SIC codes 33 and 36 which contribute to the majority of the use of lead. SIC code 33 includes facilities that are engaged in smelting and refining ferrous and nonferrous metals from ore, pig iron, or scrap, including insulated wire and cable. SIC code 36 includes facilities that manufacture machinery and supplies for the generation, storage, transmission, transformation and utilization of electrical energy. In New Jersey, there are a few battery manufacturers that have significant contributions to lead use. However, the major reduction in lead is from SIC code 33 and in particular, one facility Gerdau Ameristeel Sayerville that reported roughly 50 million pounds less of lead in 2003 and 2004. The increase in lead use from 2003-2004 can be attributed to Delphi Industries increasing their production.

[10] Public Health Service. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. US Department of Health and Human Services, Public Health Service 1990; DHHS Publication No (NHS) 90-50212.

[11] http://www.state.nj.us/health/fhs/documents/childhoodlead2003.pdf

Table 16. Lead Use by SIC Codes

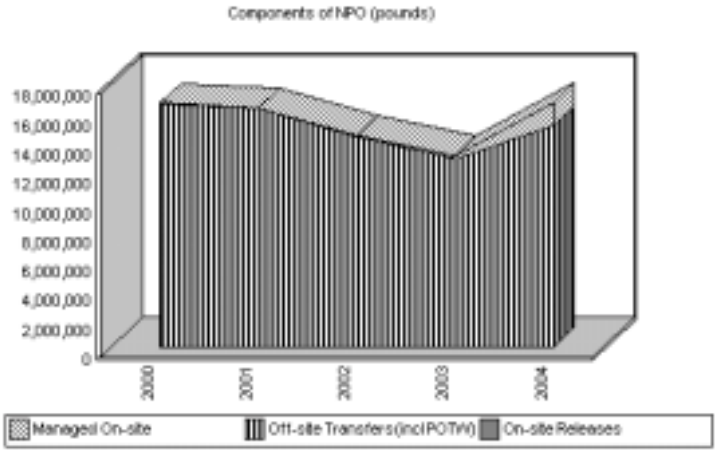
USE per SIC Codes

SIC/Year	2000	2001	2002	2003	2004
20			0		
27	118,671	79,300	134,476	149,670	141,054
28	3,597,530	2,620,140	2,366,086	856,701	1,153,803
33	77,676,146	62,329,316	58,726,479	6,550,829	8,831,733
29	180,565	129,623	189,616	204,015	12,889
30	5,336,118	3,539,155	1,728,110	1,515,849	1,574,590
32	84,728	97,560	81,011	51,961	61,354
34	60,925	671,604	93,697	46,332	71,135
26		2,613	1,739	1,881	2,476
35	87,896	93,562	85,840	107,778	122,023
36	93,150,156	76,896,895	77,195,455	75,788,061	88,171,875
37	13,185	20,323	13,100	5,146	1,799
38		2,380	4,259	2,088	2,134
39		57,917	61,535	38,888	40,573
49	366,362	365,630	538,835	298,627	394,826
51		24,083	24,729	28,093	27,966

Components of NPO for Lead

Figure 34 presents data on the components of NPO for lead. Overall there was very little change in NPO although there was a decrease for two years (2002 and 2003) followed by an increase in 2004 that resulted in a small net increase. On-site releases increased by 66% or almost 4 thousand pounds. Off-site transfers decreased by 9% or 1.5 million pounds. Managed On-site substantially increased by over 18,000%. This large increase is the result of one facility Gerdau Amersteel Perth Amboy reporting lead managed on-site (over 1.6 million pounds) for the first time.

Figure 34 Components of NPO for Lead

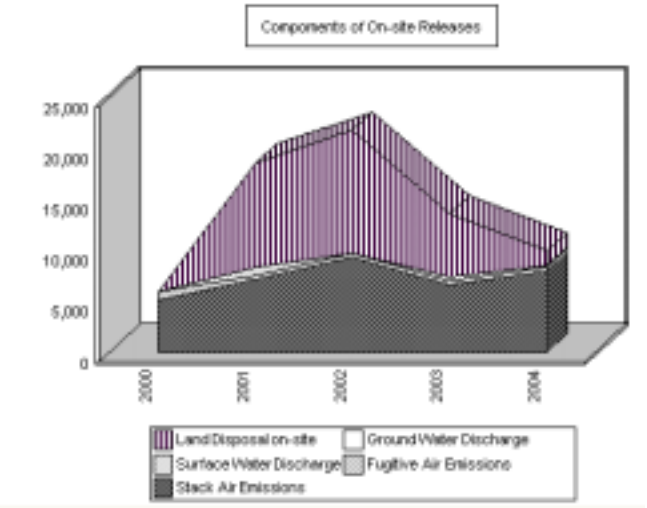


Year	NPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	16,718,460	5,948	16,703,795	8,717
2001	16,373,767	18,568	16,372,946	-17,747
2002	14,476,099	21,690	14,381,270	73,139
2003	13,124,702	13,535	12,880,961	230,206
2004	16,769,814	9,892	15,144,892	1,615,030

Components of Releases of Lead

Figure 35 presents data on the On-Site Releases on lead. Stack air emissions and On-Site Land Disposal comprise the majority of On-Site Releases of lead. Stack air emissions have increased by 57% or almost 3,000 pounds. On-Site Land Disposal increased by 100% or over 1,400 pound because in year 2000, nothing was reported for On-Site Land Disposal. There were large increases in 2001 and 2002 due to E. I. Dupont De Nemours & Co. Inc. and PSE&G Fossil LLC. Fugitive emissions decreased by 55% or almost 500 pounds. Surface water discharges increased by 350% or about 100 pounds. This is due to E. I. Dupont De Nemours & Co.

Figure 35 Components of On-Site Releases for Lead



Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	GroundWater Discharge	LandDisposal on-site
2000	5,068	850	29	1	0
2001	7,142	419	793	0	10,214
2002	9,208	423	51	0	12,008
2003	6,528	419	444	0	6,145
2004	7,955	381	131	0	1,424

Mercury

Mercury is another PBT of special concern because the organic form (methyl mercury) has been found at unacceptably high levels in certain fish taken from lakes and rivers throughout New Jersey. Mercury is a highly toxic material to adults, but the main concern is its potentially profound impact on the developing nervous system. Even low levels of mercury in a mother's diet can significantly alter fetal development.

Due to these concerns, New Jersey formed a task force to address potential risks posed by mercury releases. The Mercury Task Force (MTF) issued a report that established goals to reduce mercury air emissions, including an overall reduction of 75% from 1990 to 2006 and 85% from 1990 to 2011.[11] Currently, NJDEP is evaluating its progress towards achieving these goals.

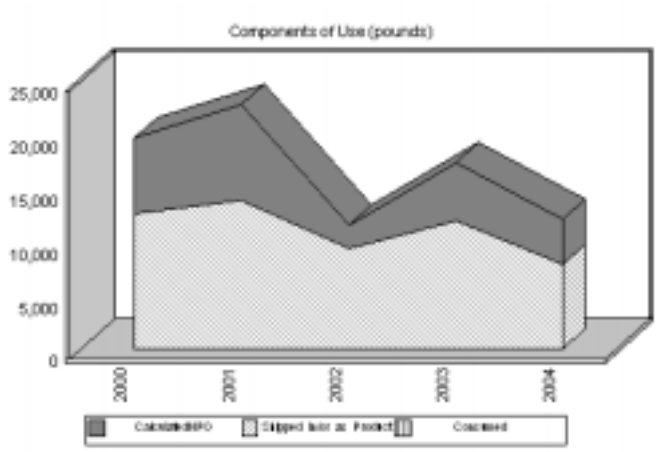
The MTF estimates that major sources of mercury include iron and steel manufacturing, coal combustion, mercury-containing products, municipal waste combustion, sludge incineration, oil refining, and many other combustion sources. At the time of the MTF report, no facilities had submitted RPPR data on mercury wastes or emissions prior to the implementation of the lower reporting thresholds in 2000.

[11] See Volume 1 of the NJ Mercury Task Force Report (2001)

Use of Mercury

Figure 36 presents the data for the components of Use for mercury from 2000-2004. Overall, mercury Use has decreased by 38% or over 7,500 pounds since 2000. NPO has decrease by 41% or almost 3 thousand pounds, Shipped as (or in) Product has decreased by 37% or 4,700 pounds. There was a slight increase in 2001 followed by a decrease in all categories in 2002. In 2003 there was a significant increase in all categories followed by a decrease again in 2004. While there are roughly 30 facilities that use mercury in any given year, there are only 2 or 3 facilities that use mercury in such quantities that would substantially impact the graph. The large increase in 2003 can be attributed to Comus International and Cycle Chem.

Figure 36 Components of Use for Mercury 2000-2004

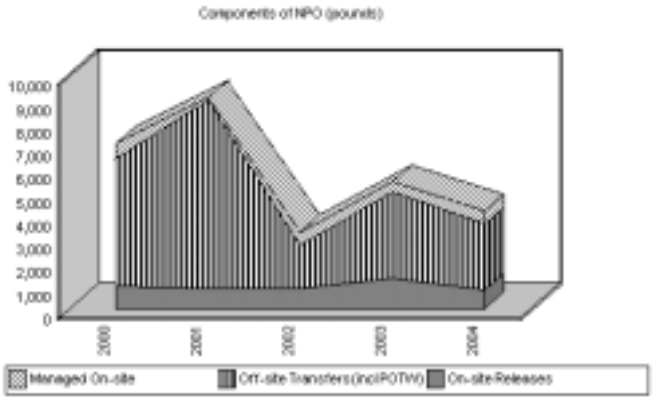


Year	Consumed	In Product	IIPO	Calculated Use
2000	0	12,614	7,092	19,705
2001	0	13,916	8,936	22,852
2002	0	9,361	2,238	11,599
2003	0	12,028	5,455	17,483
2004	0	7,951	4,197	12,148

Component of NPO for Mercury

Figure 37 presents the components of NPO. The graph mirrors the graph for Use for mercury. Off-site Transfers account for approximately 70% of the total NPO for any given year. The major fluctuations in Off-site Transfers are the result of activities at Cycle Chem.

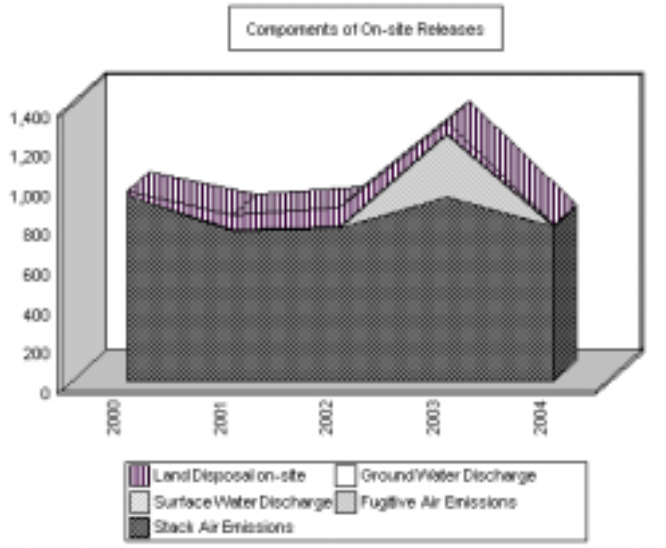
Figure 37 Components of NPO of Mercury 2000-2004



Year	IIPO	On-site Releases	Off-site Transfers (incl POTW)	Managed On-site
2000	7,092	960	5,501	631
2001	8,936	843	8,164	-71
2002	2,238	881	1,875	-519
2003	5,455	1,318	3,722	415
2004	4,197	790	2,854	554

Figure 38 demonstrates that the large majority of NPO is Stack Air Emissions. The large increase that occurred in 2003 is the result of 312 pounds of fugitive emissions reported by Gerdau Amersteel Sayerville Inc . . . Surface water discharges more than doubled from 3 pounds to 7 pounds. The fluctuations in surface water discharges are largely due to E.I. Dupont De Nemours & Co. Inc.

Figure 38 Components of On-site Releases for Mercury



Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal on-site
2000	937	1	3	1	17
2001	756	1	12	0	74
2002	775	1	2	0	103
2003	934	312	9	0	63
2004	782	0	7	0	1

Table 17 presents the data for waste transfer for mercury. Total waste transfers have decreased overall by 48% or over 2,600 pounds. The largest portion of mercury is transferred off-site for recycling, followed by disposal and treatment. The exception is in 2000 when Comus International sent 3,000 pounds off-site for treatment. Overall, recycling increased slightly, however, in 2001 it more than tripled due to a few facilities sending mercury off site to be recycled. These facilities include Valero Refinery, Cycle Chem and Comus International. Disposal increased 78% or 167 pounds.

Table 17. Components of Waste Transfer for Mercury

Report Year	Total Waste Transfer	Waste Transfer - Recycling	Waste Transfer - Energy Recovery	Waste Transfer - Treatment	Waste Transfer - Disposal	Waste Transfer - Other
2000	5,494	2,124	0	3,156	214	0
2001	8,163	7,622	2	46	493	0
2002	1,874	1,631	0	24	219	0
2003	3,721	3,398	0	134	190	0
2004	2,853	2,307	1	164	381	0

Table 18 presents NPO data for mercury by SIC code. The largest generator of NPO is the Electric Service (SIC 49) followed by SIC code 36 (Electronic Equipment except computers) which realized a large reduction. SIC code 29 is petroleum refining which remained fairly stable with a sharp peak in 2001 due to Valero reporting mercury transferred for recycling. SIC code 33 is Iron and Steel and shows a small increase in NPO for mercury.

Table 18. NPO per SIC codes for Mercury

NPO per SIC over the Years

SIC/Year	2000	2001	2002	2003	2004
28	187	576	86	163	118
33	470	386	337	991	500
29	152	1,910	113	141	150
32		7	1	126	
26		0	1	1	1
36	3,036	1,608	19	25	28
49	3,246	4,418	1,674	3,986	3,254
51	2	31	8	21	147

C. Extraordinarily Hazardous Substances (TCPA)

The Toxic Catastrophe Prevention Act (TCPA) N.J.S.A. 13:1K-19 et seq. was signed into law in 1985 and became effective in January 1986. The goal of the TCPA is to protect the public from catastrophic accidental releases of extraordinarily hazardous substances (EHS) into the environment. The TCPA requires owners or operators of facilities having EHSs at certain threshold quantities to anticipate the circumstances that could result in accidental EHS releases and to take precautionary or preemptive actions to prevent such releases. The TCPA specifies the key elements of a risk management program needed to minimize the threat of an accidental EHS release at a regulated facility.

The T C P A identified 13 chemicals and the Department added 93 additional chemicals to the EHS list when it adopted the original TCPA rules in 1988. The EHS list was further expanded in 1998 when the Department incorporated most of the flammable substances regulated by USEPA into its rules by reference.

Facilities do not report materials accounting data directly to the TCPA program. Instead, this report analyzed those substances covered by both the TCPA program and the RPPR reporting requirements. Substances covered under both programs are listed in Appendix I. Even when a facility reports a TCPA-covered substance on the RPPR, it does not mean the facility is regulated by the TCPA program.

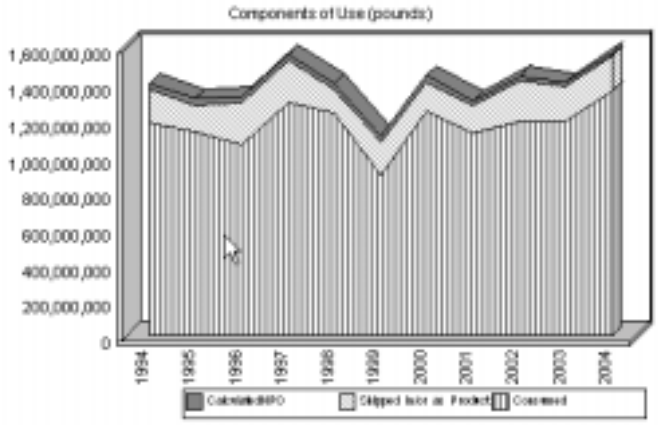
Table 19.identifies chemicals and facilities reporting TCPA chemicals A total of 36 different substances were reported on the RPPR for 1994; the total dropped to 32 in 2004. The number of facilities reporting TCPA substances ranged from 114 in 1994 to 87 in 2004. The total number of reports ranged from 188 in 1994 to 141 in 2004.

Table 19. Comparison of RPPR and TCPA Facilities reporting TCPA chemicals in Historic Core Universe 1994-2004

Reporting Year	# of Different TCPA Substance	# of Facilities Reporting on TCPA Substances	Total Number of Reports on TCPA Substances
1994	36	114	188
1995	36	102	171
1996	36	112	174
1997	37	112	171
1998	35	114	175
1999	35	102	164
2000	34	108	167
2001	34	101	157
2002	34	98	152
2003	32	91	141
2004	32	87	141

Figure 39 presents the data for the components of Use for TCPA substances for the Historic Core Universe 1994-2004. Use increased by 12% or almost 170 million pounds. NPO decreased by 48% or almost 17 million pounds. Shipped as (or in) Product increased 5% or almost 10 million pounds. Consumed also increased 15% or about 175 million pounds.

Figure 39 Components of Use for TCPA Substances Historic Core Universe 1994-2004



Year	Consumed	In Product	NPO	Calculated Use
1994	1,185,720,352	183,593,168	34,359,602	1,403,673,122.00
1995	1,140,999,017	138,734,053	39,497,440	1,319,230,510.00
1996	1,060,888,163	240,907,952	30,641,532	1,332,437,647.00
1997	1,302,601,264	233,036,221	30,665,424	1,566,302,909.00
1998	1,244,589,810	124,231,221	35,860,485	1,404,681,516.32
1999	892,129,059	187,194,121	35,087,945	1,114,411,125.13
2000	1,250,149,682	165,117,310	34,316,939	1,449,583,931.00
2001	1,131,947,348	150,385,646	23,342,506	1,305,675,500.00
2002	1,197,546,681	221,148,361	28,647,502	1,447,342,544.00
2003	1,193,304,959	192,501,523	23,117,223	1,408,923,704.50
2004	1,360,917,403	193,343,347	17,743,291	1,572,004,041.00

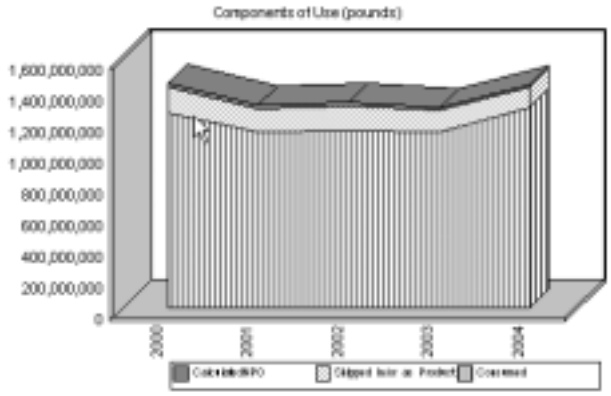
Table 20 presents similar data for the Recent Core Universe 2000-2004. The number of different TCPA substances reported ranged from 37 in 2000 to 34 in 2004. The number of facilities reporting TCPA substances range from 108 in 2000 to 89 in 2004. The total number of reports on TCPA substances ranges from 170 in 2000 to 145 in 2004.

Table 20. Comparison of RPPR and TCPA Facilities reporting TCPA chemicals for the Recent Core Universe 2000-2004

Reporting Year	#of Different TCPA Substances	# of Facilities Reporting on TCPA Substances	Total Number of Reports on TCPA Substances
2000	37	108	170
2001	37	102	161
2002	37	99	156
2003	34	92	144
2004	34	89	145

Figure 40 presents the data for the components of Use for the Recent Core Universe 2000-2004. Overall, Use remained stable with less than 1% decrease in total Use. NPO decreased by 49% or just over 17 million pounds. Shipped as (or in) Product decreased by 20% or almost 33 million pounds. Consumed increased slightly by 3% or 41 million pounds.

Figure 40 Components of Use for TCPA Substances for Recent Core Universe 2000-2004



Year	Consumed	In Product	NPO	Calculated Use
2000	1,250,769,097	165,117,310	34,459,278	1,450,345,685.00
2001	1,132,390,682	150,385,646	23,446,816	1,306,223,144.00
2002	1,141,452,157	154,156,472	28,391,017	1,323,999,646.00
2003	1,129,261,653	140,914,860	22,793,498	1,292,970,010.50
2004	1,291,774,319	132,450,057	17,413,394	1,441,637,770.00

Appendix A. Materials Accounting Data and the Release and Pollution Prevention Report

This Appendix lists each quantitative data element reported on the Release and Pollution Prevention Report (RPPR) form. The central theme of the RPPR is that materials accounting (or chemical throughput) data is compiled and the inputs should balance with the outputs. The specific data elements included in the balance are:

The input components include:

- ✓ the starting inventory of the toxic chemical for the year; (including starting inventory as NPO)
- ✓ the quantity produced on site;
- ✓ the quantity brought on site; (including brought on site as recycled) and
- ✓ the quantity recycled and reused on site.

The output components include:

- ✓ the quantity consumed (chemically reacted) in process on site;
- ✓ the quantity shipped off site as (or in) product;
- ✓ the ending inventory; (including ending inventory as NPO) and
- ✓ all nonproduct output. (including releases)

- starting inventory is the total quantity of the substance already on site as of the beginning of the year;
- starting inventory as NPO (SI (NPO)) is the total quantity of the substance on site at the beginning of the calendar year that is nonproduct output;
- produced is the total quantity of the substance produced on site during the calendar year;
- brought on site is the total quantity of the substance brought into the facility from all off-site suppliers, including other facility locations and divisions of a facility's own company, during the calendar year;
- brought on site as recycled is the total quantity of the substance brought into the facility as recycled substance from all off-site suppliers, including other facility locations and divisions of a facility's own company, during the calendar year;
- recycled and reused on site is
- consumed is the total quantity of the substance consumed in production processes during the calendar year;
- shipped as (or in) product is the total quantity of the substance shipped off the facility site during the calendar year in a form suitable for final use, as intermediates subject to further processing leading to final use, or even shipped in its "raw" form as found in inventory;
- ending inventory is the total quantity of the substance remaining on site at the end of the calendar year;
- ending inventory as NPO (EI (NPO)) is the total quantity of the substance on site at the end of the calendar year that is nonproduct output;
- nonproduct output is the quantity of the reported substance that was generated prior to storage, out-of-process recycling, treatment, control or disposal, and that was not intended for use as a product;
- stack air emissions are emissions that were released into the atmosphere from a readily-identifiable point source such as a stack, exhaust vent, duct, pipe, or other confined air stream, and storage tanks;
- fugitive air emissions are emissions that were not released through stack, vents, ducts, pipes or any other confined air stream;
- surface water discharges are releases to streams, rivers, lakes, oceans, and other bodies of water;
- groundwater discharges are releases such as spray irrigation on land, discharges to infiltration basins, and discharges to subsurface systems;

- on-site land releases (at the facility) are releases including, but not limited to: 1) surface impoundments, 2) on-site landfills, and 3) land treatment (land spreading), including other activities such as incorporating wastes into soil for treatment;
- recycled and reused on site is the quantity of the substance that was recycled out-of-process on site and then processed or otherwise used again at the facility during the calendar year;
- energy recovery on site is the total quantity of the substance that was destroyed through an on-site energy recovery process;
- destroyed through on-site treatment is the total quantity of the substance that was destroyed or neutralized through on-site treatment processes;
- transfers to publicly owned treatment works (POTW) are those discharges through pipes or ducts into a municipal sewer system or one owned by a municipal utilities authority, sewerage authority, or regional utilities authority; the substance may be treated at the POTW, may evaporate into the atmosphere, or may be collected and subsequently discharged by the POTW into a water body or to another treatment facility;
- off-site recycling is the quantity of the substance that is recovered or regenerated by a variety of recycling methods off site;
- off-site energy recovery is the quantity of the substance that is combusted off-site in industrial furnaces (including kilns) or boilers and that generates heat or energy for use at that location;
- off-site treatment is the quantity of the substance that is treated through a variety of methods, including biological treatment, neutralization, incineration, and physical separation;
- off-site disposal is the quantity of the substance that is generally either released to the land or injected underground; most disposal occurs at landfills;
- chemical throughput is the total quantity of the substance that is introduced into processes, chemically reacted or converted, blended into mixtures, or generated as a non-product output that is released to the environment, managed on site, or sent off site for further management or disposal.

RELEASE & POLLUTION PREVENTION REPORT FOR 2001

SECTION B. FACILITY-LEVEL SUBSTANCE-SPECIFIC INFORMATION

Submit one complete Section B for each reportable substance (listed in Appendices B and C of the instructions) that was manufactured, processed, or otherwise used in excess of 10,000 pounds or the lower PBT Threshold in 2001.

	1.1 CAS No. (Category No.)
	1.1 RTK Substance No.
1.3 Substance Name (or Category Name)	
1.4 Does this section contain any trade secret (confidential business information) claims for data in questions #5 through #10 (excluding #5.1 and #10.1)? ☐ Yes ☐ No	

2. ACTIVITIES AND USES OF THE SUBSTANCE AT THE FACILITY (Check all that apply.)

2.1	Manufacture the Substance:	a. ☐ Produce b. ☐ Import	If "a. produce" or "b. import" then: c. ☐ For on-site use/ processing e. ☐ As a byproduct	d. ☐ For sale/distribution f. ☐ As an impurity
2.2	Process the Substance:	a. ☐ As a reactant d. ☐ Repackaging	b. ☐ As a formulation component e. ☐ As an impurity	c. ☐ As an article component
2.3	Otherwise use the Substance:	a. ☐ As a chemical processing aid	b. ☐ As a manufacturing aid	c. ☐ Ancillary or other use
3.1	Principal Method of Storage:			
3.2	Frequency of Transfer from Storage: _____ times per _____			
3.3	Methods of Transfer:			

INVENTORY AND THROUGHPUT INFORMATION

	INVENTORY	N/A	Quantity (in pounds*)	Basis of Estimate (circle one)
4.	Maximum Daily Inventory of the Substance			M C E O T
	INPUTS		Quantity	Basis of Estimate
5.	Starting Inventory of the Substance			M C E O T
5.1	Quantity of Starting Inventory that is Nonproduct Output (NPO)			M C E O
6.	Quantity Produced on Site			M C E O T
7.	Quantity Brought on Site			M C E O T
7.1	Quantity of #7 (above) that is Brought on Site as Recycled Substance			M C E O T
	OUTPUTS		Quantity (in pounds*)	Basis of Estimate (circle one)
8.	Quantity Consumed on Site (chemically reacted in process)			M C E O T
9.	Quantity Shipped off Site as (or in) Product			M C E O T
10.	Ending Inventory			M C E O T
10.1	Quantity of Ending Inventory that is Nonproduct Output (NPO)			M C E O
11.	Total Nonproduct Output			
	ON-SITE MANAGEMENT OF NONPRODUCT OUTPUT		Quantity (pounds*)	Basis of Estimate (circle one)
12.	Quantity Recycled Out-of-Process on Site and Used on Site			M C E O
13.	Quantity Destroyed through On-Site Treatment			M C E O
14.	Quantity Destroyed through On-Site Energy Recovery			M C E O

* If this Section B is for "Dioxin and Dioxin-like Compounds," the unit of measurement is "grams/year" and not "pounds/year."

RPPR (DEQ-114) **RPPR for 2001** 03/02

FAC_ID: _____ Page ____ of ____

Substance or Category Name: _____

RELEASE INFORMATION (Substance Specific)		N/A	Quantity (in pounds*)	Basis of Estimate (circle one)
15.	Total Stack or Point Source Air Emissions			M C E O
16.	Total Fugitive of Non-Point Source Air Emissions			M C E O
17.	Total Discharge to Publicly Owned Treatment Works (POTW)			M C E O
18.	Total Discharge to Surface Waters			M C E O
19.	Total Discharge to Groundwater			M C E O

20. On-Site Land Disposal: ☐ N/A

Storage Method	Total Quantity of NPO Disposed that contained the Substance (in pounds)	Quantity of Reported Substance within Disposed NPO (in pounds*)	Basis of Estimate (circle one)	Management Method
1. SM _____	_____	_____	M C E O	D _____
2. SM _____	_____	_____	M C E O	D _____
3. SM _____	_____	_____	M C E O	D _____

21. Transfers to Other Off-Site Locations: ☐ N/A

Receiving Facility Information ID#, Name & Address (street, city, state, zip)	Storage Method	Total Quantity of NPO Transferred that contained the Substance (in pounds)	Quantity of Substance within Transferred NPO (in pounds*)	Basis of Estimate (circle one)	Management Method
1. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	_____	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
2. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	_____	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
3. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	_____	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
4. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	_____	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
5. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	_____	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
6. ID#_____	1. SM ____	_____	_____	M C E O	D _____
_____	2. SM ____	_____	___	M C E O	D _____
_____	3. SM ____	_____	_____	M C E O	D _____
_____			___		

22.	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds*/year)	

☐ *Check if additional pages containing information for questions 20 or 21 are attached.*

***** If this Section B is for "Dioxin and Dioxin-like Compounds," the unit of measurement is "grams/years" and not "pounds/year."

Substance or Category Name: _____

			Quantity	Units	Product Description
23.	2001 Quantity and Units of Production* Associated with the Reported Substance (list up to 4 on this page – see note below)	1.			
		2.			
		3.			
		4.			

*PRODUCTION: Whenever possible, "UNITS" should be mass or surface area units only, such as pounds of material manufactured or square footage of product involved.

☐ *Check if additional pages containing information for question 23 is attached (list up to six additional units of production).*

24. Has any reduction or elimination of either the use of the reported substance or the generation of the reported substance as nonproduct output (NPO) occurred during 2001 due to discontinuance of operations?

☐ Yes ☐ No If "Yes," fill in below:

	Quantity of Substance Reduced (in pounds*) (2000 to 2001)	Basis of Estimate
Quantity of substance reduced (2000 to 2001) due to the discontinuance of operations, Including operations transferred to or undertaken by another facility		M C E O

Pollution Prevention Activities

For the purposes of this question and Sections C and D and the P2-115 of this Report, pollution prevention means: the reduction or elimination of either the use of the reported substance or the generation of the reported substance as nonproduct output, prior to treatment, storage, out-of-process recycling, or disposal. Pollution prevention is not any type of treatment, out-of-process recycling, incineration, or the transfer of releases to different media.

25. Has any material-related change (change in the amount of the reported substance used due to substitution of a non-listed substance) been employed to reduce the quantity of this reported substance during 2001 relative to 2000 levels?

☐ Yes ☐ No If "Yes," fill in the table below:

POLLUTION PREVENTION METHODOLOGY	Quantity of Substance Reduced (in pounds*) (2000 to 2001)	Basis of Estimate
Material-Related Change (change in the amount of the substance used due to substitution of other non-listed substance)		M C E O

CAS Number, Substance Name and Quantity of Substitute Substance

CAS NUMBER	SUBSTANCE NAME	QUANTITY (pounds)
a) _____	_____	_____
b) _____	_____	_____
c) _____	_____	_____

Appendix B. Adjusting for Impacts from Production

Normalizing for variations in production is an important consideration when determining if reductions in the Use of hazardous substances were the result of process efficiency methods or the result of changes in economic activity. A brief explanation was given in the section that discussed meaningful metrics. Normalization for production was done using the same methodology as the Massachusetts Toxics Use Reduction Program.[12] This methodology was chosen because it has been in use for several years and has withstood scrutiny over time.

The calculation measures the actual change in reported quantities and compares them to a normalized or "adjusted" change based on TRI reported production levels. This methodology assumes that the TRI Form R reported production ratio (PR) accurately reflects the production change in the current year relative to the production in the previous year. It also assumes that changes in production are directly proportional to changes in both Use and generated NPO.

To determine a statewide production ratio, it is necessary to start with individual facility-chemical pairs that were matched when an actual quantity is reported both in the first and second years. A weighted average production ratio was calculated using all the matched pairs that had a first year quantity and a second year production ratio using the following formula:

$$PR_{WA} = \frac{\sum (PR_{2i})\,(TU_{1i})}{\sum TU_{1i}} \qquad (1.1)$$

i = all records in universe with non-zero total Use in year 1 and PR>0 for year 2
PR_2 = production ratio for an individual record in year 2
TU_1 = total Use (consumed + shipped in product + NPO)

Equation 1.1 determines an approximation of the average production ratio for all matched pairs. Once the PR_{WA} has been calculated, it can be used to calculate the adjusted quantities for the entire state:

$$Q_A = \frac{Q_{T2}}{PR_{WA}} \qquad (1.2)$$

Q_A = production adjusted quantity
Q_{T2} = total quantity actually reported in year 2
PR_{WA} = weighted production ratio

[12] University of Massachusetts Lowell, The Massachusetts Toxics Use Reduction Institute, "Measuring Progress in Toxics Use Reduction and Pollution Prevention," Technical Report No. 30, 1996.

Table B1. Example for Calculating Adjusted Use

	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
Year	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cum
1994	13,824,248,003	13,824,248,003	217,888,932	217,888,932	10,797,827,924	10,797,827,924	2,808,531,147	2,808,531,147	1.00	1.00
1995	13,912,432,280	14,635,878,759	234,629,257	246,829,978	10,950,895,804	11,520,342,386	2,726,907,220	2,868,706,395	1.05	1.05
1996	13,583,697,063	15,261,772,663	204,113,465	229,328,826	10,858,465,089	12,199,876,432	2,521,118,509	2,832,567,405	1.07	1.12
1997	13,929,267,302	15,728,283,434	198,860,752	224,544,350	11,152,069,754	12,592,400,602	2,578,336,796	2,911,338,482	1.01	1.13
1998	14,751,666,831	17,989,450,799	170,570,751	208,008,639	12,226,122,998	14,909,585,517	2,354,973,082	2,871,856,643	1.08	1.22
1999	12,994,103,799	15,592,589,296	163,793,596	196,548,089	10,784,721,167	12,941,387,142	2,045,589,037	2,454,654,066	0.98	1.20
2000	13,957,313,926	15,944,492,599	175,981,389	201,036,816	11,575,371,315	13,223,419,868	2,205,961,222	2,520,035,916	0.95	1.14
2001	13,597,144,743	14,911,722,405	146,205,649	160,340,872	11,277,406,658	12,367,711,068	2,173,532,438	2,383,670,466	0.96	1.10
Total Change	-227,103,260	1,087,474,402	-71,683,283	-57,548,060	479,578,734	1,569,883,144	-634,998,709	-424,860,681	**10% increase**	
Percent Change	2%	8%	33%	26%	4%	15%	23%	15%		
	reduction	increase	reduction	reduction	increase	increase	reduction	reduction		

$$\text{Adjusted Use} = \frac{\text{Current year Use}}{\text{Cumulative Weighted Production Index}}$$

For example, in 1997 Current Year Use = 15,728.3 million pounds
Cumulative Weighted Production Index = 1.13

$$\text{Therefore Adjusted Use} = \frac{15{,}728.3}{1.13} = 13{,}918.8 \text{ million pounds}$$

The difference in the adjusted Use of 13,918.8 million pounds versus 13,929.3 reported in the table is due to rounding of the Use numbers.

Appendix C

Table C1. List of Carcinogens reported on the RPPR

10034-93-2	HYDRAZINE SULFATE
100-41-4	ETHYLBENZENE
100-42-5	STYRENE
100-44-7	BENZYL CHLORIDE
101-14-4	4,4-METHYLENEBIS(2-CHLOROANILINE)
101-77-9	4,4-METHYLENEDIANILINE
101-80-4	4,4-DIAMINODIPHENYL ETHER
101-90-6	DIGLYCIDYL RESORCINOL ETHER
106-46-7	1,4-DICHLOROBENZENE
106-47-8	P-CHLOROANILINE
106-88-7	1,2-BUTYLENE OXIDE
106-89-8	EPICHLOROHYDRIN
106-93-4	1,2-DIBROMOETHANE
106-99-0	1,3-BUTADIENE
107-05-1	ALLYL CHLORIDE
107-06-2	1,2-DICHLOROETHANE
107-13-1	ACRYLONITRILE
107-30-2	CHLOROMETHYL METHYL ETHER
108-05-4	VINYL ACETATE
111-44-4	BIS(2-CHLOROETHYL) ETHER
117-81-7	DI(2-ETHYLHEXYL) PHTHALATE [DEHP]
118-74-1	HEXACHLOROBENZENE
119-90-4	3,3-DIMETHOXYBENZIDINE
119-93-7	3,3-DIMETHYLBENZIDINE
120-12-7	ANTHRACENE
120-71-8	P-CRESIDINE
120-80-9	CATECHOL
121-14-2	2,4-DINITROTOLUENE
123-91-1	1,4-DIOXANE
127-18-4	TETRACHLOROETHYLENE [PERCHLOROETHYLENE]
132-27-4	SODIUM O-PHENYLPHENOXIDE
133-06-2	CAPTAN
1332-21-4	ASBESTOS (FRIABLE)
1336-36-3	POLYCHLORINATED BIPHENYLS (PCBS)
140-88-5	ETHYL ACRYLATE
1582-09-8	TRIFLURALIN
1634-04-4	METHYL TERT-BUTYL ETHER
1836-75-5	NITROFEN
1897-45-6	CHLOROTHALONIL
191-24-2	BENZO(G,H,I)PERYLENE
25321-22-6	DICHLOROBENZENE (MIXED ISOMERS)
25376-45-8	DIAMINOTOLUENE (MIXED ISOMERS)
26471-62-5	TOLUENE DIISOCYANATE (MIXED ISOMERS)
302-01-2	HYDRAZINE
309-00-2	ALDRIN

List of Carcinogens reported on the RPPR (continued)

50-00-0	FORMALDEHYDE
51-79-6	URETHANE
542-75-6	1,3-DICHLOROPROPYLENE
542-88-1	BIS(CHLOROMETHYL) ETHER
56-23-5	CARBON TETRACHLORIDE
57-74-9	CHLORDANE
584-84-9	TOLUENE-2,4-DIISOCYANATE
58-89-9	LINDANE
60-09-3	4-AMINOAZOBENZENE
612-82-8	3,3-DIMETHYLBENZIDINE DIHYDROCHLORIDE
612-83-9	3,3-DICHLOROBENZIDINE DIHYDROCHLORIDE
62-53-3	ANILINE (AND SALTS)
62-56-6	THIOUREA
64-67-5	DIETHYL SULFATE
67-66-3	CHLOROFORM
67-72-1	HEXACHLOROETHANE
71-43-2	BENZENE
7439-92-1	LEAD
7440-02-0	NICKEL
7440-38-2	ARSENIC
7440-41-7	BERYLLIUM
7440-43-9	CADMIUM
7440-47-3	CHROMIUM
7440-48-4	COBALT
74-87-3	CHLOROMETHANE
75-01-4	VINYL CHLORIDE
75-07-0	ACETALDEHYDE
75-09-2	DICHLOROMETHANE
75-21-8	ETHYLENE OXIDE
75-55-8	PROPYLENEIMINE
75-56-9	PROPYLENE OXIDE
76-44-8	HEPTACHLOR
77-78-1	DIMETHYL SULFATE
78-87-5	1,2-DICHLOROPROPANE
79-00-5	1,1,2-TRICHLOROETHANE
79-01-6	TRICHLOROETHYLENE
79-06-1	ACRYLAMIDE
79-34-5	1,1,2,2-TETRACHLOROETHANE
79-44-7	DIMETHYLCARBAMYL CHLORIDE
79-46-9	2-NITROPROPANE
8001-35-2	TOXAPHENE [CAMPHECHLOR]
8001-58-9	CREOSOTE
87-62-7	2,6-XYLIDINE
87-68-3	HEXACHLORO-1,3-BUTADIENE

List of Carcinogens reported on the RPPR (continued)

87-86-5	PENTACHLOROPHENOL (PCP)
88-06-2	2,4,6-TRICHLOROPHENOL
90-04-0	O-ANISIDINE
91-08-7	TOLUENE-2,6-DIISOCYANATE
91-20-3	NAPHTHALENE
91-22-5	QUINOLINE
91-94-1	3,3-DICHLOROBENZIDINE
92-87-5	BENZIDINE
95-53-4	O-TOLUIDINE
95-80-7	2,4-DIAMINOTOLUENE
96-09-3	STYRENE OXIDE
96-45-7	ETHYLENE THIOUREA
97-56-3	C.I. SOLVENT YELLOW 3
98-07-7	BENZOIC TRICHLORIDE
98-95-3	NITROBENZENE
N020	ARSENIC COMPOUNDS
N078	CADMIUM COMPOUNDS
N090	CHROMIUM COMPOUNDS
N096	COBALT COMPOUNDS
N420	LEAD COMPOUNDS
N495	NICKEL COMPOUNDS
N583	POLYCHLORINATED ALKANES
N590	POLYCYCLIC AROMATIC COMPOUNDS
Count:	112

Appendix D. List of PBT Chemicals

Persistent, Bioaccumulative, and Toxic Chemicals covered by the USEPA October 29, 1999 PBT Rule and the January 17, 2001 Lead Rule and reportable on the Toxic Chemical Release Inventory (TRI)

Table D1. PBT Chemicals

Chemical Name or Chemical Category	*RTK Number*	*CAS # (Group #)*	*Section 313 Reporting Threshold (in pounds unless noted otherwise)*
Aldrin	0033	309-00-2	100
Benzo(g,h,i)perylene	2968	191-24-2	10
Chlordane	0361	57-74-9	10
Dioxin and dioxin-like compounds category[1, 3]	3760	N150	0.1 gram
Heptachlor	0974	76-44-8	10
Hexachlorobenzene	0978	118-74-1	10
Isodrin	2499	465-73-6	10
Lead [2]	1096	7439-92-1	100
Lead compounds category [2]	2266	N420	100
Mercury	1183	7439-97-6	10
Mercury compounds	2414	N458	10
Methoxychlor	1210	72-43-5	100
Octachlorostyrene	3761	29082-74-4	10
Pendimethalin	3415	40487-42-1	100
Pentachlorobenzene	3417	608-93-5	10
Polychorinated biphenyls (PCBs)	1554	1336-36-3	10
Polycyclic aromatic compounds category[3,4]	3758	N590	100
Tetrabromobisphenol A	3763	79-94-7	100
Toxaphene	1871	8001-35-2	10
Trifluralin	1918	1582-09-8	100

1. Qualifier: "manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacturing of that chemical".
2. The lower reporting thresholds apply to lead and all lead compounds, except for lead contained in stainless steel, brass, and bronze alloys. For the federal TRI, lead contained in stainless steel, brass, and bronze alloys remains reportable under the 25,000-pound manufacture and process reporting threshold and the 10,000-pound otherwise use reporting threshold. For the state RPPR, lead contained in stainless steel, brass, and bronze alloys remains reportable under the 10,000-pound manufacture, process and otherwise use reporting threshold.
3. See Appendix C for the specific substances reportable under this category.
4. Two chemicals, benzo(j,k)fluorene (206-44-0) and 3-methylcholanthrene (56-49-5), were added to this category effective RY 2000.

Appendix E. Chemicals that are regulated under TCPA and RPPR

CAS Number	SUBSTANCE NAME
75-07-0	ACETALDEHYDE
107-02-8	ACROLEIN
107-13-1	ACRYLONITRILE
107-18-6	ALLYL ALCOHOL
107-11-9	ALLYLAMINE
107-05-1	ALLYL CHLORIDE
7664-41-7	AMMONIA
542-88-1	BIS(CHLOROMETHYL) ETHER
10294-34-5	BORON TRICHLORIDE
7637-07-2	BORON TRIFLUORIDE
7726-95-6	BROMINE
106-99-0	1,3-BUTADIENE
75-15-0	CARBON DISULFIDE
463-58-1	CARBONYL SULFIDE [CARBON OXYSULFIDE]
7782-50-5	CHLORINE
10049-04-4	CHLORINE DIOXIDE
67-66-3	CHLOROFORM
107-30-2	CHLOROMETHYL METHYL ETHER
76-06-2	CHLOROPICRIN
126-99-8	CHLOROPRENE
334-88-3	DIAZOMETHANE
124-40-3	DIMETHYLAMINE
57-14-7	1,1-DIMETHYL HYDRAZINE
106-89-8	EPICHLOROHYDRIN
75-00-3	CHLOROETHANE
74-85-1	ETHYLENE
107-15-3	ETHYLENEDIAMINE
151-56-4	ETHYLENEIMINE
75-21-8	ETHYLENE OXIDE
7782-41-4	FLUORINE
50-00-0	FORMALDEHYDE
302-01-2	HYDRAZINE
7647-01-0	HYDROCHLORIC ACID
74-90-8	HYDROGEN CYANIDE [HYDROCYANIC ACID]
7664-39-3	HYDROGEN FLUORIDE
13463-40-6	IRON PENTACARBONYL
126-98-7	METHACRYLONITRILE
74-83-9	BROMOMETHANE
74-87-3	CHLOROMETHANE
79-22-1	METHYL CHLOROCARBONATE
60-34-4	METHYL HYDRAZINE
74-88-4	METHYL IODIDE
624-83-9	METHYL ISOCYANATE
7697-37-2	NITRIC ACID
20816-12-0	OSMIUM TETROXIDE
10028-15-6	OZONE
594-42-3	PERCHLOROMETHYL MERCAPTAN

Chemicals that are regulated under TCPA and RPPR (continued)

79-21-0	PERACETIC ACID
75-44-5	PHOSGENE
7803-51-2	PHOSPHINE
75-55-8	PROPYLENEIMINE
75-56-9	PROPYLENE OXIDE
2699-79-8	SULFURYL FLUORIDE [VIKANE]
7550-45-0	TITANIUM TETRACHLORIDE
91-08-7	TOLUENE-2,6-DIISOCYANATE
584-84-9	TOLUENE-2,4-DIISOCYANATE
108-05-4	VINYL ACETATE
75-01-4	VINYL CHLORIDE
75-35-4	VINYLIDENE CHLORIDE
4170-30-3	CROTONALDEHYDE
26471-62-5	TOLUENE DIISOCYANATE (MIXED ISOMERS)

NOTE: A form, condition or physical state qualifier may differentiate the substance, as it is reportable under the RPPR versus the TCPA requirements. For example, on the RPPR hydrochloric acid is reportable in an "aerosol form only" while TCPA regulates hydrochloric acid at "36% by weight or more HCl." The analyses in this report did not distinguish among the various forms.

APPENDIX F 2004 Trends Report Readers' Response

We will continuously attempt to improve the quality of the Report so that readers may acquire accurate information using the Community Right to Know and Release and Pollution Prevention Report data. Feel free to complete the survey below and let us know what you like and do not like about the Report. Plenty of room is left for comments.

1) How did you find out about the Report?_____
   _____
2) When did you review the Report? (*date*) _____
   _____
3) Which part(s) of the Report did you find useful?_____
   _____
4) Which part(s) of the Report did you find not to be useful? _____
   _____
5) Was the analysis too detailed, not detailed enough, or just right? _____
   _____
6) Would you like to see other analyses that were not presented in this Report? If yes, please provide specifics. _____
   _____
7) Were the graphics presented in the Report documented appropriately in writing (i.e. were there charts or tables that you could not understand?) _____
   _____
8) Was the material in the appendices useful? _____
   _____
9) How often would you like to see updates to this Report?_____
   _____
10) Is there an appropriate balance between graphs and tables and written documentation? (If no, please explain.)_____
    _____
11) Would you recommend this Report to a colleague?_____
    _____
12) Is the information in the Report timely enough? _____
    _____
13) Would you like to be on the mailing list for future reports? (provide mailing address)
    _____
    _____
    _____
    _____

Please mail to the address and contact below:

NJDEP
Office of Pollution Prevention and Right to Know
P.O. Box 443
Trenton, NJ 08625-0443
attn: William H. Lowry