DELAWARE TOXICS RELEASE INVENTORY

DATA SUMMARY

2009

Prepared by the
Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances

November 2010

2009 TRI DATA SUMMARY

TABLE OF CONTENTS

Front Cover: *This is a picture of the Calpine Edge Moor/Hay Road Energy Center in Edge Moor. The facility has reduced on-site releases by 60% since 2008 and 72% since 1998.*

Photo used with permission of Calpine.

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 2009. DNREC publishes this report as part of our effort to inform citizens about environmental issues in their communities. This is the 23rd year of TRI data collection. TRI has been successful in two ways. First, it has proved to be a consolidated, easy to use tool for tracking multi-media information on toxic chemicals used and released by facilities. Second, the public availability of the data has proved to be an effective tool in prompting facilities to reduce their releases of toxic chemicals.

Chemical releases and other waste management reported by TRI facilities for 2009 in Delaware were significantly lower compared to 2008. Virtually all categories of releases and waste management were lower, some by more than 40%. On-site releases were 44% lower compared to 2008, off-site transfers were down 28%, and on-site waste management, down by 22%. Enhanced pollution controls take some of the credit, but another significant cause was the impact of the economy.

For 2009, economic conditions affected production at many facilities. Production indexes at many TRI reporting facilities were generally down, with 180 reports out of the total 254 chemical reports showing reduced production involving the reported chemicals. The top 15 facilities reported 4.0 million pounds lower on-site release amounts than for 2008. These facilities represent over 99% of the total on-site releases, and 13 of these 15 facilities reported lower on-site release amounts than for 2008.

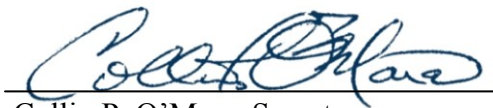
Some of the reductions were because of improved environmental controls, and analysis provided in this annual TRI report will attempt to quantify how much of the reduction was the result of environmental controls. For example, the Indian River Power Plant reduced its on-site release of hydrochloric acid by 1,107,000 pounds (40%) in 2009. Total on-site releases at this facility decreased significantly by 40%, or 1.5 million pounds, for 2009 compared to 2008. However, production for 2009 at this facility was reported as 24% lower than for 2008, which accounted for about 903,000 million pounds. The remainder, a significant amount of about 606,000 pounds, was because of improved environmental controls.

Loss of three major reporting facilities – Chrysler, General Motors, and Dow Reichhold – played a small but measurable part in the reductions for 2009; those facilities reported a total of 191,000 pounds of on-site releases in the 33 chemical reports filed in their last declining year (2008) of operation.

We publish two TRI documents annually: This more technical *TRI Data Detail Report* and the shorter *Data Summary Report*, a more compact, less technical report. These reports, and reports for recent years, are available at DNREC offices, and also at http://www.serc.delaware.gov/public.shtml. They are also available at Delaware public libraries. Specific facility data from 1995-2009 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 and of the many other resources available to you to obtain information on the management of chemicals in and around your community, and I also encourage our industrial citizens to continue to reduce releases of pollutants.

Sincerely,



Collin P. 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 many things, including electricity, fuel, and consumer products, 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.

This report provides a summary of the release and waste management of toxic chemicals handled by Delaware facilities in 2009 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.

For 2009, three Delaware TRI facilities closed and many others reported lower production compared to 2008. These changes resulted in an overall decrease of 4,200,000 pounds (44%) in the total amount of state-wide on-site releases for 2009. Other waste management activities reported to TRI were also lower by more than 20%. We hope that, with the help of industry and interested citizens, reductions in the amounts of on-site releases of TRI chemicals will continue, even as production increases.

This year's report focuses in part on the releases of the persistent, bioaccumulative and toxic chemicals known as PBTs. Although this is the 23^{d} year for TRI, this is only the tenth year that these PBT chemicals have been reported at lower thresholds.

Delaware's 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.

WHAT IS THE TOXICS RELEAESE 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 23 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 2009 TRI data and revisions received as of October 1, 2010 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, 90 were reported by 62 facilities in Delaware for 2009.

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.

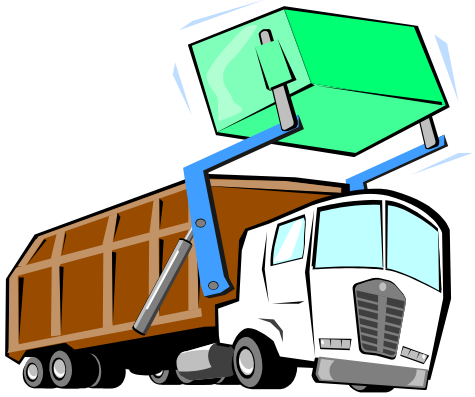
DNREC and EPA check the data for completeness and accuracy, including comparing it with data reported to other programs.

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. TRI data and 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 2009 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.

2009 DATA SUMMARY

Table 1 shows statewide totals of 2009 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-two facilities submitted 254 reports on 90 different chemicals. Reports from all Delaware facilities resulted in an overall reduction in the total amount of state-wide on-site releases by 4,200,000 pounds (44%) for 2009. These facilities also reported a total reduction of 4,406,000 pounds (28%) in off-site transfers, and a total reduction of 15,605,000 pounds (21%) in on-site waste management.

As noted in the Message from the Secretary, three facilities closed in 2008. As part of the above reduction, they reported 191,000 pounds of on-site release for 2008, their last year of production.

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. Releases to air, shown in Figure 1, make up the largest portion (60% for 2009) of the total on-site release amount. Two electric generating facilities reported a total reduction of 1,755,000 pounds in hydrochloric acid released to air, and a reduction of 814,000 pounds of nitrate compounds released to water was reported by another large facility.

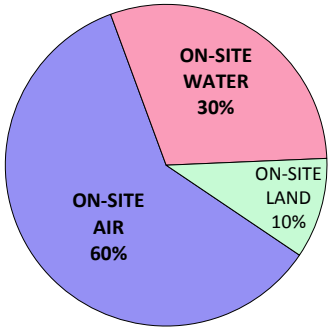
TABLE 1

2009 TRI DATA SUMMARY

(IN POUNDS)

	2009
No. of Facilities	62
No of Form As	29
No of Form Rs	225
No. of Chemicals	90
On-site Releases	
Air	3,183,506
Water	1,590,477
Land	537,489
Total On-Site Releases	5,311,472
Off-Site Transfers	
POTW's	636,602
Recycle	5,334,333
Energy Recovery	2,336,579
Treatment	140,248
Disposal	2,785,524
Total Off-Site Transfers	11,233,287
On-Site Waste Mgmt.	
Recycle	5,630,119
Energy Recovery	14,670,034
Treatment	38,179,139
Total On-Site Mgmt.	58,479,292
Total Waste	75,024,050

FIGURE 1
2009 ON SITE RELEASES



TOTAL REPORTED
5,311,472 POUNDS

Of all the TRI chemicals released to air, hydrochloric acid, sulfuric acid, and hydrogen fluoride make up about 80% 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 48% of the total on-site releases to air, water, and land combined.

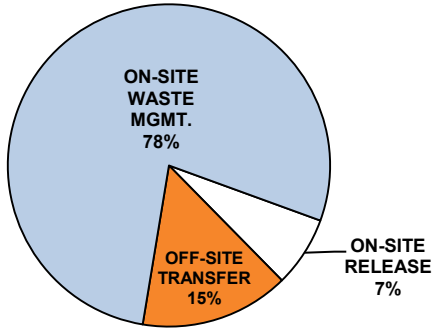
On-site releases to water consist mostly of nitrate compounds from the Premcor, Perdue Georgetown, and INVISTA Seaford facilities. Although these facilities are large producers of nitrate compounds, there are several other nitrate-producing facilities in Delaware that are not subject to the TRI program.

On-site releases to land are mostly 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
2009 TOTAL TRI WASTE



TOTAL REPORTED:
75,024,050 POUNDS

Table 1 and Figure 2 show that on-site releases make up only about 7% of the total TRI waste. Other data, including transfers off-site and waste managed on-site are discussed in more detail in the *2009 TRI Data Detail Report* available from DNREC.

LIMITATIONS OF TRI DATA

In addition to the fact that not all facilities in Delaware 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, the direction of its path, 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 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

In 2000, the EPA required reporting at much lower threshold levels on a class of chemicals known as persistent, bioaccumulative, toxics (PBTs). Table 2 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 these chemicals are more toxic to humans, animals, and the environment than others. 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 and accumulate in bodies of humans, fish, and animals rather than being destroyed or eliminated.

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)	2009 REPORTS
Aldrin	100	0
Benzo[g,h,I]perylene	10	8
Chlorodane	10	0
Dioxin and dioxin-like compounds category	0.1 grams	6
Heptachlor	10	0
Hexachlorobenzene	10	1
Isodrin	10	0
Lead *	100	3
Lead and lead compounds *	100	12
Mercury	10	2
Mercury compounds	10	7
Methoxychlor	100	0
Octachlorostyrene	10	1
Pendimethalin	100	0
Pentachlorobenzene	10	1
Polychlorinated biphenyls (PCB's)	10	1
Polycyclic aromatic compounds category	100	12
Tetrabromobisphenol A	100	0
Toxaphene	10	0
Trifluralin	100	0
* Lower Threshold For 2001 Reports	TOTAL	54

Table 3 shows the reported on-site release amounts for PBTs for 2004-2009. The PBT chemicals made up a small part, about 0.38%, of the

total on-site releases for 2009. Lead and lead compounds make up a large portion, 19,003 pounds, or 94%, of PBT on-site releases for 2009. Releases from coal-burning operations at power generating facilities accounted for 18,025 pounds, or 95%, of this amount. The 2009 reported on-site releases of PBTs are 13,561 pounds (40%) lower compared to 2008 because a large reduction (12,194 pounds) in the amount of lead and lead compounds released mostly to land from coal-burning power plants. The total PBT on-site release amounts reported for 2009 are 37% lower than the amounts reported for 2004.

TABLE 3
2004-2009 TRI PBT DATA SUMMARY
(IN POUNDS)

	2004	2005	2006	2007	2008	2009
No. of facilities	26	28	26	30	27	25
No. of Form A's	NA	NA	6	4	NA	NA
No. of Form R's	60	60	54	59	60	54
No. of Chemicals	11	11	11	11	11	11
On-site Releases						
Air	3,796	4,095	4,075	4,172	3,716	1,568
Water	1,002	1,857	1,405	1,565	1,008	492
Land	27,356	26,559	25,309	15,270	28,948	18,052
Total On-Site Releases	32,154	32,511	30,789	21,008	33,673	20,112

The Edge Moor/Hay Road Power Plant reported the largest PBT release to air and water, and the Indian River Power Plant reported the largest release to land. Over 96% of the amounts transferred off-site for PBT recycle was lead compounds from Johnson Controls.

The Premcor refinery reported almost the entire amount of on-site PBT chemical waste management with 372 pounds of benzo(g,h,i) perylene and 404 pounds of polycyclic aromatic compounds being treated on-site.

DIOXINS

Chemicals vary in toxicity, and dioxins are the most highly toxic class of PBTs. Because of their high toxicity, dioxins are reported in grams rather than pounds under TRI. These units are in grams; one gram equals 0.0022 pounds. The dioxin trend for Delaware is shown in Figure 3 on the next page. The DuPont Edge Moor facility made a major reduction in on-site releases starting in 2003; its reported 2002 on-site release was 13.85 grams (and higher for previous years) but its 2003 amount was only 0.972 grams.

Evraz Claymont Steel, now the top reporter for on-site release of dioxins, began dioxin reporting starting in 2006 with 7.13 grams, but that amount fell to 5.622 grams for 2009. The total amount reported as released on-site in Delaware under TRI for 2009 was 10.376 grams, or 0.0229 pounds. Table 4 shows the amounts reported released on-site by the six facilities that reported on dioxins for 2009. Beginning with reporting year 2008, additional information on toxicity became available to TRI for dioxin and dioxin-like compounds (DLCs). The 17 compounds that fall under the category of DLCs for TRI have a wide range of toxicity; the toxicity value is called the Toxic Equivalent Factor (TEF). In order to compare the releases on an equal toxicity basis, we multiply the TEF of each dioxin by the weight reported to get the Toxic Equivalent Quantity (TEQ). The rank of facilities may change when comparing weight or TEQ amounts.

Please see the 2009 TRI Detail Report for a more technical discussion of TEQ. The discussion includes comparisons based on weight and TEQ amounts for each facility reporting dioxins.

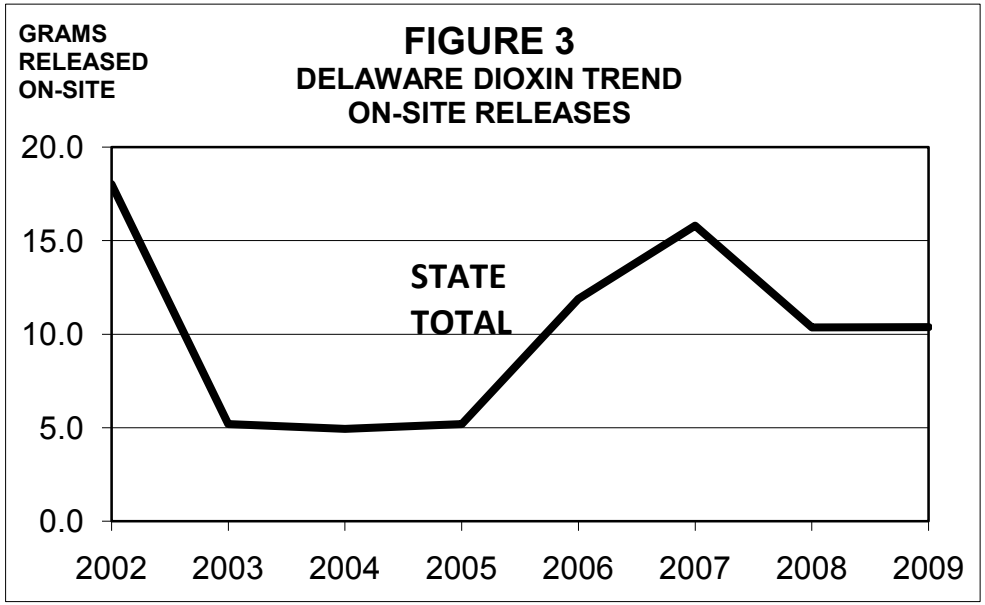


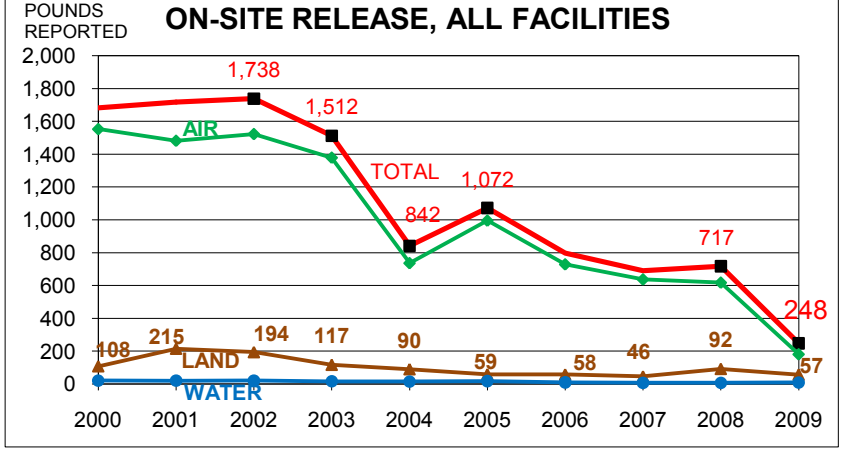
TABLE 4
FACILITIES SORTED BY DIOXIN ON-SITE RELEASE

FACILITY	TOTAL ON-SITE GMS. RELEASE	ON-SITE GMS. RANK
EVRAZ CLAYMONT STEEL	5.622	1
DUPONT EDGE MOOR	2.859	2
EDGE MOOR/HAY ROAD POWER PLANTS	1.226	3
PREMCOR	0.345	4
INDIAN RIVER POWER PLANT	0.210	5
INVISTA SEAFORD	0.114	6
TOTAL	10.376	

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 mercury and mercury compound total on-site release amounts decreased by 469 pounds (65%) compared to 2008. Evraz Claymont Steel led the decline with a reduction of 183 pounds, followed by the Edge Moor/Hay road Power Plant with 133 pounds, the Indian River Power plant with 87 pounds, and INVISTA with 53 pounds. Most of the reductions, 436 pounds, were in releases to air. Figure 4 shows the trend since 2000. Total reported on-site releases of mercury in Delaware have decreased by 86% since the peak of 1,738 pounds in 2002.

FIGURE 4
DELAWARE MERCURY TRENDS
ON-SITE RELEASE, ALL FACILITIES

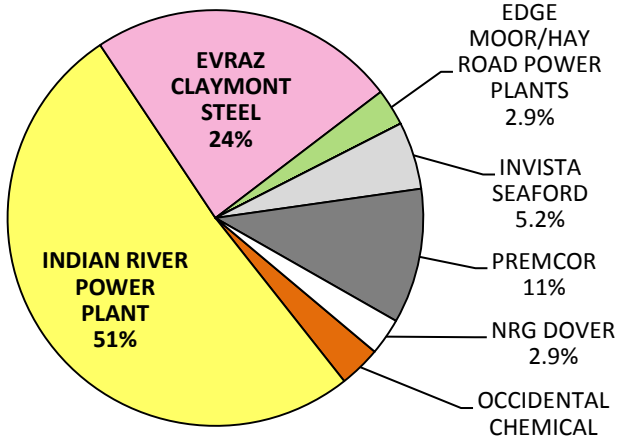


The reasons for the reductions are a combination of reduced production, reduced mercury content of coal, and better pollution controls.

The Occidental facility contributed virtually all of the 8 pounds of elemental mercury released on-site, down from the 278 pounds it reported in 2005. This amount will continue to decrease as the facility completes its shutdown. No other Delaware facility reported a release of elemental mercury.

Figure 5 shows the percentage each of the facilities that reported a mercury or mercury compound contributed to the mercury on-site release total in 2009. 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 5
2009 ON-SITE MERCURY RELEASES
FROM DELAWARE FACILITIES



248 POUNDS REPORTED RELEASED ON-SITE

CARCINOGENIC CHEMICALS

Some chemicals are known to or suspected to cause cancer in humans. These chemicals are called carcinogens. Table 5 shows the chemicals on the TRI list that are identified as carcinogens and were reported in Delaware for 2009. Table 5 also shows the number of reports that were received by Delaware for each of these chemicals (twenty less than for 2008).

DATA FOR CARCINOGENIC CHEMICALS

Table 6 shows data for carcinogens reported to TRI in Delaware since 2003. The trend has been generally down because of reductions, such as chromium compounds released to land (-51,530 pounds), from the Indian River Power Plant. Additional detail can be found in the longer, more technical *2009 TRI Data Detail Report* available from DNREC. The amount of carcinogens released on-site in 2009 decreased by 43% compared to the amount released in 2008, and decreased 70% since 2003.

TABLE 6
2003-2009 TRI CARCINOGENS

ON-SITE RELEASES IN POUNDS

	2003	2004	2005	2006	2007	2008	2009
AIR	246,106	223,522	226,188	187,836	145,637	161,821	121,492
WATER	10,773	12,129	8,062	6,770	8,094	5,627	2,586
LAND	334,290	222,680	178,694	187,366	78,238	140,976	51,417
TOTAL ON-SITE	591,169	458,331	412,943	381,972	231,970	308,424	175,495

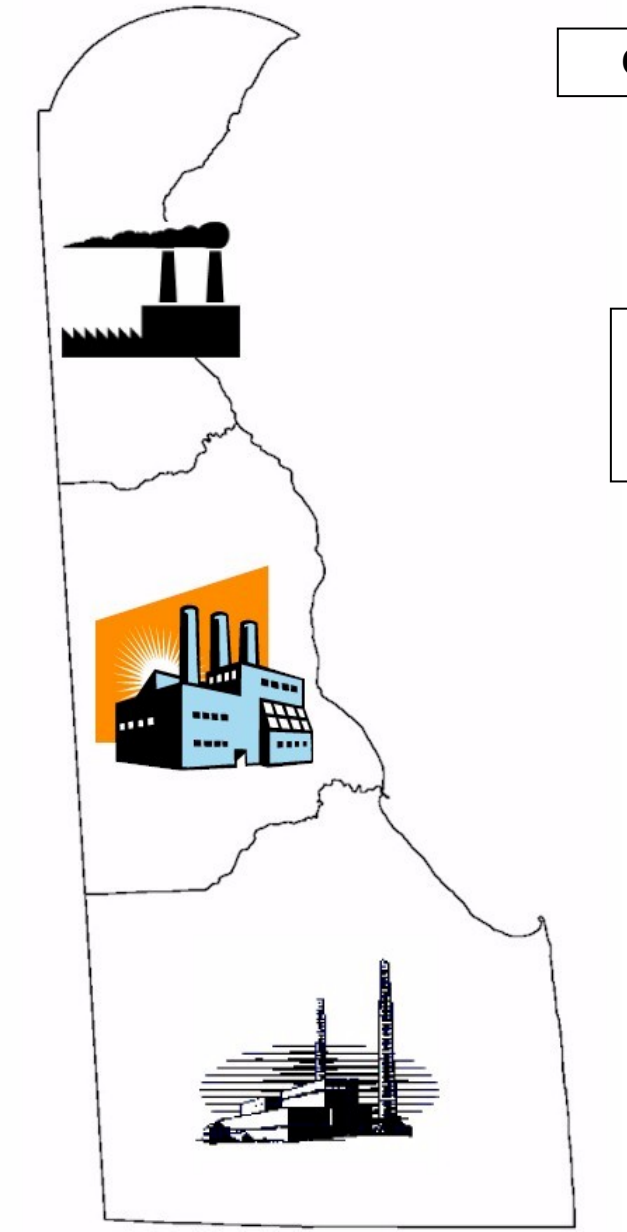
TABLE 5
CARCINOGENS REPORTED BY DELAWARE FACILITIES FOR 2009

CHEMICAL NAME	IARC	NO. OF REPORTS
ARSENIC COMPOUNDS	1	3
BENZENE	1	3
CHROMIUM COMPOUNDS	1	4
ETHYLENE OXIDE	1	2
NICKEL COMPOUNDS	1	4
VINYL CHLORIDE	1	1
1,3-BUTADIENE	2A	1
4,4'-METHYLENEBIS(2-CHLOROANILINE)	2A	2
CREOSOTE	2A	1
POLYCHLORINATED BIPHENYLS	2A	1
TRICHLOROETHYLENE	2A	1
POLYCYCLIC AROMATIC COMPOUNDS	2A	12
COBALT COMPOUNDS	2A	1
DICHLOROMETHANE	2A,B	1
ETHYL ACRYLATE	2B	1
ETHYLBENZENE	2B	3
HEXACHLOROBENZENE	2B	1
LEAD	2B	3
LEAD COMPOUNDS	2B	12
NAPHTHALENE	2B	6
NICKEL	2B	2
NITROBENZENE	2B	1
P-CHLOROANILINE	2B	1
PROPYLENE OXIDE	2B	1
STYRENE	2B	3
TETRACHLOROETHYLENE	2B	1
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2B	3
VINYL ACETATE	2B	1
	TOTAL =	76

Source: 2009 DNREC TRI Database, October 2010

FIGURE 6

ON-SITE RELEASES BY COUNTY



NEW CASTLE

Releases to Air = 1,193,078 Pounds
Releases to Water = 1,394,538 Pounds
Releases to Land = 14,981 Pounds
Total On-Site Releases = 2,602,597 Pounds
156 Reports, 30 Facilities
49.0% of Statewide Releases

KENT

Releases to Air = 146,207 Pounds
Releases to Water = 0 Pounds
Releases to Land = 0 Pounds
Total On-Site Releases = 146,207 Pounds
30 Reports, 13 Facilities
2.8% of Statewide Releases

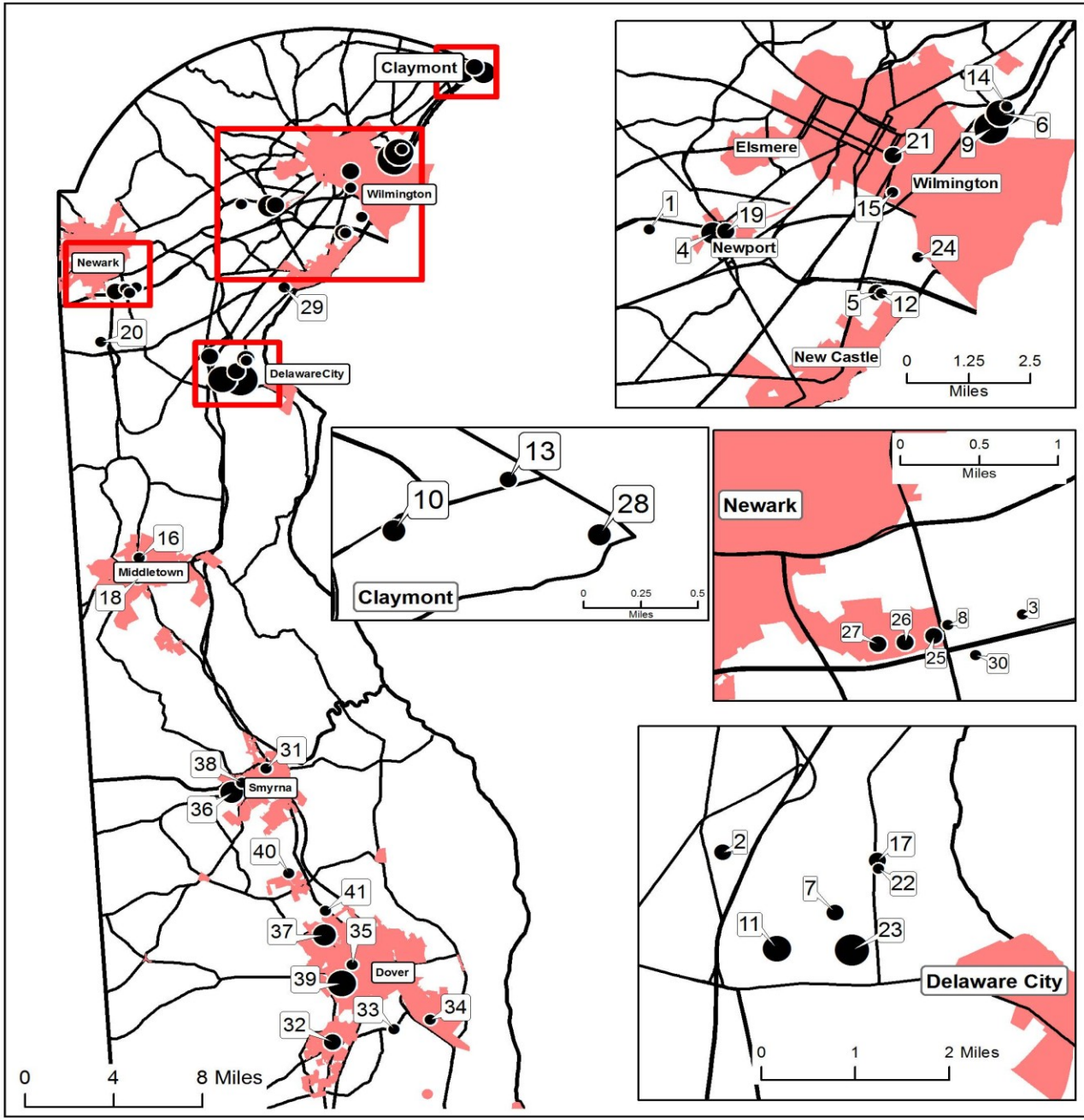
SUSSEX

Releases to Air = 1,844,221 Pounds
Releases to Water = 195,939 Pounds
Releases to Land = 522,508 Pounds
Total On-Site Releases = 2,562,668 Pounds
68 Reports, 19 Facilities
48.2% of Statewide Releases

Figure 6 on this page summarizes data about the TRI releases in 2009 for each county, and the maps and indexes on the next 2 pages show where TRI facilities are located.

Source: DNREC 2008 TRI Database, 10-1-10

FIGURE 7 - TRI FACILITY LOCATOR MAP 2009



MAP ID	FACILITY
	NEW CASTLE COUNTY
1	AGILENT TECHNOLOGIES NEWPORT
2	ARLON
3	CHROME DEPOSIT
4	CIBA
5	CRODA
6	DUPONT EDGE MOOR
7	DUPONT RED LION
8	EAR
9	EDGE MOOR/HAY ROAD POWER PLANTS
10	EVRAZ CLAYMONT STEEL
11	FORMOSA PLASTICS
12	FUJIFILM IMAGING COLORANTS
13	HONEYWELL
14	IKO
15	INSTEEL WIRE
16	JOHNSON CONTROLS
17	KUEHNE CO
18	MACDERMID
19	MEDAL
20	MOTECH AMERICAS
21	NORAMCO
22	OCCIDENTAL CHEMICAL
23	PREMCOR REFINING GROUP
24	PRINCE MINERALS
25	ROHM & HAAS B2 B3 B8
26	ROHM & HAAS B5 B6
27	ROHM & HAAS B7 B15
28	SUNOCO
29	V&S DELAWARE GALVANIZING
30	VP RACING FUELS
	NEW CASTLE COUNTY
31	BUCK ALGONQUIN
	KENT COUNTY
32	CAMDEL METALS
33	CARL KING
34	DOVER AFB
35	HANESBRANDS
36	HANOVER FOODS
37	HIRSH INDUSTRIES
38	METAL MASTERS
39	NRG DOVER
40	PPG DOVER
41	SERVICE ENERGY DOVER

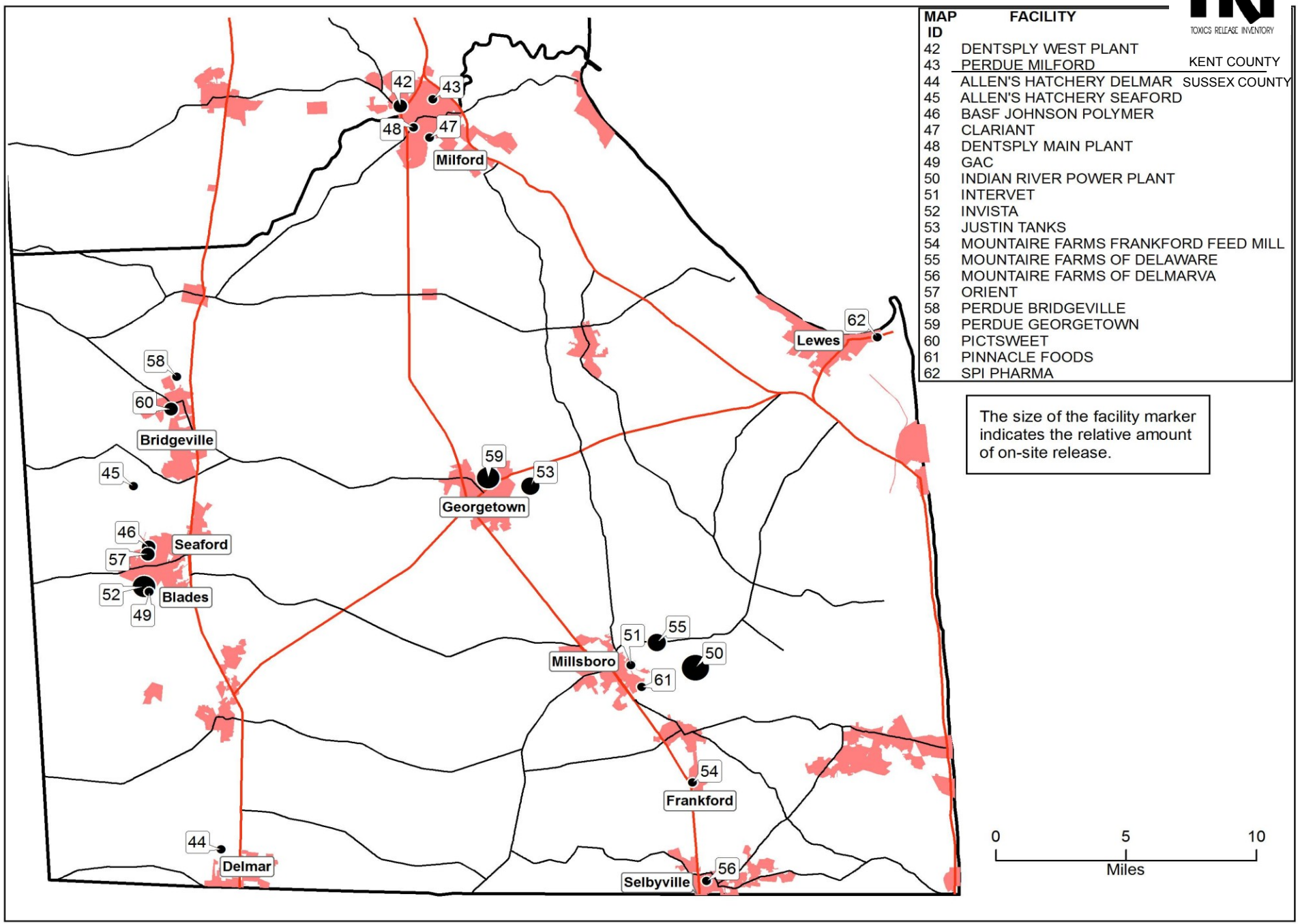
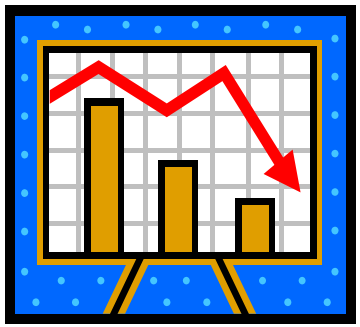


FIGURE 7 - TRI FACILITY LOCATOR MAP 2009

TRENDS OVER TIME



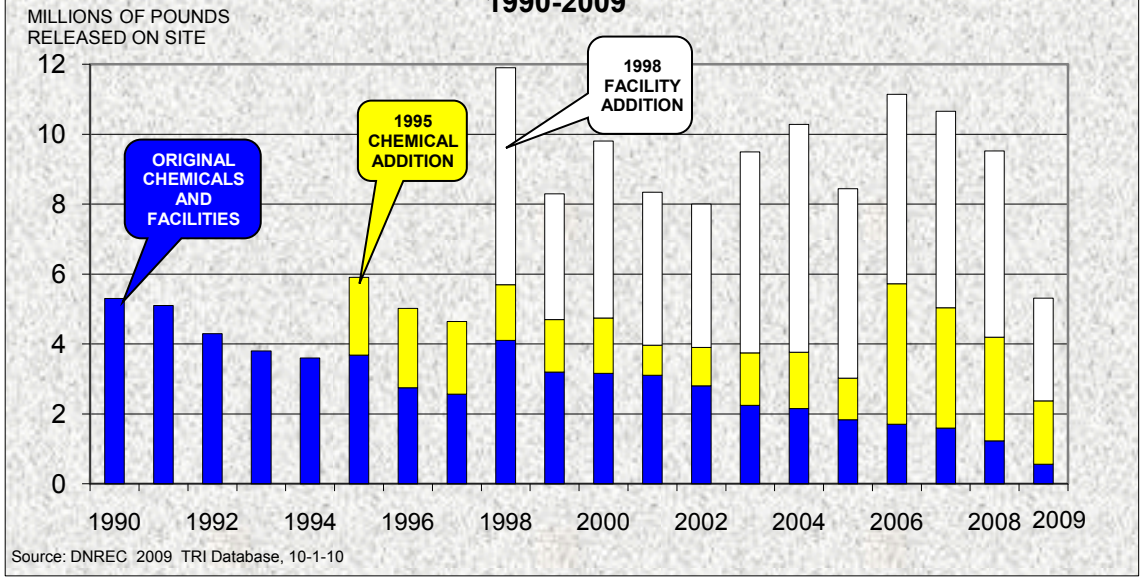
In addition to the reported releases for the latest year, DNREC also looks at how the releases change over time. If a type of release is trending up or down, we will look for reasons why. It may be because a group of chemicals, such as PBTs or carcinogens, had a change in reporting, or a facility changed the way it estimates the release of a chemical because it found a more accurate way to do this. 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 8 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 89% (4.7 million pounds) lower than the original amount reported.

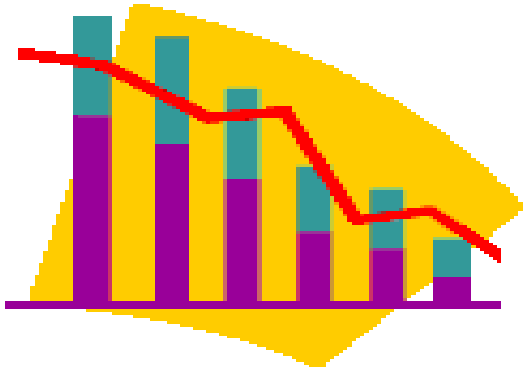
In 1995, a large group of chemicals was added increasing the total number of chemicals increased to 667 from the 365 reportable in 1994. This group trended down 50% since it was added in 1995, until 2006. In 2006 the Premcor refinery reported a large increase in the release of a chemical in this group,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

FIGURE 8
EFFECT OF CHEMICAL AND FACILITY GROUP ADDITIONS
1990-2009



Source: DNREC 2009 TRI Database, 10-1-10

changed to a more accurate method of analyzing for this chemical. Because the facility was in the process of shutting down at the end of 2009, the report for nitrate compounds was lower, and the 1995 group is now 19% (410,000 pounds) lower compared to its 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. Because the electric generating facilities are starting to implement parts of new Delaware pollution control regulations, the 1998 Facility Addition group is now 53% (3,270,000 pounds) lower than its original reported amount for 1998.

The amounts of on-site releases for the three groups are all lower than their original amounts. If each group had remained constant at its original reported amount, the amounts reported for 2009 would be 13.73 million pounds instead of the 5.31 million pounds reported; a reduction of 61%. We hope that this downward trend will continue.

TRI, POLLUTION CONTROL, AND THE ECONOMY

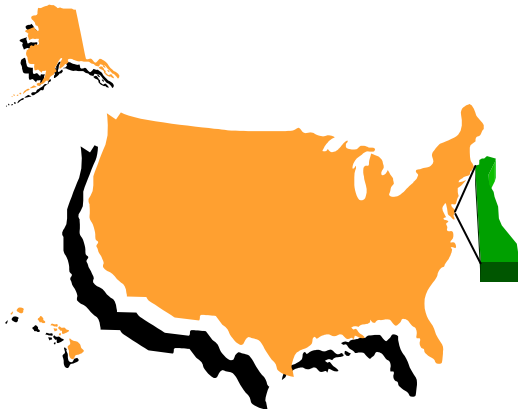
The declining economy in Delaware has influenced many facilities. Some of the changes noted in this report were the result of normal changes within the facilities, but some were the result of facility closings. Facilities that closed in 2008 were Dow Reichhold and Chrysler. Dow Reichhold closed in November and Chrysler closed in December. General Motors closed in July, 2009. These three facilities had declining production during 2008 and earlier years, and were not required to report for 2009. These three facilities reported a total of 191,600 pounds of on-site releases for 2008, their last year of declining production, and an average of 605,200 pounds annually for 1998-2007.

Other facilities had reductions in production, and as a result, had lower releases. The Production Index (PI) that is reported along with TRI release and waste management data is one way to estimate the impact of the economy, because the PI is the level of production associated with the chemical being reported.

For the top 15 facilities, the average PI was 83% of the 2008 value. Of the total reduction in on-site releases of 4.0 million pounds for these facilities, the amount of reduction in on-site release predicted by the PI was 2.1 million pounds (53% of the total reduction). This represents the effect of the economy. The difference between the predicted amount and the actual 2009 amount was an additional 1.9 million pounds (47% of the total reduction). This represents the effect of pollution

control activities. These activities could be because of increased regulation or because of plant or company-sponsored pollution control initiatives.

NATIONAL PERSPECTIVE



It may be helpful to see how Delaware compares to other states and to the nation.

At the time of this report, the EPA has not released its national 2009 TRI report, so we could not compare our 2009 data with the national 2009 data. However, we did compare our 2009 data with EPA's 2008 national data. Following are some highlights from this comparison:

1. Delaware ranks 44th in the nation for total on-site releases.

2. Eighty-nine facilities in the nation each individually released more on-site than all the facilities in the State of Delaware combined.

3. Delaware released 0.16% 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 163,900 pounds of toluene to air. The Delaware total for all facilities was 20,069 pounds. Another facility in Maryland released 241,000 pounds of hexane to air. The Delaware total for hexane was 13,913 pounds

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

DuPont Edge Moor ranks #3 in the nation for off-site disposal of dioxin and dioxin-like compounds.

DuPont Edge Moor ranks #6 for off-site transfer to disposal of chromium compounds, #7 for off-site transfer to disposal of manganese compounds, and #19 for on-site release of carbonyl sulfide.

Evraz Claymont Steel ranks #71 for on-site release of dioxins based on weight and #30 based on TEQ (see pages 9 and 10 for a discussion on dioxins and TEQ).

Formosa Plastics ranks #2 in the nation for on-site release of vinyl chloride and #18 in the nation for on-site release of vinyl acetate.

Premcor ranks #7 in the refinery group for total on-site release of all chemicals, #40 for on-site release of cyanide compounds, #52 for on-site release of propylene, and #47 in all industries for on-site release of nitrate compounds.

The **Indian River Power Plant** ranks #70 for on-site release of hydrochloric acid.

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

These rankings may change when the national 2009 data is published, and the new data may be greater than or less than the 2008 data for a specific comparison.

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 *2009 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 1998-2009 TRI annual reports may be viewed through the DNREC link at: http://www.serc.delaware.gov/reports.shtml. Additional details and information not in the reports are available to the public through the EPCRA Reporting Program located within DNREC. A searchable database is 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 2008 TRI data, and later this year to the 2009 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 National analysis - 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 2009 edition of this report will be available later this year and will be available at the DNREC office at 655 S. Bay Rd. in Dover.

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://dhss.delaware.gov/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/toxfaqs/index.asp

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.

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) - http://www.epa.gov/oppt/index.htm 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.

Risk-Screening Environmental Indicators (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 at: http://www.epa.gov/oppt/rsei/.

Questions or Comments About This Report – Please direct your comments, questions, or requests to the TRI COORDINATOR at the location on the back cover of this report.

Delaware
Toxics Release Inventory

Delaware Department of Natural Resources and Environmental Control

Emergency Planning and Community Right to Know Program
655 South Bay Road, Suite 5N
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. 40-04-04/10/09/02