DELAWARE TOXICS RELEASE INVENTORY

DATA SUMMARY

2008

Prepared by the
Department of Natural Resources and Environmental Control

December 2009

2008 TRI DATA SUMMARY

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Front Cover: *This is a picture of the Indian River Power Plant located near Millsboro. This facility is an important producer of electricity for the region. Although this facility is ranked #1 in on-site TRI chemical releases, it has reduced those releases to air for 2008 by 11% through the use of lower sulfur coal while increasing power production.*

DNREC photo by Joanna Wilson.

A MESSAGE FROM THE SECRETARY

The Department of Natural Resources and Environmental Control is pleased to present the Toxics Release Inventory (TRI) Report for the reporting year 2008. DNREC publishes this report as part of our efforts to inform citizens about environmental issues in their communities. This is the 22nd year of TRI data collection. The program has proven to be successful as a non-regulatory way to encourage pollution prevention and reductions of toxic chemical releases. When properly motivated and encouraged to innovate, Delaware companies have demonstrated continued progress in increasing efficiency and reducing their releases of toxic chemicals.

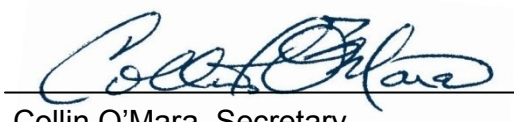
The 2008 data summarized in this report are encouraging. The Indian River and Edge Moor/Hay Road Power Plants, INVISTA, and Delaware City (Premcor/Valero) Refinery facilities reported significant reductions in on-site releases. These facilities reflect a trend towards greater accuracy and decreased releases. Delaware's 2008 total on-site TRI releases declined by 11% compared to 2007 reported releases. Reported releases to air and water were down 17% and 16%, respectively. Reported releases to land, however, were up by over 100%, which was caused primarily by the increased release at the Indian River Power Plant, as it shifted away from transfer/disposal off-site to disposal on-site for its ash. The long term trend for total on-site releases since 1998 shows a decrease of more than twenty percent. Although the data for on-site releases of carcinogenic compounds was up for 2008, the long term carcinogen trend is down, by 64%, or 548,000 pounds, since 1998. In the future, emissions from power plants will also be significantly reduced when compliance with our multi-pollutant regulations is achieved.

This TRI report shows progress in two important areas: Increased accuracy and decreased emissions across a broad front. Instead of relying on estimates, Delaware's TRI facilities increasingly use results from directly monitored data (36% of the total TRI waste contained in 10% of the reports for 2008). For 2006, the use of such direct data revealed higher than estimated nitrate compound releases from the Premcor refinery. For 2007 and 2008, Premcor further increased their water sampling to get better data over time, and the facility-reported discharge of nitrate compounds to the Delaware River decreased by 595,000 pounds for these two years. At the Edge Moor/Hay Road Power Plants, where emissions factors were used to estimate releases, reported releases of mercury to air decreased by 34 pounds, or 20%, for 2008.

We publish two TRI documents annually: The more technical *TRI Data Detail Report* and this shorter *Data Summary Report*, a more compact, less technical report. These reports and reports for recent years are available at DNREC offices and also through the public information link at http://www.serc.delaware.gov/epcra.shtml. CDs containing both reports were also sent to all public libraries. Specific facility data from 1995-2008 are also available at the above web site, and the ***Other Sources of Information*** section of this report provides details about the many other DNREC and EPA Internet sites devoted to community right-to-know.

I urge you to take advantage of the information in this report to learn about the management of chemicals in your community. I also encourage our industrial citizens to continue to reduce releases below today's levels and focus on providing a safer and more healthful environment for our future.

Sincerely,



Collin O'Mara, Secretary,
Department of Natural Resources and Environmental Control

INTRODUCTION

Chemicals are a part of our lives. We use chemicals in our homes, our cars, our schools, and our industries. Chemicals are used to make most of the products, including electricity, which we use, enjoy, and depend on each day.

At the same time, Delaware citizens and all Americans have a right to air that is clean, water that is safe to drink, food that is free from dangerous contaminants, and communities that are free of hazardous wastes.

In 1986, Congress created the Toxics Release Inventory (TRI) as part of the Superfund Amendments and Reauthorization Act (SARA) to ensure that toxic chemicals and their wastes are managed and used safely and responsibly by the manufacturing industries and other facilities, and to let the communities in which these facilities are located know about the disposal and waste management of these chemicals. Recognizing the value of information and the power the public can apply through the use of the "Right-to-Know" concept, Delaware and DNREC joined with the EPA and first reported on releases and other waste management of toxic chemicals in Delaware for 1987. DNREC and the EPA continue to collect and distribute TRI data to the public each year. The fact that companies must report on the amount of toxic chemicals they release into the environment has, by itself, caused significant reductions in reported TRI environmental releases over the years.

For 2008, one Delaware facility increased its sampling frequency for nitrate compounds in water and saw its reported on-site release decrease. Another facility also reported a decrease in release of nitrate compounds to water through better treatment plant operation. Reports from these and other Delaware facilities resulted in an overall decrease of 1,200,000 pounds (11%) in the total amount of state-wide on-site releases for 2008. We hope that, with the help of industry and interested citizens, reductions in the amounts of on-site releases of TRI chemicals will continue.

This year's report focuses in part on the releases of the persistent, bioaccumulative and toxic chemicals known as PBTs. Although this is the 22nd year for TRI, this is only the ninth year that these PBT chemicals have been reported at lower thresholds.

The Department of Natural Resources and Environmental Control (DNREC) hopes that the information presented in this report will benefit Delaware citizens by improving their awareness and promoting their involvement in environmental issues in their communities.

This report provides a summary of the toxic chemicals handled by Delaware facilities in 2008 and associated data reported to the TRI program. DNREC also publishes a second, more detailed TRI report that provides information about each TRI chemical reported by each facility in Delaware.

WHAT IS THE TOXICS RELEASE INVENTORY?

The **Toxics Release Inventory**, or **TRI**, is a collection of data that contains information about toxic chemicals that are manufactured or used by some, but definitely not all, facilities in the United States. See the next page for details on who must report to the TRI program. This information is reported each year by the facilities to the states where they are located and to the U.S. Environmental Protection Agency (EPA). This information is available to the public through this report and a more technical report published by Delaware's Department of Natural Resources and Environmental Control (DNREC). In addition, the EPA publishes TRI reports, and the data is available through state and federal internet sites. The TRI program was established in 1986 to provide information to the public about the presence and release of toxic chemicals in their communities. It is part of the Emergency Planning and Community Right-to-Know Act (EPCRA).

The EPCRA Reporting Program maintains a database that is updated as new reports are received. The database currently contains twenty-two years of data. Most chemical releases reported under TRI are also regulated through Federal and/or State permits.

This report is a summary of the 2008 TRI data and revisions received as of November 1, 2009 from Delaware facilities.

WHY IS THERE A NEED FOR THIS PROGRAM?

A dramatic and fatal accident involving the release of a large quantity of methyl isocyanate gas occurred in Bhopal, India on December 3, 1984. Because of this release and similar, less tragic, accidents that occurred in the United States, Congress enacted the Emergency Planning and Community Right to Know Act (EPCRA). The purpose of this Act is to give citizens information about the chemicals present in their communities, and improve the ability of facilities and local emergency agencies to plan for and respond to chemical emergencies. The Act established a number of reporting requirements for facilities and businesses, and reporting began in 1987. In 1991, Delaware established its own EPCRA legislation that enhanced the federal requirements.

WHAT IS A TOXIC CHEMICAL?

A toxic chemical is one that meets any one of several standards for serious or significant potential to harm human, fish, or animal life, or to be harmful to the environment. There are now 581 chemicals and an additional 30 chemical categories, such as mercury compounds, polycyclic aromatic compounds (PAC's), and Dioxin and Dioxin-like compounds, on the TRI chemical list. Of these chemicals and compounds, 100 were reported by 68 facilities in Delaware for 2008.

WHO MUST REPORT TO THE TRI PROGRAM?

Not every facility in Delaware reports to the TRI program. There are three requirements a facility must meet before reporting is required.

1. Only facilities that have 10 or more full time employees are required to report.

2. A facility must be doing business as a manufacturer or processor, generate electric power, or distribute bulk petroleum products. All federal facilities are also required to report.

3. A facility must manufacture or process one of the chemicals on the TRI list in quantities greater than a minimum threshold value. This value is generally 25,000 pounds for Manufacturing and Processing, and 10,000 pounds for the Otherwise Use category. There are lower threshold values (see Table 2 on page 8) for Bioaccumulative Toxins (PBTs). Some facilities are able to report some chemicals on a short form (Form A) if the reportable amount of that chemical meets certain criteria. No amounts are reported on Form A; the facility only indicates that it manufactured, processed, or otherwise used less than the threshold amount of the chemical during the year.

HOW DO WE GET THE DATA?

Each year by July 1, facilities report on each chemical that meets the reporting threshold. Each chemical report is usually on a 5-page form that details the type and amount of on-site release, off-site transfer, or on-site waste management activity the chemical has experienced during the prior calendar year. The facilities report this data to DNREC and to the EPA.

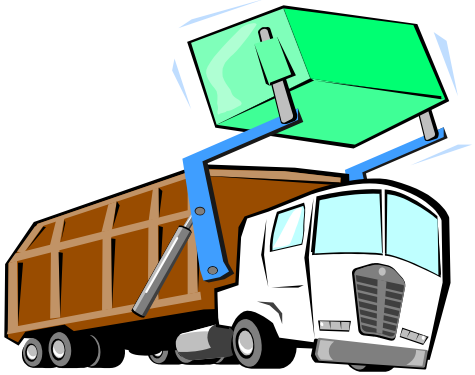
DNREC and EPA check the data for completeness and accuracy, including comparing it with data reported to other programs.

DNREC also visits some of the facilities to get a better understanding about the process at the facility and the reasons for specific chemical use. In addition, DNREC and EPA may audit a facility if they suspect that reporting was not accurate. Both DNREC and the EPA publish reports on the data. The reports, such as this one, are available to the public.

TYPES OF TRI DATA

TRI chemical data is reported in several categories. Table 1 on the next page lists all the categories and amounts reported in 2008 to Delaware and EPA under the TRI program.

On-Site Releases: On-site releases in Delaware are to **air, water,** or **land**. **Releases to air** includes exhaust air collected by vents, ducts, or pipes, as well as air escaping into the general facility atmosphere. **Releases to water** are releases to streams or water bodies, including rivers, lakes, oceans and bays at the facility site. This includes releases from sources such as industrial process outflow or open trenches and storm water runoff. **Releases to land** go to landfills, hazardous waste landfills, surface impoundments (uncovered holding areas used to evaporate and/or settle waste materials), other land disposal such as waste piles or releases, and land application or treatment in which waste containing a TRI chemical is applied to or incorporated into soil or land at the facility.



Off-Site Transfers: Off-site transfers include transfer of chemical waste to **POTW's** (Publicly Owned Wastewater Treatment Plants), to **recycle** operations, to **energy recovery** operations, to **treatment** operations, and to **disposal.** These transfers are to other facilities that are permitted to accept the waste from the facility that generates it.

On-site waste Management:
Waste management operations at the facility generating the waste include **recycling, energy recovery, and treatment.** These are the same as described above in Off-Site Transfers, but occur on-site.

2008 DATA SUMMARY

Table 1 shows statewide totals of 2008 reported TRI on-site releases, off-site transfers, and wastes managed on-site. These different categories are discussed in the previous section and below.

Sixty-eight facilities submitted 318 reports on 100 different chemicals. Reports from all Delaware facilities resulted in an overall decrease in the total amount of state-wide on-site releases by 1,200,000 pounds (11%) for 2008. Releases to air make up the largest portion (61% for 2008) of the total on-site release amount. Reductions of 721,000 pounds in hydrochloric acid released to air were reported by two electric generating facilities, and a reduction of 210,000 pounds of nitrate compounds released to water was reported by another large facility.

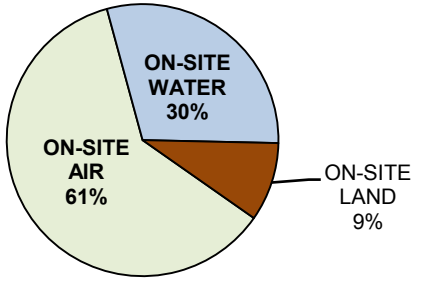
TABLE 1
2008 TRI DATA SUMMARY
(IN POUNDS)

	2008
No. of Facilities	68
No of Form As	31
No of Form Rs	287
No. of Chemicals	100
On-site Releases	
Air	5,771,173
Water	2,796,686
Land	885,976
Total On-Site Releases	9,453,836
Off-Site Transfers	
POTW's	1,117,335
Recycle	7,535,327
Energy Recovery	3,707,411
Treatment	150,297
Disposal	3,129,281
Total Off-Site Transfers	15,639,650
On-Site Waste Mgmt.	
Recycle	10,870,477
Energy Recovery	20,932,200
Treatment	42,281,742
Total On-Site Mgmt.	74,084,419
Total Waste	99,177,905

ON-SITE RELEASES

On-site releases are emissions to the air, water, or land environment at the facility site. Figure 1 shows the relative amounts of all TRI chemicals released on-site for all Delaware TRI facilities.

FIGURE 1
2008 ON SITE RELEASES



TOTAL REPORTED
9,453,836 POUNDS

Of all the TRI chemicals released to air, hydrochloric acid, sulfuric acid, and hydrogen fluoride make up about 84% of the total releases to air. These acid gasses are almost entirely generated by the power plants at Indian River, Edge Moor/Hay Road, INVISTA, and the Premcor refinery.

These same chemicals make up about 51% of the total on-site releases to air, water, and land combined.

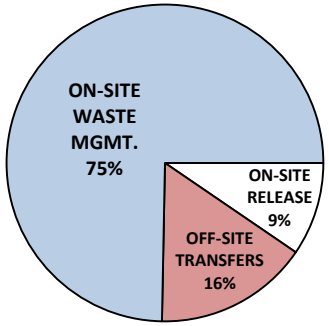
On-site releases to water consist mostly of nitrate compounds from the Premcor, Perdue Georgetown, and INVISTA Seaford facilities. Although these facilities are large producers of nitrate compounds, there are several other nitrate-producing facilities in Delaware that are not subject to the TRI program.

On-site releases to land are usually metallic compounds such as barium, vanadium, lead, nickel, manganese, chromium, copper, and zinc compounds. The power plants at Indian River, INVISTA, and at the Motiva/ Premcor refinery generate most of these metallic compounds in ash from impurities in the fuels that they burn.

TOTAL WASTE

The relative amounts of all TRI chemical wastes from the three main categories in Table 1 are shown in Figure 2, where you can see the percentage contribution of the on-site releases, off-site transfers, and on-site waste management.

FIGURE 2
TOTAL TRI WASTE



TOTAL REPORTED:
99,177,905 POUNDS

Table 1 and Figure 2 show that on-site releases make up only about 9% of the total TRI waste. Other data, including transfers off-site and waste managed on-site are discussed in more detail in the *2008 TRI Data Detail Report* available from DNREC.

LIMITATIONS OF TRI DATA

In addition to the fact that not all facilities are required to report to the TRI program, there is an important thing to keep in mind:

THIS DATA DOES NOT INDICATE THE AMOUNT, IF ANY, OF HUMAN EXPOSURE OR HOW SEVERE IT MIGHT BE.

TRI data does not provide an indication of actual or potential exposure to the reported releases and cannot be used by itself to determine the impact on your health. Factors such as the chemical's release rate, the toxicity of the chemical, where the chemical enters the environment and its proximity to nearby communities must be fully considered when assessing exposure to the chemical. A small release to air of a highly toxic chemical near a large community may be a greater risk than a large release to land of a less toxic chemical in a remote area.

PERSISTENT, BIOACCUMULATIVE TOXIC CHEMICALS

Certain chemicals are more toxic to humans, animals, and the environment than others, and some remain in the environment much longer than others before they are destroyed by natural processes (if they are destroyed at all). In addition, some chemicals tend to accumulate in bodies of humans, fish, and animals rather than being destroyed or eliminated. These chemicals, if they meet certain standards, are classified as Persistent, Bioaccumulative Toxic (PBT) chemicals. Metals, as elements, are neither created nor destroyed. They can, however, change form in nature or industry as they combine with other elements to become chemicals or compounds that may be classified as PBTs.

If these PBT chemicals are manufactured, processed, or otherwise used above the reporting threshold amounts shown in Table 2, rather than the amounts on page 4, they are reportable to the TRI program. Because of the increased hazards associated with these substances, the thresholds for reporting PBTs to TRI are much lower than the basic thresholds applied to other, non-PBT substances. The total amounts released on-site for these PBT substances are shown in Table 3 on the next page.

TABLE 2
PBT CHEMICALS AND REPORTING THRESHOLDS

(pounds/year)

Chemical or Chemical Category	Threshold (Pounds)	2008 Reports
Aldrin	100	0
Benzo[g,h,I]perylene	10	10
Chlorodane	10	0
Dioxin and dioxin-like compounds category	0.1 grams	6
Heptachlor	10	0
Hexachlorobenzene	10	1
Isodrin	10	0
Lead *	100	2
Lead and lead compounds *	100	13
Mercury	10	2
Mercury compounds	10	8
Methoxychlor	100	0
Octachlorostyrene	10	1
Pendimethalin	100	0
Pentachlorobenzene	10	2
Polychlorinated biphenyls (PCB's)	10	1
Polycyclic aromatic compounds category	100	14
Tetrabromobisphenol A	100	0
Toxaphene	10	0
Trifluralin	100	0
* Lower Threshold For 2001 Reports	TOTAL	60

DATA FOR PERSISTENT BIOACCUMULATIVE TOXICS

In 2000, the EPA required reporting at much lower threshold levels on a class of chemicals known as persistent, bioaccumulative, toxics (PBTs). Table 2 on page 8 shows the new thresholds.

In 2001, lead and lead compounds, already on the TRI chemical list, were added to the PBT list, and their reporting thresholds were also reduced. PBTs are receiving increased attention because we are learning that they remain in the environment for a long time and may not be readily destroyed by nature. PBTs may also move up the food chain without being destroyed and accumulate in body tissues.

Table 3 shows the reported on-site release amounts for PBTs for 2003-2008. The PBT chemicals made up a small part, about 0.36%, of the total on-site releases for 2008. Lead and lead compounds make up a large portion, 31,906 pounds, or 95%, of PBT on-site releases. Releases to land from coal-burning operations at power generating facilities accounted for 30,397 pounds, or 95%, of this amount. The 2008 reported on-site releases of PBTs are 60% higher compared to 2007 because a large amount of metallic PBT compounds generated and disposed of off-site to land in 2007 from the Indian River Power Plant were disposed of on-site in 2008. The total PBT amounts reported for 2008 are 23% higher than the amounts reported for 2003.

TABLE 3

2003-2008 TRI PBT DATA SUMMARY

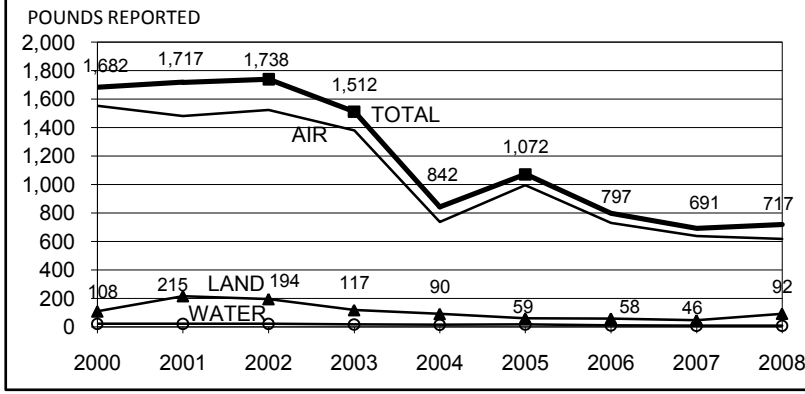
(IN POUNDS)

	2003	2004	2005	2006	2007	2008
Number of Facilities	28	26	28	26	30	27
Number of Form As	NA	NA	NA	6	4	NA
Number of Form Rs	62	60	60	54	59	60
Number of Chemicals	11	11	11	11	11	11
On-Site Releases						
Air	5,230	3,796	4,095	4,075.01	4,172	3,716
Water	311	1,002	1,857	1,405.18	1,565	1,008
Land	21,826	27,356	26,559	25,309.02	15,270	28,948
Total On-Site Releases	27,367	32,154	32,511	30,789	21,008	33,673

Mercury and Mercury Compounds

Mercury (elemental mercury) and mercury compounds are an important part of the PBT category, and this section discusses some of the data in these reports. Reported elemental mercury on-site release amounts decreased 11 pounds as Occidental Chemical completes its chlor-alkali plant shutdown. Occidental Chemical sent about 2,000 pounds of mercury off-site for recycling in 2008 as part of this shutdown activity, following 560,000 pounds in 2005-2007. Occidental contributed virtually all of the 6 pounds of elemental mercury released on-site, down from 278 pounds reported in 2005 to 17 pounds in 2007, and this amount will continue to decrease as the facility completes its shutdown. Figure 3 shows the combined trend since 2000 in Delaware for mercury and mercury compounds.

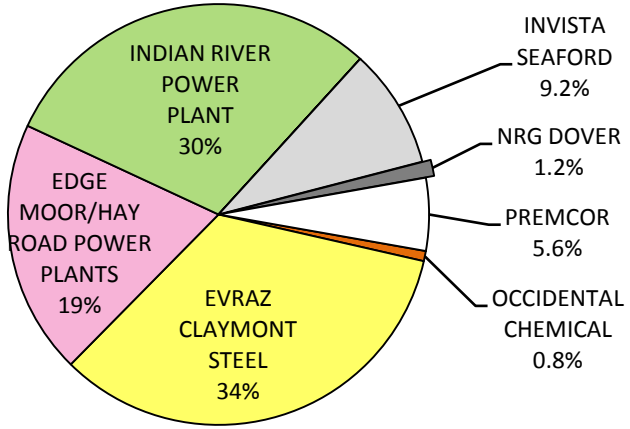
FIGURE 3
DELAWARE MERCURY TRENDS
ON-SITE RELEASE, ALL FACILITIES



Reported on-site releases of mercury in mercury compounds in Delaware increased 37 pounds (5.5%), largely due to the 51-pound increase reported from the Indian River Power Plant, a 25-pound increase in the report from Premcor, and a 23-pound increase from INVISTA. The Edge Moor/Hay Road power plants reported a 34-pound decrease followed by Evraz claymont Steel with a 28-pound decrease. Total on-site releases of mercury in Delaware have decreased by 59% since the peak of 1,738 pounds in 2002.

Figure 4 shows the percentage each of the facilities that reported a mercury or mercury compound contributed to the mercury on-site release total in 2007. Intervet and Dentsply were required to report on mercury because of activities at the facilities involving mercury, but these facilities did not report any on-site releases of mercury.

FIGURE 4
2008 ON-SITE MERCURY RELEASES
FROM DELAWARE FACILITIES



717 POUNDS REPORTED
MERCURY AND MERCURY COMPOUNDS

CARCINOGENIC CHEMICALS

Some chemicals are known to or suspected to cause cancer in humans. These chemicals are called carcinogens. Table 4 shows the chemicals on the TRI list that are identified as carcinogens and were reported in Delaware for 2008. Table 4 also shows the number of reports that were received by Delaware for each of these chemicals (nine less than for 2007).

DATA FOR CARCINOGENIC CHEMICALS

Table 5 shows data for carcinogens reported to TRI in Delaware since 2002. Additional detail can be found in the longer, more technical *2008 TRI Data Detail Report* available from DNREC. The amount of carcinogens released on-site in 2008 increased 33% compared to the amount released in 2007, but decreased 49% since 2002.

TABLE 5

2002-2008 TRI CARCINOGENS

ON-SITE RELEASES IN POUNDS

	2002	2003	2004	2005	2006	2007	2008
AIR	402,350	246,106	223,522	226,188	187,836	145,637	161,821
WATER	11,791	10,773	12,129	8,062	6,770	8,094	5,627
LAND	187,549	334,290	222,680	178,694	187,366	78,238	140,976
TOTAL ON-SITE	601,690	591,169	458,331	412,943	381,972	231,970	308,424

TABLE 4

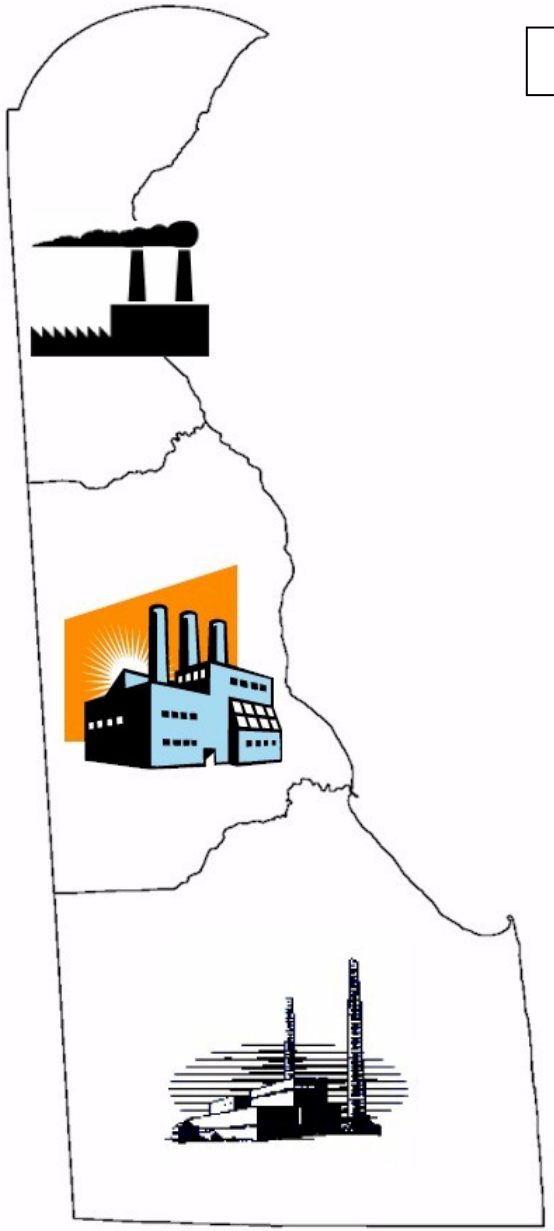
CARCINOGENS REPORTED BY DELAWARE FACILITIES FOR 2008

CHEMICAL NAME	IARC	NO. OF REPORTS
ARSENIC COMPOUNDS	1	2
BENZENE	1	4
CHROMIUM COMPOUNDS	1	7
ETHYLENE OXIDE	1	2
NICKEL COMPOUNDS	1	6
VINYL CHLORIDE	1	1
1,3-BUTADIENE	2A	2
4,4'-METHYLENEBIS(2-CHLOROANILINE)	2A	2
ACRYLAMIDE	2A	1
CREOSOTE	2A	1
FORMALDEHYDE	2A	1
POLYCHLORINATED BIPHENYLS	2A	1
TRICHLOROETHYLENE	2A	1
POLYCYCLIC AROMATIC COMPOUNDS	2A,B	14
ACRYLONITRILE	2B	1
COBALT COMPOUNDS	2B	3
DICHLOROMETHANE	2B	1
ETHYL ACRYLATE	2B	2
ETHYLBENZENE	2B	4
HEXACHLOROBENZENE	2B	1
LEAD	2B	2
LEAD COMPOUNDS	2B	13
NAPHTHALENE	2B	8
NICKEL	2B	2
NITROBENZENE	2B	1
P-CHLOROANILINE	2B	1
PROPYLENE OXIDE	2B	1
STYRENE	2B	5
TETRACHLOROETHYLENE	2B	1
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2B	3
VINYL ACETATE	2B	2
	TOTAL =	96

Source: 2008 DNREC Database, November, 2009

FIGURE 5

ON-SITE RELEASES BY COUNTY



NEW CASTLE

Releases to Air = 2,267,187 Pounds
Releases to Water = 2,216,461 Pounds
Releases to Land = 9,535 Pounds
Total On-Site Releases = 4,493,184 Pounds
199 Reports, 33 Facilities
47.5% of Statewide Releases

KENT

Releases to Air = 198,100 Pounds
Releases to Water = 0 Pounds
Releases to Land = 0 Pounds
Total On-Site Releases = 198,100 Pounds
44 Reports, 15 Facilities
2.1% of Statewide Releases

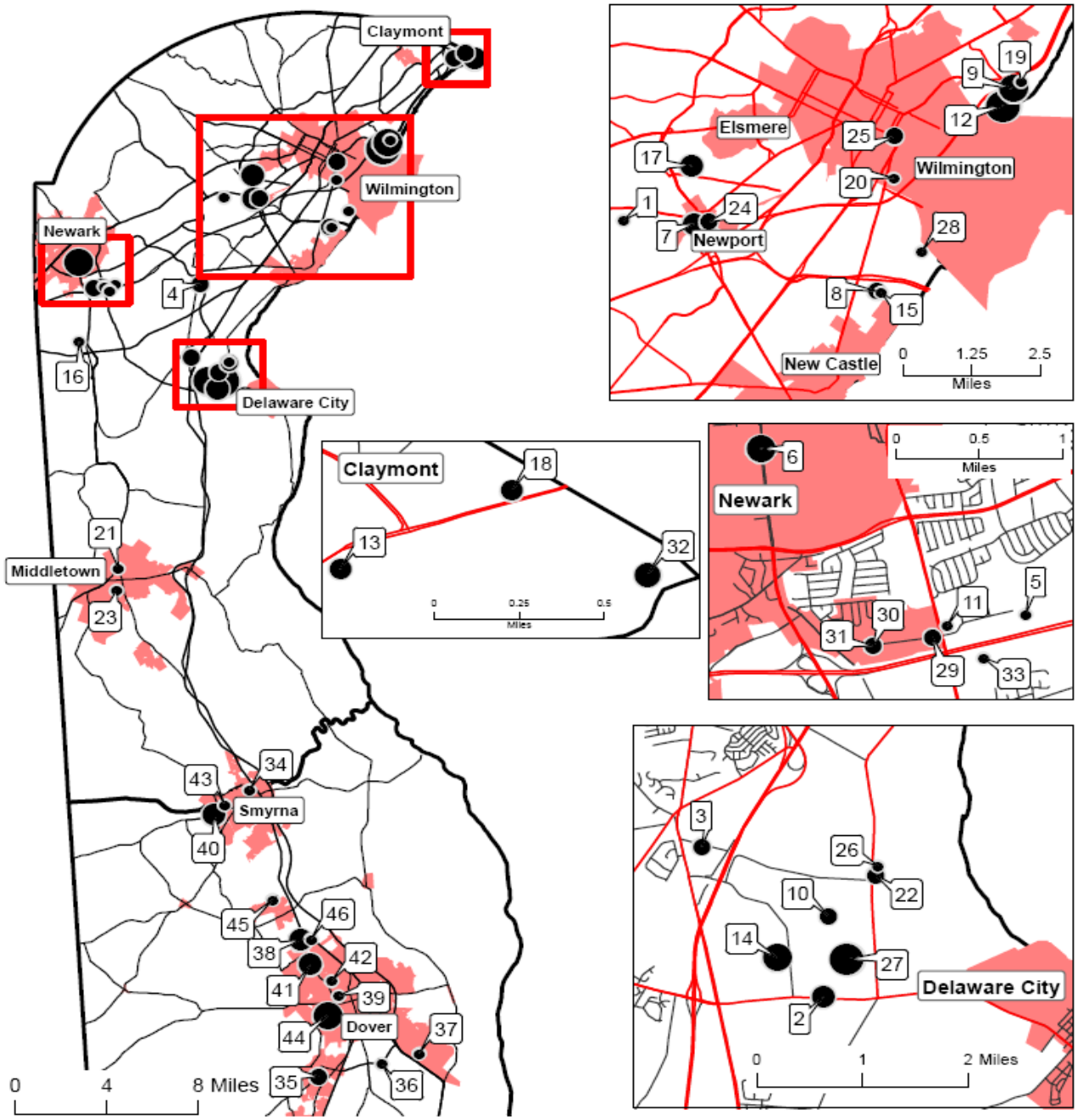
SUSSEX

Releases to Air = 3,305,886 Pounds
Releases to Water = 580,225 Pounds
Releases to Land = 876,411 Pounds
Total On-Site Releases = 4,762,552 Pounds
75 Reports, 20 Facilities
50.4% of Statewide Releases

Figure 5 on this page summarizes data about the TRI releases in 2008 for each county, and the maps and indexes on the next 2 pages show where TRI facilities are located.

Source: DNREC 2008 TRI Database, 11-1-09

FIGURE 6 - TRI FACILITY LOCATOR MAP 2008



MAP ID	FACILITY
	NEW CASTLE COUNTY
1	AGILENT TECHNOLOGIES NEWPORT
2	AIR LIQUIDE INDUSTRIAL
3	ARLON
4	ASTRAZENECA PHARMACEUTICALS
5	CHROME DEPOSIT
6	CHRYSLER
7	CIBA
8	CRODA
9	DUPONT EDGE MOOR
10	DUPONT RED LION
11	E-A-R SPECIALTY COMPOSITES
12	EDGE MOOR/HAY ROAD POWER PLANTS
13	EVRAZ CLAYMONT STEEL
14	FORMOSA PLASTICS
15	FUJIFILM IMAGING COLORANTS
16	GE ENERGY
17	GENERAL MOTORS
18	HONEYWELL
19	IKO
20	INSTEEL WIRE
21	JOHNSON CONTROLS
22	KUEHNE COMPANY
23	MACDERMID AUTOTYPE
24	MEDAL
25	NORAMCO
26	OCCIDENTAL CHEMICAL
27	PREMCOR REFINING GROUP
28	PRINCE MINERALS
29	ROHM AND HAAS B2 B3 B8
30	ROHM AND HAAS B5 B6
31	ROHM AND HAAS B7 B15
32	SUNOCO MARCUS HOOK
33	VP RACING FUELS
	NEW CASTLE COUNTY
	KENT COUNTY
34	BUCK ALGONQUIN
35	CAMDEL METALS
36	CARL KING
37	DOVER AFB
38	DOW REICHHOLD
39	HANESBRANDS
40	HANOVER FOODS
41	HIRSH INDUSTRIES
42	MCKEE RUN POWER PLANT
43	METAL MASTERS
44	NRG DOVER
45	PPG DOVER
46	SERVICE ENERGY DOVER

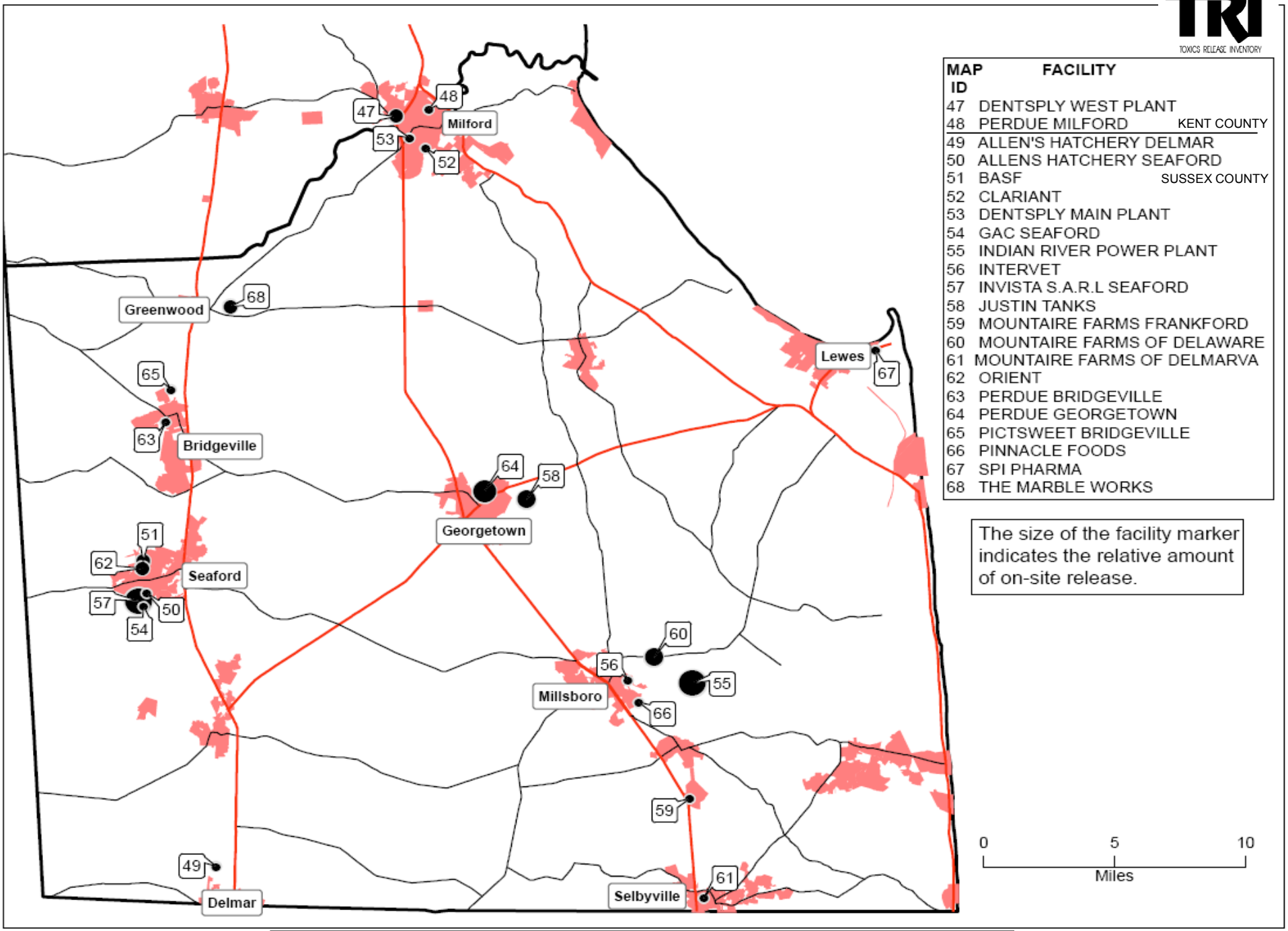
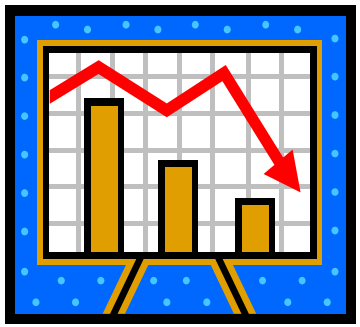


FIGURE 6 - TRI FACILITY LOCATOR MAP 2008

TRENDS OVER TIME



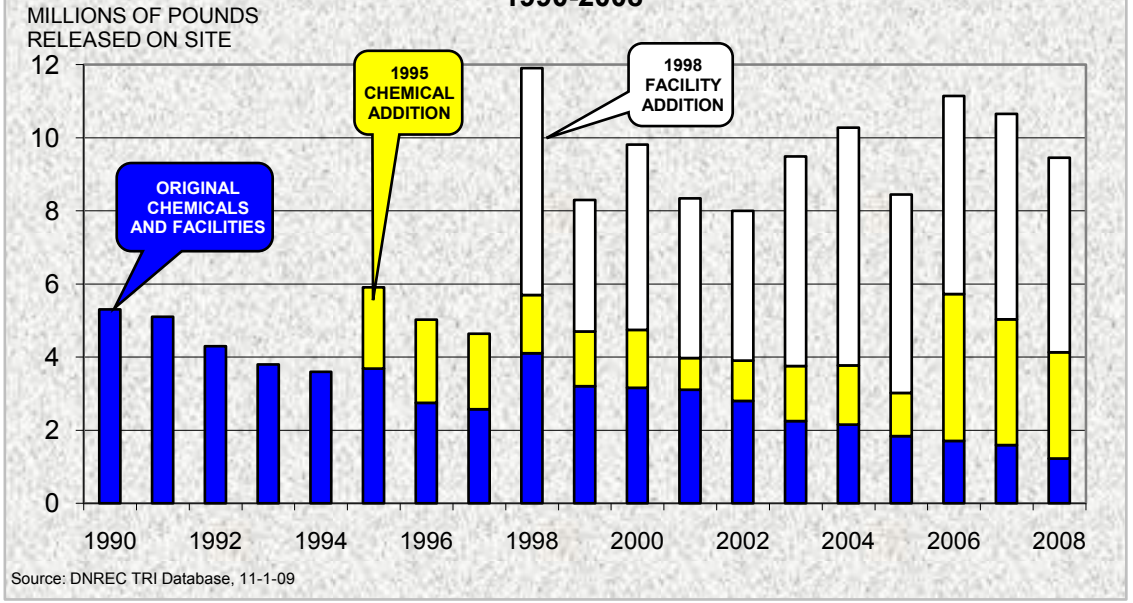
In addition to the reported releases for the latest year, DNREC also looks at how the releases change over time. If a type of release is trending up or down, we will look for reasons why. It may be because a new group of chemicals, such as the PBTs, is now being reported. It may be that a facility has changed the way it estimates the release because it found a more accurate way to do this, and the actual release may not have changed very much. Whatever the reason, we look at trends as long-term indicators for the way activity is changing. We also look at trends for potential issues that need investigation.

The EPA also adds chemicals and facilities to the TRI program when it discovers chemicals that are significant toxics or that some facilities as a group tend to manufacture or use toxic chemicals. Figure 7 shows the trend of the on-site releases since 1990, and also shows the result of adding chemicals and facilities and industry efforts to reduce releases. Usually a few chemicals are added or deleted every year and they are included in the totals for that year.

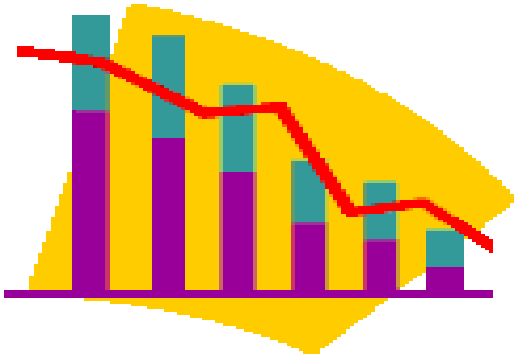
Since 1990, on-site releases of the original chemicals from the original facilities in the TRI program list have trended down over time and are now 77% (4.1 million pounds) lower than the original amount reported.

In 1995, a large group of chemicals was added and the total number of chemicals increased to 667 from the 365 reportable in 1994. This group trended down 50% since it was added in 1995, until 2006. In 2006 the Premcor refinery reported a large increase in the release of a chemical in this group, nitrate

FIGURE 7
EFFECT OF CHEMICAL AND FACILITY GROUP ADDITIONS
1990-2008

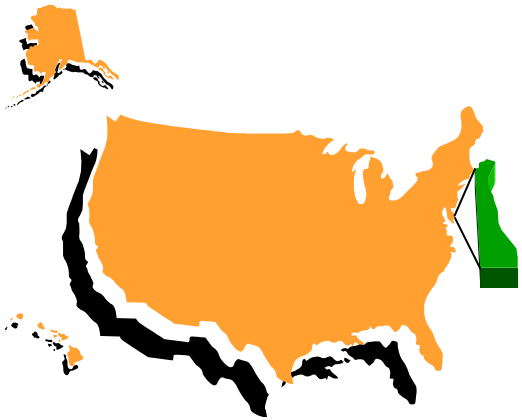


compounds, because they changed to a more accurate method of analyzing for this chemical. Now, although the report for this chemical was lower for 2008, this group shows an increase of 670,000 pounds over the original 1995 amount.



In 1998, a group of facilities was added. This group included electric generating facilities, as well as some chemical and petroleum distribution facilities. The Indian River Power Plant and the Edge Moor/Hay Road Power Plants are significant facilities in this group. The 1998 Facility Addition group is now 14% (880,000 pounds) lower than its original reported amount for 1998.

The amounts of on-site releases for two of the three groups are now lower than their original amounts. If each group had remained constant at its original reported amount, the amounts reported for 2008 would be 13.73 million pounds instead of the 9.45 million pounds actually reported; a reduction of 31%. We hope that this downward trend will continue.



NATIONAL PERSPECTIVE

Because Delaware is a small state, it may be helpful to see how it compares to other states and to the nation.

At the time of this report, the EPA has not released its national 2008 TRI report, so we could not compare our 2008 data with the national 2008 data. However, we did compare our 2008 data with EPA's 2007 national data. Following are some highlights from this comparison:

1. Delaware ranks 42nd in the nation for total on-site releases.

2. Fifty-four facilities in the nation each released more on-site individually that all the facilities in the State of Delaware combined.

3. Delaware released 0.28% of the total on-site release amounts in the nation.

4. Some reports from nearby facilities in neighboring states exceed the amounts for all Delaware reports for a specific chemical. For example, one facility in Pennsylvania released 182,951 pounds of toluene to air. The Delaware total for toluene was 25,308 pounds. Another facility in Maryland released 193,000 pounds of hexane to air. The Delaware total for hexane was 24,677 pounds

Some facilities in Delaware do rank at or near the top of the national rankings for specific releases.

DuPont Edge Moor ranks #4 in the nation for off-site transfer of dioxin and dioxin-like compounds.

DuPont Edge Moor ranks #7 for off-site transfer to disposal of manganese compounds, and #19 for on-site release of carbonyl sulfide.

Evraz Claymont Steel ranks #44 for on-site release of dioxins.

Formosa Plastics ranks #2 in the nation for on-site release of vinyl chloride and #19 in the nation for on-site release of vinyl acetate.

Premcor ranks #4 in the refinery group for total on-site release of all chemicals and #28 in all industries for on-site release of nitrate compounds.

The **Indian River Power Plant** ranks #54 and the **Edge Moor/Hay Road Power Plant** ranks #98 for on-site release of hydrochloric acid.

Chrysler ranks #70 for on-site release of certain glycol ethers. This facility closed in December 2008, and **General Motors** closed in July 2009.

No Delaware facility ranked in the top 100 for on-site release of mercury.

These rankings may change when the national 2008 data is published, and the new data may be greater than or less than the 2007 data for a specific comparison.

EPA CHANGES TO THE TRI PROGRAM

The EPA enacted a change to the TRI reporting requirements for the short Form A for 2006. No amounts are reported on Form A, only that the facility manufactured, processed, or otherwise used the chemical at its facility. The change increased the Form A **total waste** amount threshold for reporting to 5,000 pounds, up from the prior 500 pounds and established an **on-site release** threshold amount for Form A of 2,000 pounds. Also, the change allowed for **reporting of PBT chemicals, except dioxins**, on Form A if no release or disposal activities occurred, and total waste management of the PBT chemical was less than 500 pounds. No reporting of PBTs on Form A was allowed up through reporting year 2005. DNREC and many other organizations opposed this change; it has now been reversed and the original thresholds of 1,000,000 pounds manufacture, process, or otherwise use, 500 pounds total waste management, and no PBT reporting on Form A have been restored. Although there was some loss of data nationwide associated with the conversion of the standard Form R reports to the short Form A reports, Delaware suffered no loss of data, as most facilities in Delaware continued to report on the long Form R.

Chemicals vary in toxicity. The most toxic chemicals, dioxins and dioxin-like compounds, have Toxic Equivalent Factors (TEF). These factors, when used with the reported release and waste management amounts, provide a Toxic Equivalent Quantity (TEQ) which allows us to compare the compounds on an equal toxicity basis. Starting with 2008, the TEQ amounts reported in Delaware are available in DNREC's longer, more technical *2008 TRI Data Detail Report*. The link to DNREC's TRI page can be found in the ***Other Sources of Information*** section on page 18.

OTHER SOURCES OF INFORMATION

Information about TRI and related programs is available from several additional sources. Some of these sources are shown below. Other sources can be found in our DNREC *2008 TRI Data Detail Report.*

Access to the DNREC TRI Files - DNREC is responsible for collecting, processing, and distributing information submitted by Delaware facilities under the TRI program. The 1998-2008 TRI annual reports may be viewed at:

http://www.serc.delaware.gov/reports.shtml. Additional details and information not contained in the reports are available to the public through the EPCRA Reporting Program located within DNREC. A searchable database is located at: http://www.serc.delaware.gov/services/search/index.shtml.

Delaware's Department of Natural Resources and Environmental Control has publications, reports, and information available for a wide variety of programs at: http://www.dnrec.delaware.gov/info/pages/ELibrary.aspx.
In addition to TRI reports, there are other provisions of the Emergency Planning and Community Right to Know Act (EPCRA) that provide information to the public and to local emergency planning and response organizations. For additional information, visit the Delaware EPCRA website at: http://www.serc.delaware.gov/epcra.shtml.

EPA's TRI Home Page – The EPA TRI home page provides information on the many facets of the TRI program at EPA, including an Executive Summary, Q&A's, a link now to the 2006 TRI data, and later this year to 2008 data, a current list of reportable chemicals, reporting forms, state and federal program contacts, and various guidance documents available for downloading. This website has many links to other EPA and non-EPA sites associated with TRI. www.epa.gov/tri/.

Toxics Release Inventory Public Data Release - EPA's annual TRI report. It covers information nationwide and provides a good perspective on how Delaware compares to other states www.epa.gov/tri/tridata/index.htm. The 2008 edition of this report will be available later this year and will be available for review at the DNREC office at 156 South State Street in Dover. Paper copies can also be obtained by calling EPA at (202) 564-9554.

Right-to-know Network - Searchable nationwide TRI data is available through RTKNet. The RTKNet was established by two non-profit organizations to provide access to TRI and chemical data, link TRI with other environmental data, and exchange information among public interest groups. www.rtknet.org.

Delaware Public Health Cancer Rates and Causes – This site provides data and answers to many cancer-related questions. http://www.state.de.us/dhss/dph/dpc/cancer.html.

Delaware's Pollution Prevention Program is at: http://www.dnrec.state.de.us/dnrec2000/p2/

OTHER SOURCES OF INFORMATION

Chemical Data Fact Sheets - A two-page fact sheet is available for most TRI chemicals reported in Delaware and contains information on chemical characteristics, health hazards, and ecological effects. The two-page fact sheets (ToxFAQs) are available upon request from DNREC's TRI program or available through the Agency for Toxic Substances and Disease Registry at: http://www.atsdr.cdc.gov/toxfaq.html

Envirofacts Electronic Warehouse - Envirofacts is an EPA-developed website that provides public access to multiple environmental databases, including TRI. Links are available to data about hazardous waste, water permits, drinking water, Superfund sites, air, water, toxics, and more. On-line queries allow the user to retrieve data and create reports, as well as generate maps: www.epa.gov/enviro.

Environmental Defense Fund Scorecard - The EDF Scorecard combines scientific, geographic, technical, and legal information from many databases (with emphasis on TRI) to enable users to produce detailed local reports on toxic chemical pollution. Chemical profiles and a map generator are also available through the Scorecard: www.scorecard.org

Delaware Air Quality Report - The annual air quality report is prepared by the Air Surveillance Branch in the Air Quality Management Section of DNREC. This report presents data gathered from a statewide network of air monitoring stations, and includes analyses, trends, and other information regarding Delaware's air quality. For a copy of the report, or for more information, please call (302) 323-4542. This report is available on-line at: http://www.awm.delaware.gov/AQM/Pages/AQMPublicationsandReports.aspx and air toxics information is at: http://www.awm.delaware.gov/AQM/Pages/DATAS1.aspx. The EPA site for additional air quality information is: http://www.epa.gov/oar/oaqps/publicat.html.

The Office of Pollution Prevention & Toxics (OPPT) www.epa.gov/opptintr is a part of the EPA that:

- Promotes pollution prevention as the guiding principle for controlling industrial pollution;
- Promotes safer chemicals through a combination of regulatory and voluntary efforts;
- Promotes risk reduction so as to minimize exposure to existing substances such as lead, asbestos, dioxin, and polychlorinated biphenyls; and,
- Promotes public understanding of risks by providing understandable, accessible and complete information on chemical risks to the broadest audience possible.

OPPT also has a link to *Risk-Screening Environmental Indicators* (RSEI) at: http://www.epa.gov/oppt/rsei/. This model was developed by EPA's Office of Pollution Prevention & Toxics as a risk-screening tool that provides a relative comparison of TRI releases. This application is available on CD-ROM or through the Internet.

Delaware
Toxics Release Inventory

Delaware Department of Natural Resources and Environmental Control

Emergency Planning and Community Right to Know Program
156 South State Street
Dover, Delaware 19901
302-739-9405

The Department of Natural Resources and Environmental Control is committed to affirmative action, equal opportunity, and the diversity of its workforce.

Doc. No. 40-09-03/09/09/08