



INDUSTRIAL POLLUTION PREVENTION IN NEW JERSEY:

A Trends Analysis of Materials Accounting Data From 1994 to 2001

and

An Annual Report for 2001

EXECUTIVE SUMMARY



Spring 2004

New Jersey Department of Environmental Protection
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Executive Summary

Purpose and Scope of the Report

Industrial facilities in New Jersey use hazardous substances in their day to day manufacturing operations that produce the products and services needed to keep the state's economy growing. While hazardous substances play a vital role for these facilities and the state, they can also pose potential risks to workers, the general public, and the environment if they are not properly managed. 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.

The purpose of this report is to provide public information on the use, generation, and release of hazardous substances in New Jersey. The report uses data submitted by facilities from 1994 to 2001 and evaluates changes in hazardous substance trends that occurred during this period. In the last trends analysis published by the New Jersey Department of Environmental Protection (NJDEP) in 1996, the NJDEP found that facilities decreased Nonproduct Output (NPO) by at least 50% between 1987 and 1994, which was the statewide policy goal in the Pollution Prevention Act (P2 Act). This report covers the next seven years to determine if these reductions have continued and where these reductions occurred. Data evaluated in the report is submitted by facilities under the Worker and Community Right to Know (W&CRTK) Act and P2 Act. The report reviews statewide trends for total hazardous substances and looks at specific chemicals and facilities to determine how they changed through time.

This report also includes a detailed evaluation and data release for calendar year 2001. This single-year evaluation provides the most current data available on the use, generation, and release of hazardous substances. The data release includes over 200 tables and charts on the various ways facilities used and managed their hazardous substances. This report summarizes some of the essential data for 2001, but the entire data release is available in various formats by contacting NJDEP.

The NJDEP encourages facility staff and members of the public to review and ask questions concerning the data and analyses presented in this report. In the future, we plan to publish additional reports on a more frequent schedule and feedback from diverse stakeholders will help improve our ability to provide information to the public.

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, which is submitted only in the state of New Jersey, 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). This report focuses on three (3) separate quantities reported 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 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 and 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, the 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 and is based on a subset of chemicals from the original, regulated Standard Industrial Classification (SIC) codes. This report summarizes data for the Core facilities that were required to report each year between 1994 and 2001. This Core universe captures a minimum of 80% of the total facilities that report each year.

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/Activity Index 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 efficiency and pollution prevention.

Overview of Findings

Overall, New Jersey facilities have achieved substantial reductions statewide for NPO and releases of hazardous substances. The most notable finding from assessing trends for hazardous substances statewide is that facilities substantially decreased hazardous substances generated as NPO and released into the environment. Although production levels increased by 10%, facilities decreased their NPO generation by 26% and releases decreased by 58%.

When the quantities are adjusted for production, reductions grow to 33% for NPO and 62% for releases. This means that facilities achieved statewide reductions by improving efficiency and implementing pollution prevention measures.

Overall, New Jersey facilities have made less progress reducing the Use of hazardous substances compared to NPO and release. Facilities actually increased the Use of hazardous substances by 8%, using unadjusted quantities. However, when you adjust the quantities for production, Use decreased by 2%. This means that facilities are using substances more efficiently, but increases in production are outpacing this efficiency improvement to drive total Use up.

Increases in Use of hazardous substances are caused by increases in chemicals shipped as (or in) product. 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 2001, hazardous substances shipped as (or in) product accounted for 87% of all hazardous substance Use. Between 1994 and 2001 hazardous substances shipped as (or in) product increased by 15% using unadjusted quantities and increased by 4% using adjusted quantities and is the only component of use that increased using adjusted and unadjusted quantities during the period. 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.

Statewide trends are often driven by changes at a few large facilities. This is particularly true for hazardous substance Use, which is dominated by petroleum refineries, metal manufacturers, and a few large plastics and chemical manufacturers. Increases in Use by the top 10 facilities mask decreases in Use achieved by all other facilities combined. If the top 10 facilities were excluded from the analysis, statewide Use would show a decrease of 10% instead of the 8% increase.

Reductions in releases, on the other hand, are more often attributed to the combined actions of several smaller facilities. Changes by the top 10 facilities account for approximately 46% of the statewide release reductions. This means that the remaining universe of facilities has contributed more to statewide release reductions than the top 10 facilities.

Even though there is a clear downward trend statewide, there are instances where increases are taking place. Of the 197 “core” chemicals tracked, the following trends were seen:

- 32% (63 chemicals) increased in Use,
- 34% (67 chemicals) increased in NPO; and
- 22% (43 chemicals) increased in On-site Releases.

An analysis of specific facilities shows a similar distribution of increases. This analysis shows that 24%, 23% and 16% of facilities reported increases in Use, NPO and releases respectively for unadjusted quantities. While decreases have outpaced these increases to drive the overall statewide trends downward, it is important to understand where these increases are taking place and whether they create potential localized impacts to human health and the environment.

Statewide Trends

Findings on Hazardous Substance Use

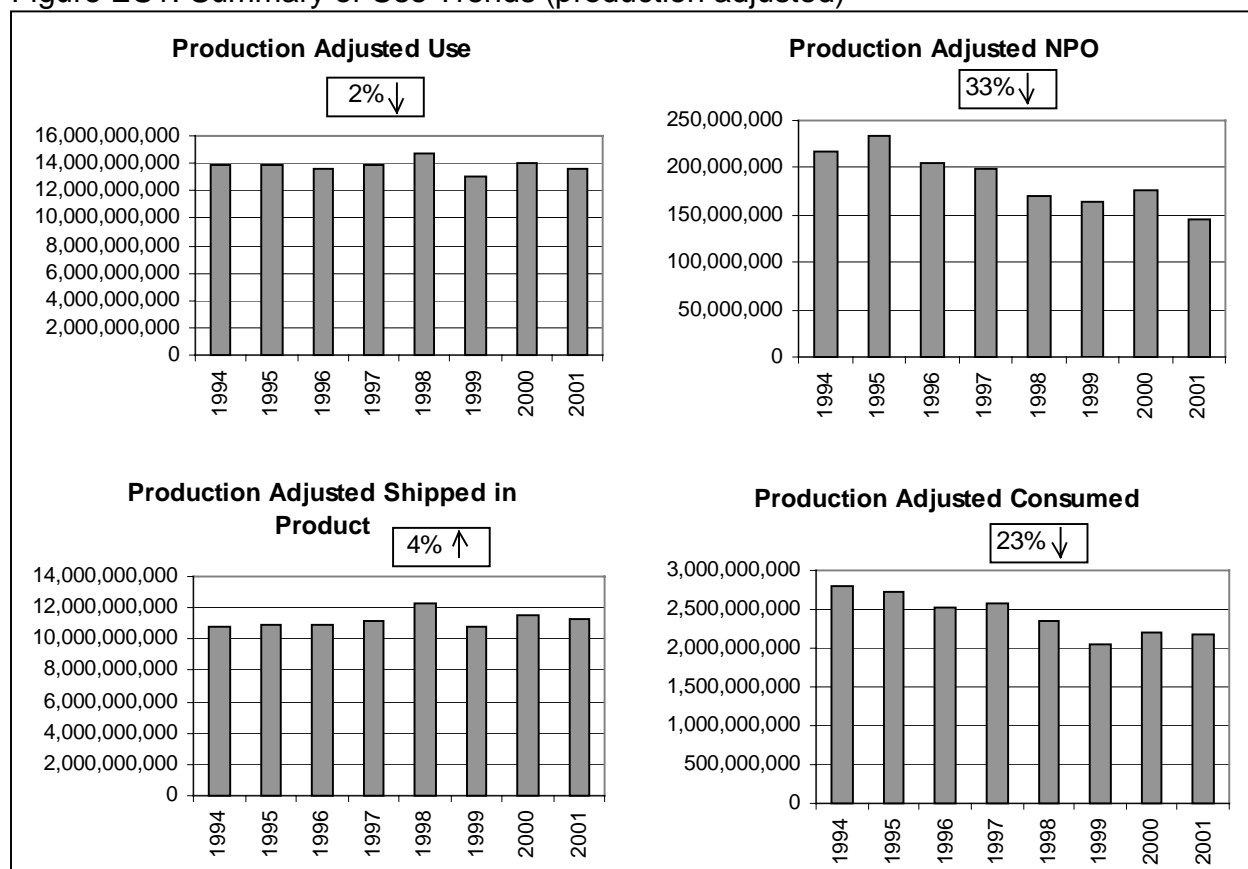
Use of hazardous substances decreased by 2% or 227 million pounds from 1994 to 2001 when adjusted for production (see Table ES1). This trend shows that the quantities Used increased at a slow rate between 1994 and 1997, but saw its biggest increase in 1998 (see Figure ES1). Quantities decreased in 1999, then Use increased in 2000 and decreased in 2001. The biggest decrease occurred between 2000 and 2001. If unadjusted quantities are used, Use actually increased by 8%. This means that facilities are using substances more efficiently, but that increases in production are outpacing these efficiency gains.

Trends for Use of hazardous substances are dominated by the quantity of these substances shipped as (or in) product. In 2001, hazardous substances shipped in products accounted for 87% of the total Use of hazardous substances. The quantity of hazardous substances shipped in product increased using both unadjusted and adjusted quantities.

Table ES1. Summary of Statewide Use Trends

Year	USE		Nonproduct Output		Shipped in/as Product		Consumed		Weighted Production Index	
	Use (Adjusted)	Use	NPO (Adjusted)	NPO	Shipped (Adjusted)	Shipped	Consumed (Adjusted)	Consumed	Yearly	Cumulative
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% reduction	8% increase	33% reduction	26% reduction	4% increase	15% increase	23% reduction	15% reduction	10% increase	

Figure ES1. Summary of Use Trends (production adjusted)



Findings on NPO Generation

The generation of NPO decreased by 33% or 71.7 million pounds when adjusted for production (see Table ES2). This is the biggest percent reduction of the three components of Use tracked in this report. Reductions were driven by decreases in both on-site management and off-site transfers of hazardous substances (see Figure ES2).

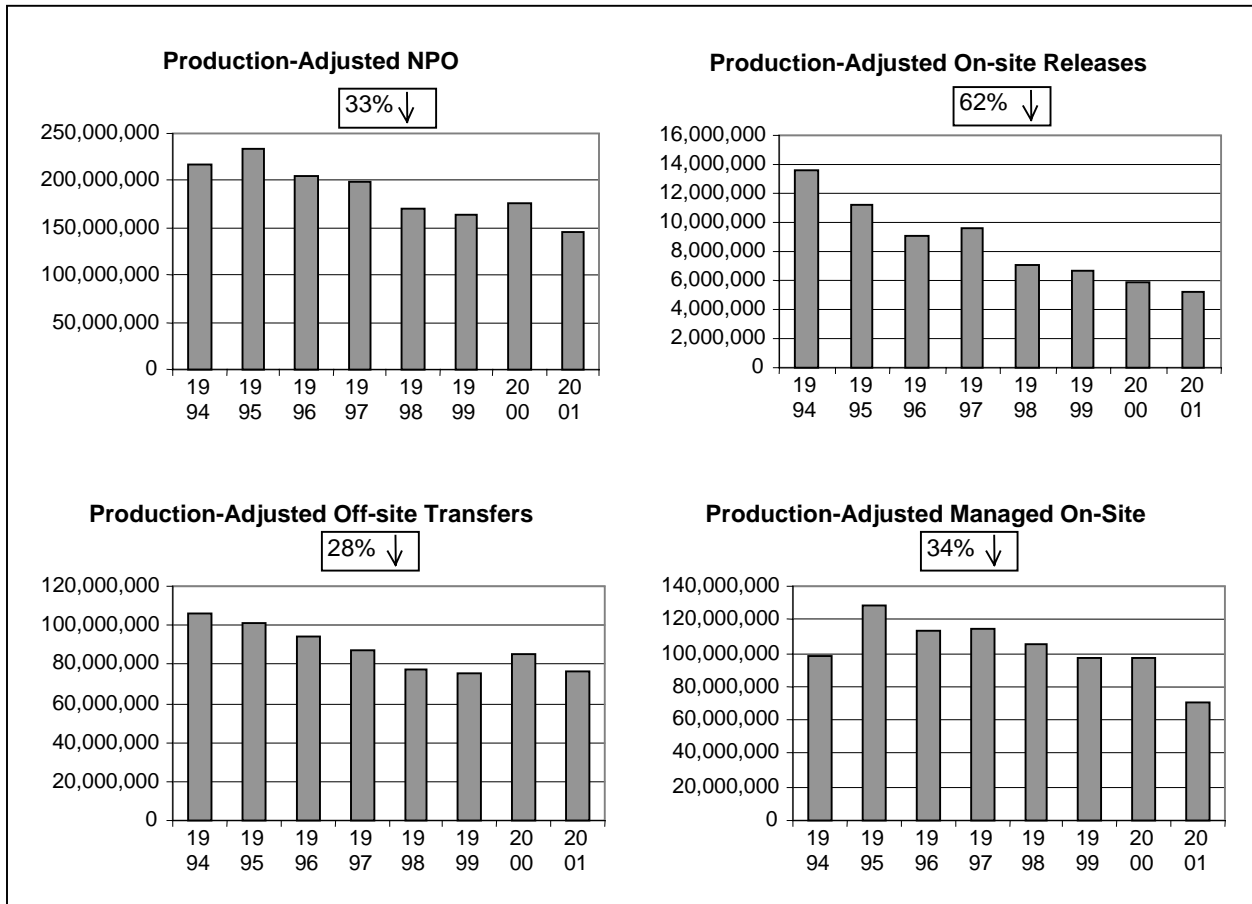
NPO decreased by 26% using unadjusted quantities. For comparison, we estimated national reductions for the same period as reported on the federal Toxic Chemical Release Inventory (TRI).¹ Reductions for total production-related waste (the TRI term for NPO) nationally are estimated to be 6% between 1994 and 2001 using unadjusted quantities. These data show that reductions in New Jersey exceeded the national average.

¹ This comparison was done by downloading data from USEPA's TRI explorer web site using the 1991 core chemicals and original industries filters.

Table ES2. Summary of Statewide NPO Trends

Year	Nonproduct Output		On-site Releases		Off-Site Transfers		Managed On-Site	
	NPO (Adjusted)	NPO	On-site Releases (Adjusted)	On-site Releases	Off-Site Transfers (Adjusted)	Off-Site Transfers	Managed On-Site (Adjusted)	Managed On-Site
1994	217,888,932	217,888,932	13,659,206	13,659,206	106,055,181	106,055,181	98,174,545	98,174,545
1995	234,629,257	246,829,978	11,235,382	11,819,622	101,416,374	106,690,025	121,977,501	128,320,331
1996	204,113,465	229,328,826	9,049,432	10,167,363	94,635,652	106,326,562	100,428,381	112,834,901
1997	198,860,752	224,544,350	9,651,815	10,898,382	87,568,937	98,878,788	101,640,000	114,767,180
1998	170,570,751	208,008,639	7,099,577	8,657,834	77,237,168	94,189,643	86,234,007	105,161,162
1999	163,793,596	196,548,089	6,713,684	8,056,247	75,767,613	90,919,181	81,312,299	97,572,661
2000	175,981,389	201,036,816	5,923,341	6,766,679	85,306,036	97,451,520	84,752,011	96,818,616
2001	146,205,649	160,340,872	5,193,272	5,695,360	76,275,429	83,649,769	64,736,948	70,995,743
Total Change	-71,683,283	-57,548,060	-8,465,934	-7,963,846	-29,779,752	-22,405,412	-33,437,597	-27,178,802
Percent Change	33%	26%	62%	58%	28%	21%	34%	28%
	reduction	reduction	reduction	reduction	reduction	reduction	reduction	reduction

Figure ES2. Summary of NPO Trends (production adjusted)



Findings on On-site Releases

In Table ES3 we see On-site Releases decreased by 62% or 8.5 million pounds when adjusted for production. Stack air emissions are the biggest component of on-site releases accounting for 65% of on-site releases in 2001. Stack air emissions decreased by 56% or 3.9 million pounds. Surface water discharges, though much smaller in magnitude compared to air emissions, increased during the period 1994-2001, with quantities going significantly against the statewide reduction trends. Surface water discharges increased by 95%, using adjusted quantities.

On-site releases decreased by 58% using unadjusted quantities. By comparison, national data for total on-site releases for the same period decreased by 40% for the entire country. It is evident that New Jersey facilities have reduced releases more than the national average.

Table ES3. Summary of On-site Release Trends

Report Year	On-site Releases		Stack Air Emissions (Adjusted)	Stack Air Emissions	Fugitive Air Emissions (Adjusted)	Fugitive Air Emissions	Surface Water Discharge (Adjusted)	Surface Water Discharge	Land Disposal On-site (Adjusted)	Land Disposal On-Site
	On-site Releases (Adjusted)	On-site Releases								
1994	13,659,206	13,659,206	6,913,919	6,913,919	6,156,716	6,156,716	128,623	128,623	459,942	459,942
1995	11,235,382	11,819,622	6,563,747	6,905,062	4,415,784	4,645,405	158,053	166,272	96,647	101,673
1996	9,049,432	10,167,363	5,568,945	6,256,910	2,987,085	3,356,098	201,386	226,264	291,994	328,066
1997	9,651,815	10,898,382	5,821,820	6,573,730	2,851,770	3,220,087	194,811	219,971	783,407	884,587
1998	7,099,577	8,657,834	4,268,612	5,205,513	2,516,608	3,068,968	116,263	141,781	198,082	241,558
1999	6,713,684	8,056,247	3,668,297	4,401,862	2,745,752	3,294,831	165,377	198,448	134,251	161,098
2000	5,923,341	6,766,679	3,447,364	3,938,184	2,207,389	2,521,667	164,452	187,866	104,128	118,953
2001	5,193,272	5,695,360	3,015,450	3,306,985	1,692,313	1,855,927	250,468	274,683	235,037	257,760
Total Change	-8,465,934	-7,963,846	-3,898,469	-3,606,934	-4,464,403	-4,300,789	121,845	146,060	-224,905	-202,182
Percent Change	- 62% reduction	- 58% reduction	- 56% reduction	- 52% reduction	- 73% reduction	- 70% reduction	+ 95% increase	+ 114% increase	-49% reduction	44% reduction

Chemical-specific Changes

To better understand changes underpinning reductions seen at the state level, we evaluated statewide increases and decreases for each chemical. 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. In the chemical-specific analysis, we wanted to know if statewide changes could be attributed to only a few facilities or if changes were part of a broader trend where several facilities were making similar changes. This analysis identified the number of chemicals that increased and decreased across the state. It also identified the top 10 chemicals with increases and decreases.

Table ES4 shows that more chemicals decreased compared to those that increased. Of the 197 core chemicals reported, over 60% of the chemicals decreased statewide. Chemical releases decreased the most, with 70% of chemicals showing decreases.

Table ES4: Summary of Chemical Increases and Decreases

Change Category	Use	NPO	Release
Decrease	134	121	137
No Change	0	9	17
Increase	63	67	43
Percent of chemicals with Decreases	68%	61%	70%
Percent of chemicals with Increases	32%	34%	22%

Table ES5 identifies the top 10 chemical changes for releases. The full report also presents a similar analysis for Use and NPO. All increases in releases for the top 10 chemicals are due primarily to a single facility for each chemical, where a separate facility accounted for essentially all of the increase for 9 out of the top 10 chemical increases. There are no instances where a large number of facilities are reporting increases of a specific chemical. Reductions, on the other hand, are more often due to the actions of numerous facilities combined to reduce statewide releases.

Table ES5. Summary of Chemical-specific Changes in Release

CAS Number	Chemical Name	# of Facilities Increase	# of Facilities Decrease	Ratio of Increase to Decrease	Release 1994	Release 2001	Change
Increase							
N982	ZINC COMPOUNDS	34	31	1.10	53,614	163,351	109,737
108-95-2	PHENOL	3	10	0.30	22,889	72,609	49,720
100-42-5	STYRENE	10	17	0.59	146,385	171,402	25,017
110-82-7	CYCLOHEXANE	7	6	1.17	34,453	58,073	23,620
N106	CYANIDE COMPOUNDS	1	3	0.33	18,238	39,060	20,822
306-83-2	2,2-DICHLORO-1,1,1-TRIFLUOROETHANE	1	1	1.00	9	19,270	19,261
N450	MANGANESE COMPOUNDS	8	9	0.89	4,146	21,245	17,099
N100	COPPER COMPOUNDS [WITH EXCEPTIONS]	9	13	0.69	3,471	19,247	15,776
107-21-1	ETHYLENE GLYCOL	11	35	0.31	27,080	37,048	9,968
106-89-8	EPICHLOROHYDRIN	3	2	1.50	1,614	11,491	9,877
Decrease							
67-56-1	METHANOL	34	79	0.43	1,987,962	430,114	-1,557,848
108-88-3	TOLUENE	37	101	0.37	1,694,730	866,762	-827,968
1330-20-7	XYLENE (MIXED ISOMERS)	29	83	0.35	1,412,245	650,706	-761,539
75-09-2	DICHLOROMETHANE	8	34	0.24	824,913	141,483	-683,430
71-55-6	1,1,1-TRICHLOROETHANE	1	39	0.03	483,599	5	-483,594
78-93-3	METHYL ETHYL KETONE	24	66	0.36	737,827	365,613	-372,214
71-36-3	N-BUTYL ALCOHOL	15	44	0.34	558,676	199,557	-359,119
79-01-6	TRICHLOROETHYLENE	3	9	0.33	385,607	106,393	-279,214
76-13-1	FREON 113		11		279,594	6,377	-273,217
N230	GLYCOL ETHERS (EXCEPT SURFACTANTS)	28	59	0.47	696,021	467,863	-228,158

Facility-specific Changes

We also evaluated increases and decreases at specific facilities to complement the chemical-specific review. The facility-specific analysis is useful to highlight facilities with the biggest changes and to pinpoint geographically where reductions and increases are taking place.

Table ES6 shows the majority of facilities decreased their quantities of hazardous substances between 1994 and 2001. The analysis shows that the number of facilities reporting reductions is in a consistent range between 70% – 80% for the quantities used, generated as NPO, and released.

Table ES6. Summary of Facility Increases and Decreases

Change Category	Use	NPO	Release
Decrease	442	421	444
No Change	1	26	45
Increase	141	137	95
Percent of Facilities with Decreases	76%	72%	76%
Percent of Facilities with Increases	24%	23%	16%
Number of Nonreporters *	258	258	258
Percent of decreases that are Nonreporters	58%	61%	58%

* Nonreporters are facilities that reported in 1994 but not in 2001.

Table ES7 identifies the top 10 facilities based on changes for releases. The full report also presents a similar analysis for Use and NPO. The top 10 facilities reduced 3.6 million pounds of releases out of the 7.9 million pounds statewide, accounting for 46% of the release reductions. This is much smaller compared to the top facilities for Use or NPO. Reductions in releases statewide are more the result of changes by a larger number of facilities compared to Use and NPO.

Table ES7. Summary of Facility Changes in Release

ID	Facility Name	City	1994 Release	2001 Release	Release Difference
Increase					
00118500002	ROCHE VITAMINS INC.	WHITE TWP	113,596	390,589	276,993
00115401005	CHEVRON PRODUCTS COMPANY	PERTH AMBOY	7,978	85,588	77,610
27789100000	FRY'S METALS INC.	JERSEY CITY	5	41,300	41,295
00457000006	REICHHOLD CHEMICALS INC.	NEWARK	4,168	36,695	32,527
01122800002	MONSANTO COMPANY	LOGAN TWP	59,463	86,254	26,791
18174500000	VIKING YACHT CO CORP	NEW GRETNA	34,000	60,380	26,380
32502200000	NEWCO INC	NEWTON	16,556	34,460	17,904
04595700000	NATIONAL MANUFACTURING CO INC	CHATHAM	14,122	31,440	17,318
71236100000	BWAY CORPORATION	ELIZABETH	7,263	21,241	13,978
00000004082	GLACIER GARLOCK BEARINGS, L.L.C.	THOROFARE	4,412	16,130	11,718
TOTAL			261,563	804,077	542,514
Decrease					
84980600000	FRUTAROM MEER CORPORATION	NORTH BERGEN	1,173,000	*NR	-1,173,000
00850201001	E I DUPONT DE NEMOURS & CO INC	PENNSVILLE	1,627,423	727,344	-900,079
18048200002	TEVA PHARMACEUTICALS USA	WALDWICK	521,913	NR	-521,913
00315601000	FORD MOTOR COMPANY	EDISON	795,205	428,017	-367,188
15738800004	NATIONAL CAN COMPANY	PISCATAWAY	293,353	NR	-293,353
00006500000	PEERLESS TUBE COMPANY	BLOOMFIELD	268,160	33,043	-235,117
47034000000	PERMACEL, A NITTO DENKO COMPANY	NORTH BRUNSWICK TWP	401,426	202,402	-199,024
40103700000	ATLANTIC STATES CAST IRON PIPE CO.	PHILLIPSBURG	194,561	17,098	-177,463
00004010001	GENERAL MOTORS CORPORATION	LINDEN	394,273	221,842	-172,431
00060201002	REXAM BEVERAGE CAN COMPANY	MONMOUTH JUNCTION	211,615	68,774	-142,841
TOTAL			5,880,929	1,698,520	-4,182,409
DIFFERENCE					-3,639,895
Statewide Change					-7,963,885
% OF STATEWIDE CHANGE FROM TOP FACILITIES					46%

*NR= nonreporters are facilities that reported in 1994 but not in 2001

Chemicals of Concern

Releases of Carcinogens

The NJDEP has compiled a list of 111 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. The NJDEP assesses cancer risks from releases of these chemicals to the environment in its regulatory decisions, such as developing air permit limits. Only 55 of these carcinogens are reported on the RPPR. Appendix G lists these 55 chemicals, along with references and citations for scientific research on those chemicals.

Carcinogens accounted for 14% of statewide releases in 2001 (788,934 pounds out of 5.7 million pounds – see Table ES8). Most of the releases of carcinogens are emissions to the air. In 2001, air emissions accounted for over 90% of the releases of carcinogens.

On-site releases of carcinogens decreased by 65% or 1.5 million pounds between 1994 and 2001 using unadjusted quantities (see Figure ES3). This decrease is slightly more than the statewide reduction of 58% for all chemicals.

Table ES8. Release of Carcinogens

Report Year	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal on-site	Total On-site Releases
1994	1,134,883	826,484	20,930	3	257,636	2,239,936
1995	1,108,391	955,063	10,971	2	31,296	2,105,723
1996	1,151,538	663,911	27,490	17	180,935	2,023,891
1997	1,219,767	648,043	18,981	1	339,357	2,226,149
1998	535,267	476,590	21,334	1	111,707	1,144,899
1999	672,261	419,016	27,812	1	124,566	1,243,656
2000	781,938	412,697	47,430	1	25,781	1,267,847
2001	467,717	266,660	19,958	1	34,598	788,934

Figure ES3. Trends for Release of Carcinogens

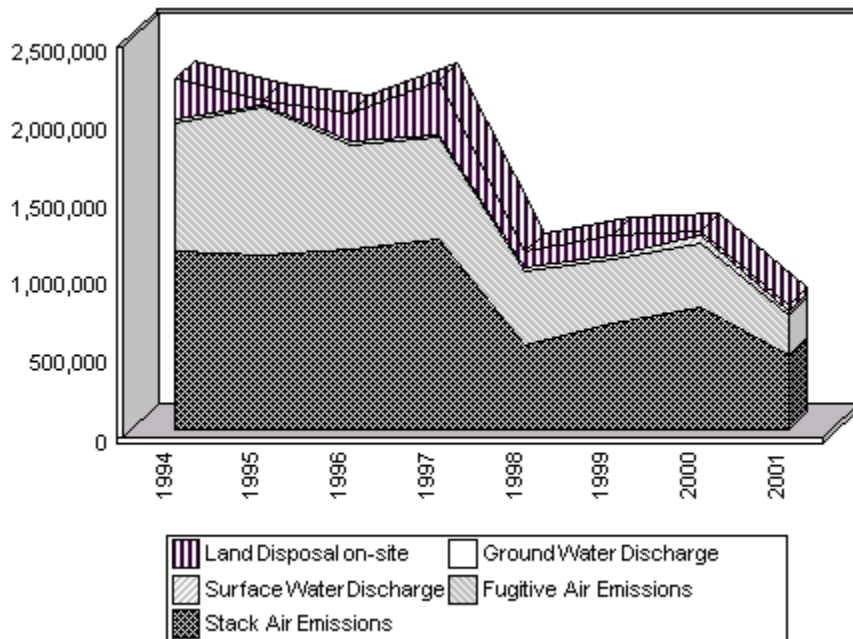


Table ES9 compares the top 10 carcinogens released in 1994 to the top 10 released in 2001. There were two changes in the top 10 lists. Chromium compounds and chloroform replaced tetrachloroethylene and formaldehyde. Releases have substantially decreased for most of the top 10 carcinogens, with 6 of the chemicals reporting reductions over 50%. Only one chemical, styrene, increased. Increases in styrene air emissions are mainly due to two boat manufacturing facilities.

Table ES9. Comparison of Top 10 On-site Releases of Carcinogens (All)

Reporting Year 1994

CAS Number	Chemical Name	On-site Releases
75-09-2	DICHLOROMETHANE	825,835
79-01-6	TRICHLOROETHYLENE	385,607
N495	NICKEL COMPOUNDS	228,540
78-87-5	1,2-DICHLOROPROPANE	155,011
100-42-5	STYRENE	146,385
74-85-1	ETHYLENE	86,822
71-43-2	BENZENE	60,994
50-00-0	FORMALDEHYDE	58,311
127-18-4	TETRACHLOROETHYLENE [PERCHLOROETHYLENE]	45,586
75-01-4	VINYL CHLORIDE	43,363

Reporting Year 2001

CAS Number	Chemical Name	On-site Releases
100-42-5	STYRENE	171,418
75-09-2	DICHLOROMETHANE	141,848
79-01-6	TRICHLOROETHYLENE	106,444
71-43-2	BENZENE	63,647
78-87-5	1,2-DICHLOROPROPANE	63,472
74-85-1	ETHYLENE	61,725
75-01-4	VINYL CHLORIDE	30,481
67-66-3	CHLOROFORM	25,940
N495	NICKEL COMPOUNDS	24,914
N090	CHROMIUM COMPOUNDS	18,063

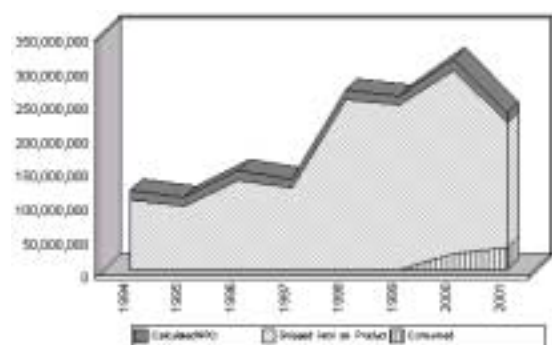
Persistent, Bioaccumulative, Toxic Substances (PBTs)

Chemicals that are persistent, bioaccumulative and toxic (PBT) 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. Through a series of recent rule changes, EPA established a list of 18 chemicals and compounds that are considered PBTs for TRI reporting purposes and lowered the threshold for reporting for these chemicals.

Due to these changes in reporting requirements and the short time period that most of the PBT chemicals have been reported, it is difficult to track a “core” universe of facilities for PBT chemicals. Data presented below includes all reports submitted by facilities for chemicals classified as PBT. Consequently, trends are driven more by changes in reporting requirements, not actual increases or decreases of hazardous substances Used or generated by facilities.

Figure ES4 presents Use trends for PBTs and shows that most of the PBTs are shipped as (or in) product. A closer look at the data shows that the majority of PBTs shipped in product are lead and polycyclic aromatic compounds (PACs). Lead is shipped, for example, in product by several battery manufacturers, metal recyclers and cable and electronics board manufacturers. PACs are shipped as a chemical component in petroleum products.

Figure ES4. Summary of PBT Use Trends



Year	Consumed	In Product	NPO	Calculated Use
1994	0	103,187,744	15,452,481	118,640,225.00
1995	1,385,267	92,993,740	12,601,512	106,980,519.00
1996	32,041	132,297,645	15,486,422	147,816,108.14
1997	0	121,717,112	12,952,927	134,670,039.14
1998	0	252,051,141	14,641,538	266,692,678.71
1999	0	245,505,718	12,836,084	258,341,801.60
2000	25,167,686	271,859,450	16,132,851	313,159,986.88
2001	33,403,941	184,262,017	14,917,403	232,583,361.06

Table ES10 presents trends for releases and transfers of PBTs. The two most important PBT chemicals in New Jersey are lead and mercury. Lead also accounted for 72% of all PBT releases in 2001 and for other years, a much higher percentage (e.g., 99.9% in 1994 and 98.6% in 1995).

Table ES10. Summary of PBT Releases and Transfers

Report Year	1994	1995	1996	1997	1998	1999	2000	2001
Recycled & Reused on-site	9,071	23,509	13,971	125,819	321,868	2,243	1,881	41,853
Destroyed on-site	5,010	4,874	510	697	386,249	284,907	323,054	211,089
Energy Recovered on-site	0	0	0	0	0	0	15,148	24,850
Stack Air Emissions	17,695	13,705	14,023	13,139	13,535	7,853	8,081	10,458
Fugitive Air Emissions	2,695	1,631	1,775	2,035	2,210	993	1,604	1,183
Surface Water Discharge	899	602	2,700	2,703	841	2,857	2,772	1,141
Ground Water Discharge	1	1	1	1	1	1	2	0
POTW Discharge	34,311	11,151	1,670	754	906	637	500	351
Land Disposal on-site	57,842	49,136	43,526	108,690	55,712	26,340	3,535	12,438
Total Waste Transfer	12,652,776	12,375,995	15,377,098	12,700,470	13,605,804	12,016,143	15,768,389	14,669,723
EM(NPO) - SM(NPO)	2,672,181	120,908	31,150	-1,181	254,412	484,059	8,108	-55,603

In 2001, 14% of the mercury NPO was released through stack air emissions, 1% land disposal, 2% discharged to surface waters and the remainder of the 84% is transferred off-site. Table ES11 shows how these off-site wastes were managed. For reporting year 2001, 88% of the mercury transferred off-site was recycled, 1% was transferred off-site for further treatment, and 11% was transferred off-site for disposal.

Table ES11. Components of NPO (Mercury)

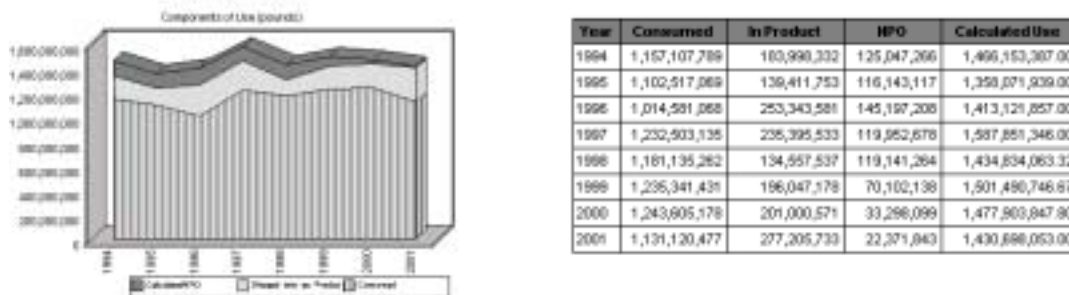
Report Year	2000	2001
Recycled & Reused on-site	0	0
Destroyed on-site	0	0
Energy Recovered on-site	0	0
Stack Air Emissions	937	756
Fugitive Air Emissions	1	0
Surface Water Discharge	3	12
Ground Water Discharge	1	0
POTW Discharge	7	0
Land Disposal on-site	17	74
Total Waste Transfer	5,387	4,365
EI(NPO) - SI(NPO)	631	5

Extraordinarily Hazardous Substances (TCPA)

Under the Toxic Catastrophe Prevention Act (TCPA) N.J.S.A. 13:1K-19 et seq., the NJDEP regulates 215 chemicals that are considered extraordinarily hazardous substances (EHS). The goal of the TCPA is to protect the public from catastrophic accidental releases of EHSs into the environment. Under the TCPA program, facilities do not report the quantity of substance used. Instead, in this analysis we are relying on data reported on the RPPR as a surrogate for quantities of these substances used throughout the state. The list of EHS chemicals that are also reported under the W&CRTK is found in Appendix I.

Use of TCPA chemicals accounted for 9% of the total Use for all chemicals statewide (1.4 billion out of 15.6 billion) in 2001 (see Figure ES5). Use of TCPA substances decreased by 2% or 35.5 million pounds between 1994 and 2001. The reduction for Use of TCPA substances is an improvement compared to the statewide increase of 8% for all chemicals.

Figure ES5. Trends for EHS Use



Summary of the 2001 Annual Report

Along with analyzing trends over time, this report also evaluates all data reported for calendar year 2001. This single-year snapshot compliments the trend data by identifying the top contributors to Use, NPO and releases using the most recent data available. The analysis for 2001 is not limited to the core universe and uses all data submitted by each facility that submitted an RPPR. Table ES12 identifies the top 10 chemicals released into the environment in 2001. These 10 chemicals accounted for almost 80% of all releases in 2001. The full report provides additional analysis for Use, NPO, transfers, waste management activities and releases to air, water, and land.

Table ES12. Top 10 Substances Released in 2001

CAS Number	Substance Name	On-Site Releases	% of Total
7647-01-0	HYDROCHLORIC ACID	6,154,312	34.31 %
N511	NITRATE COMPOUNDS (WATER DISSOCIABLE)	3,099,303	17.28 %
7664-41-7	AMMONIA	1,330,004	7.41 %
108-88-3	TOLUENE	893,134	4.98 %
1330-20-7	XYLENE (MIXED ISOMERS)	666,530	3.72 %
7664-93-9	SULFURIC ACID	529,696	2.95 %
N230	GLYCOL ETHERS (EXCEPT SURFACTANTS)	467,967	2.61 %
67-56-1	METHANOL	439,491	2.45 %
1634-04-4	METHYL TERT-BUTYL ETHER	372,410	2.08 %
78-93-3	METHYL ETHYL KETONE	366,225	2.04 %
Sum of Top Ten:		14,319,072	79.82 %
Sum Other:		3,619,543	20.18 %
Sum All:		17,938,615	100.00 %

Table ES13 identifies the top 10 facilities with releases in 2001. These 10 facilities accounted for 67% of the releases in 2001. The list includes electric utilities (4), petroleum refineries (2), chemical manufacturers (2), a pharmaceutical company and an auto assembly plant.

Table ES13. Top 10 Facility Releases

Facility Name (City)	County	On-Site Releases	% of Total
PUBLIC SERVICE ELECTRIC & GAS CO (JERSEY CITY)	HUDSON	3,333,269	18.58 %
CONOCOPHILLIPS COMPANY (LINDEN)	UNION	2,325,306	12.96 %
PSEG FOSSIL LLC (HAMILTON)	MERCER	2,320,471	12.94 %
E I DUPONT DE NEMOURS & CO INC (PENNSVILLE)	SALEM	1,674,347	9.33 %
CONECTIV (PENNSVILLE)	SALEM	548,040	3.06 %
CONECTIV (BEESLEYS POINT)	CAPE MAY	496,571	2.77 %
FORD MOTOR COMPANY (EDISON)	MIDDLESEX	429,325	2.39 %
ROCHE VITAMINS INC. (WHITE TWP)	WARREN	394,087	2.20 %
COASTAL EAGLE POINT OIL COMPANY (WEST DEPTFORD TWP)	GLOUCESTER	342,010	1.91 %
MALLINCKRODT BAKER INC (PHILLIPSBURG)	WARREN	285,613	1.59 %
Sum of Top Ten:		12,149,038	67.73 %
Sum Other:		5,789,577	32.27 %
Sum All:		17,938,615	100.00 %