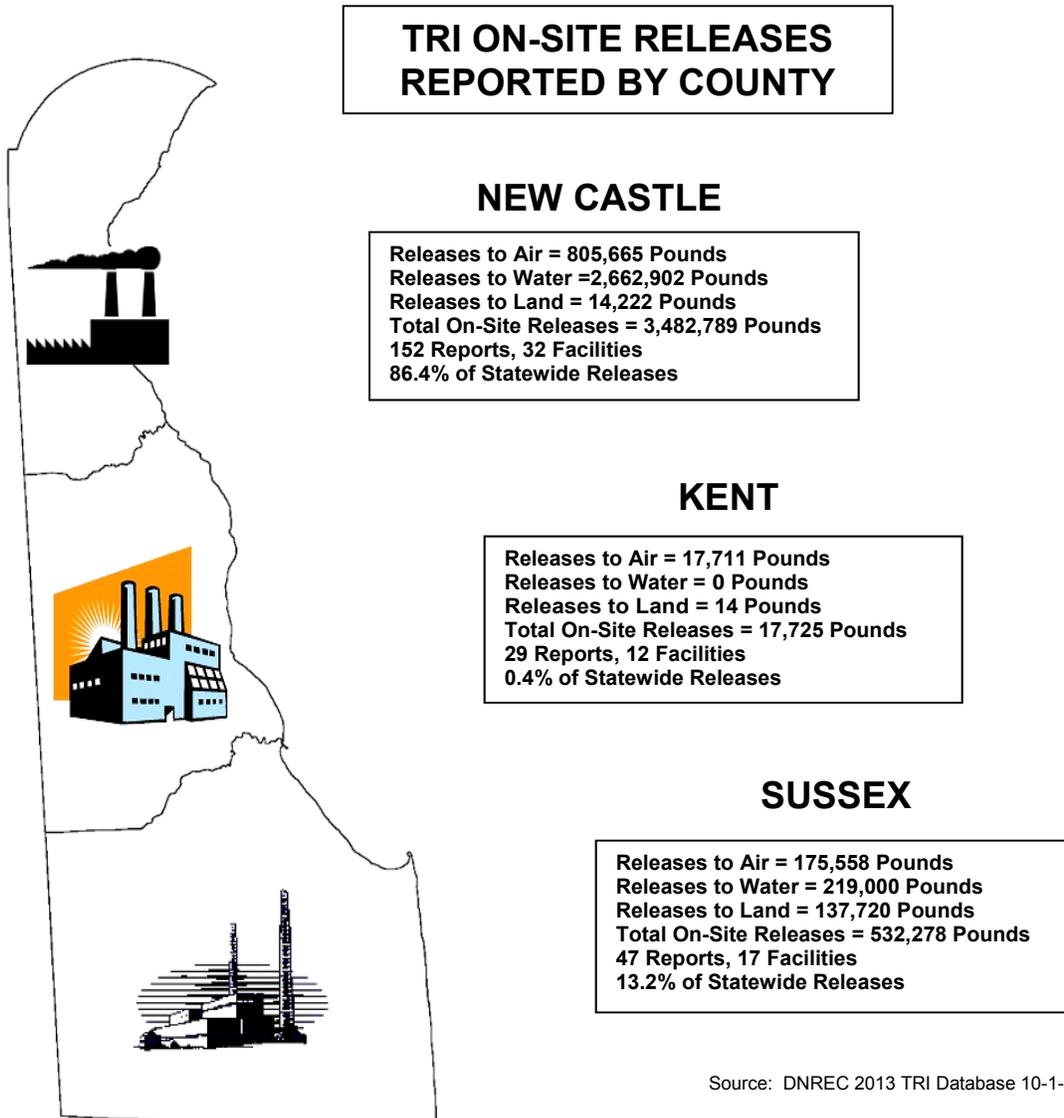


# 2013 Data Detail

## On-Site Releases by County

Figure 8 below provides basic on-site release information for each county in the State.

**FIGURE 8**



## Facility Locations and Information

The facility key map in the *TRI Facility Profiles* (see *Access to TRI Files* under the *Further Information Section* on page 46) shows the location of each reporting facility in the State, with the facility location marker size depicting the size of its on-site release relative to other facilities in Delaware. The facility profiles provide a facility overview and the corresponding TRI information for each facility reporting in Delaware.

## NAICS Industry Groups

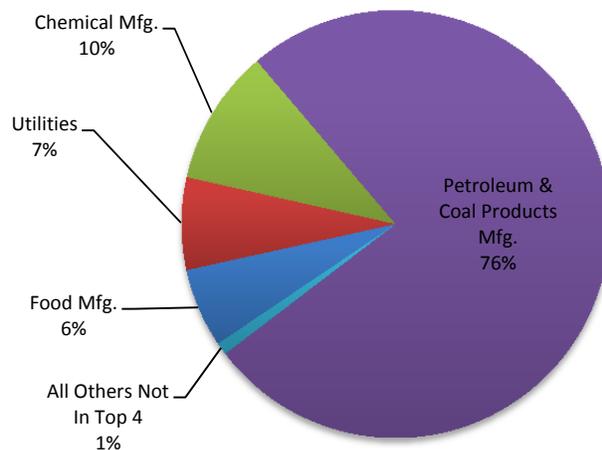
Table 5 provides a description of each North American Industrial Classification System (NAICS) industry group and the number of facilities in each group that reported in Delaware, along with the total reported amounts for each NAICS code. This table also provides on-site releases, off-site transfers, and wastes managed on-site for each group.

**TABLE 5**  
**2013 TRI DATA BY PRIMARY NAICS GROUP**  
(in pounds)

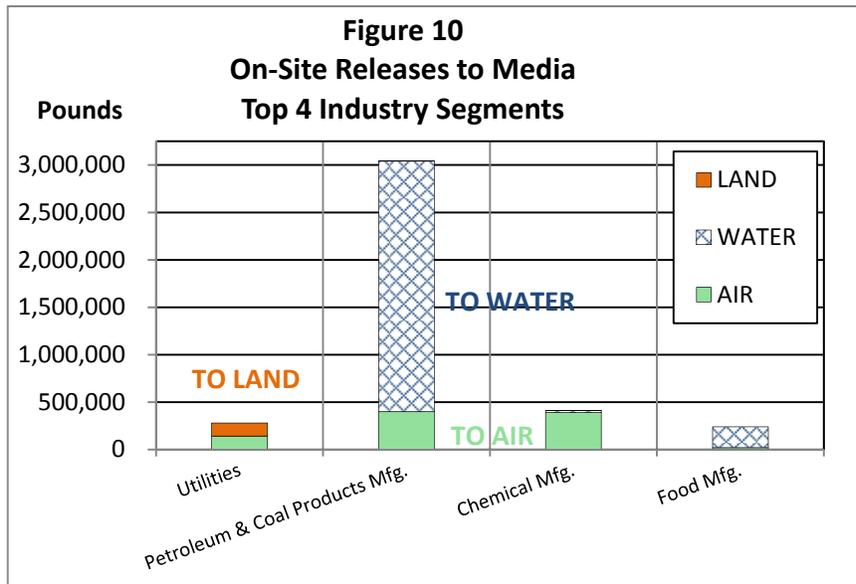
NAICS CODE	INDUSTRY GROUP	REPORTS	FACILITIES	FORM A	FORM R	ON-SITE RELEASE	OFF-SITE TRANSFERS	ON-SITE WASTE MGMT.
212	Mining	4	1	2	2	168	0	0
221	Utilities	15	2	1	14	280,114	31	3,372,390
311	Food Mfg.	21	9	15	6	240,317	0	236,265
313	Textile Products Mfg.	9	4	1	8	7,129	1,865,692	4,041,314
324	Petroleum & Coal Products Mfg.	44	4	4	40	3,043,549	179,538	371,248,681
325	Chemical Mfg.	79	17	5	74	411,982	3,822,505	17,958,427
326	Plastics & Rubber Mfg.	11	4	0	11	17,715	309,747	5,677,613
327	Non-metallic Mineral Product Mfg.	4	4	0	4	75	0	0
331	Primary Metal Mfg.	12	2	0	12	19,627	1,950,002	0
332	Fabricated Metal Product Mfg.	7	4	0	7	352	415,145	197,516
333	Equipment Mfg.	3	1	0	3	10	577,618	0
334	Computer and Electronic Product Mfg.	1	1	0	1	0	212	0
335	Electrical Equipment Mfg.	3	2	0	3	155	4,433,080	0
337	Furniture Manufacturing	1	1	0	1	5,717	0	0
339	Misc. Manufacturing	4	2	0	4	5,584	24,330	0
424	Wholesalers, Non-Durable Goods	2	1	2	0	0	0	0
454	Non-Store Retailers	3	1	3	0	0	0	0
928	National Security	5	1	0	5	298	0	0
	<b>TOTAL</b>	<b>228</b>	<b>61</b>	<b>33</b>	<b>195</b>	<b>4,032,792</b>	<b>13,577,900</b>	<b>402,732,206</b>

Figure 9 shows the percent contribution of each of the top four NAICS groups and all others not in the top four, compared to the reported total on-site releases. The top four, NAICS groups 221 (Utilities), 324 (Petroleum and Coal Products Mfg.), 325 (Chemical Mfg.) and 311 (Food Mfg.), account for 99% of the total on-site releases within the State. Facilities not in the top four NAICS industry groups contributed only 56,830 pounds of on-site releases, or 1.4% of the 2013 on-site release total.

**FIGURE 9**  
**TOP 4 NAICS INDUSTRIES FOR 2013**  
**PERCENT ON-SITE RELEASE**

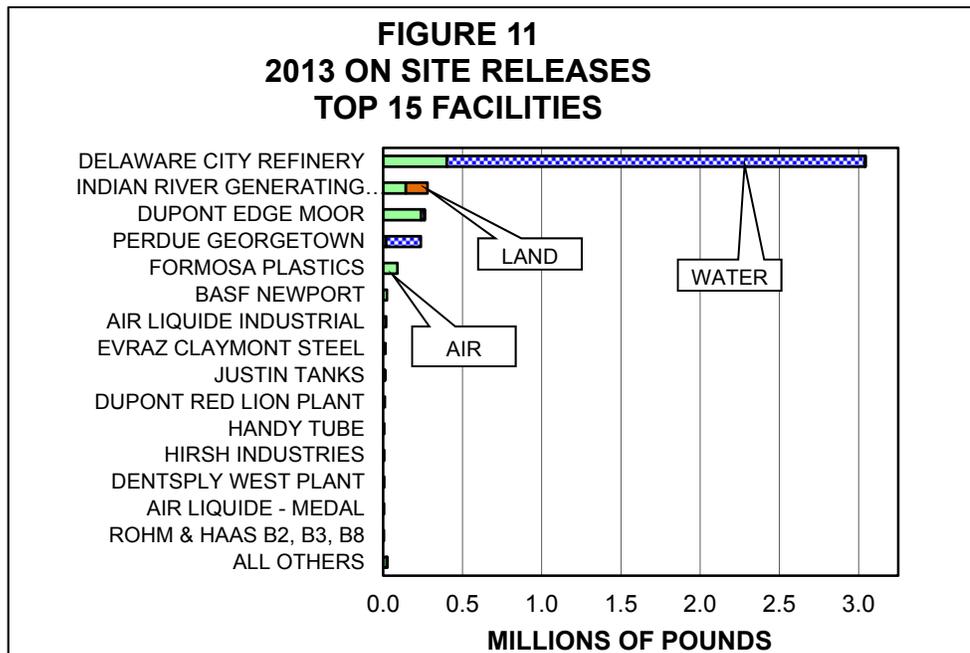


Depending on the NAICS group, releases to air, water, and land can be very different. Figure 10 shows the top 4 NAICS groups in Delaware and to what media the releases occurred. For example, utilities reported having their releases split between air and land, with 51% of the releases to air and 49% of the releases to land. Chemical manufacturing reported most of their releases were to air at 95%. For petroleum & coal products, and for food manufacturing, most of their releases were to water – 87% and 91%. Keep in mind this is based on a small sample size due to the overall low number of facilities reporting in Delaware. Other states will have greatly different results among NAICS groups, particularly those states whose industries have little presence in Delaware, such as mining or forestry/paper products manufacturing.



## RELEASES FROM THE TOP 15 FACILITIES

Figure 11 shows the relative contribution of each of the top 15 reporting facilities to on-site releases. The top four facilities accounted for 3,820,076 pounds, or 95% of all on-site releases. Of the 4,032,792 pounds that were reported as released on-site by all 61 facilities Statewide, the top 15 facilities accounted for total releases of 4,009,773 pounds, or 99% of the total on-site releases.



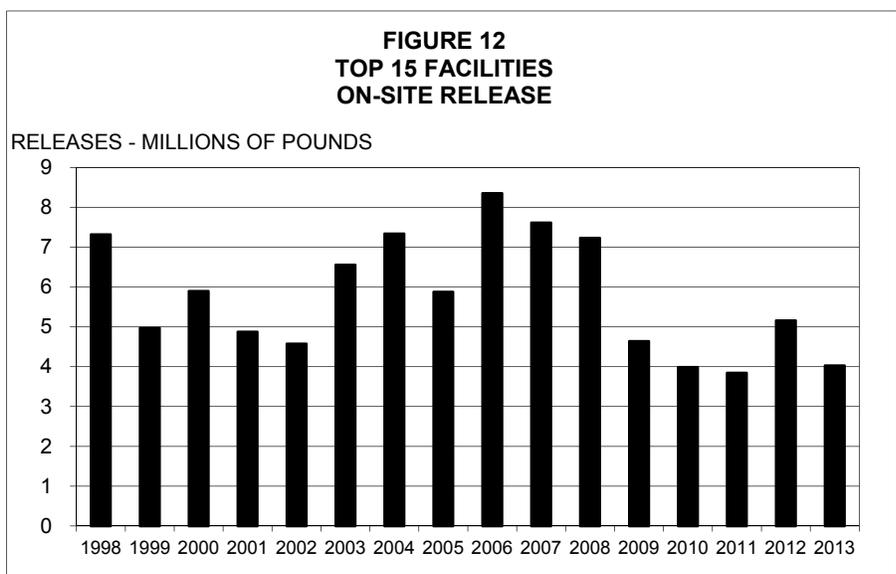
**TABLE 6**  
**TOP 15 FACILITIES 2012 AND 2013 RANKING BY ON-SITE RELEASE**  
(in pounds)

2012 RANK	2013 RANK	FACILITY	2013			2013 ON-SITE RELEASE	2012 ON-SITE RELEASE	2012 TO 2013 CHANGE IN RELEASES	
			TOTAL AIR	TOTAL WATER	TOTAL LAND				
1	1	DELAWARE CITY REFINERY	400,441	2,640,461	2,646	3,043,548	3,690,000	(646,451)	-18%
2	2	INDIAN RIVER GENERATING STATION	141,970	0	137,384	279,354	489,676	(210,322)	-43%
4	3	DUPONT EDGE MOOR	237,528	22,030	616	260,174	217,157	43,018	20%
3	4	PERDUE GEORGETOWN	18,000	219,000	-	237,000	409,792	(172,792)	-42%
5	5	FORMOSA PLASTICS	89,502	-	-	89,502	150,868	(61,366)	-41%
8	6	BASF NEWPORT	23,279	-	-	23,279	19,645	3,634	18%
DNR	7	AIR LIQUIDE INDUSTRIAL	17,792	-	-	17,792	DNR	-	-
9	8	EVRAZ CLAYMONT STEEL	2,370	306	10,905	13,581	18,032	(4,451)	-25%
10	9	JUSTIN TANKS	9,688	-	331	10,019	12,555	(2,536)	-20%
13	10	DUPONT RED LION PLANT	9,325	-	-	9,325	8,499	826	10%
NR	11	HANDY TUBE	6,046	-	-	6,046	4,610	1,436	31%
NR	12	HIRSH INDUSTRIES	5,717	-	-	5,717	3,925	1,792	46%
15	13	DENTSPLY WEST PLANT	5,584	-	-	5,584	4,929	655	13%
12	14	AIR LIQUIDE - MEDAL	4,694	-	-	4,694	8,668	(3,974)	-46%
NR	15	ROHM & HAAS B2, B3, B8	4,157	-	-	4,157	4,161	(4)	0%
<b>ALL OTHERS</b>			<b>22,840</b>	<b>104</b>	<b>75</b>	<b>23,019</b>	<b>151,301</b>	<b>(110,489)</b>	<b>-85%</b>
<b>TOP 15</b>			<b>976,094</b>	<b>2,881,797</b>	<b>151,882</b>	<b>4,009,773</b>	<b>5,042,516</b>	<b>(1,050,536)</b>	<b>-20%</b>
<b>STATE TOTALS, ALL FACILITIES</b>			<b>998,934</b>	<b>2,881,902</b>	<b>151,956</b>	<b>4,032,792</b>	<b>5,193,817</b>	<b>(1,161,025)</b>	<b>-22%</b>

NR- Not ranked in the top 15 for 2012  
DNR- Did not report in 2012  
Source: 2012 and 2013 DNREC TRI Databases, October 2014

Table 6 shows the 2013 ranking of the top 15 facilities along with their 2012 ranking and the reported amounts of on-site releases for both years. Releases to the environment because of remedial actions, accidents, or one-time catastrophic events are included in these values. The percent change in total on-site releases for each of the top 15 facilities from 2012 to 2013 is also shown, and some of these changes are significant.

Figure 12 shows the totals for reported on-site releases for the top 15 facilities during 1998-2013. The total on-site release trend for these 15 facilities is down 1,161,025 pounds (22%) since 2012 and down 3.3 million pounds (44%) since 1998 after reaching a peak of 8.4 million pounds in 2006. These facilities reported 99% of the total on-site releases in the State for 2013, while the remaining 46 facilities reported 1%.



Six facilities of the top 15 facilities reported an increase in on-site releases, while eight reported a decrease and one facility did not report release data for 2013. Changes at the facility, such as the way releases are estimated, how waste is managed, changes in raw materials or processing methods, or

installation of new or improved equipment possibly used to limit or eliminate releases of specific chemicals or all chemicals, may affect reported releases. Changes in production may also affect releases from a facility; seven of the top 15 facilities reported a decrease in production for 2013, and all but one of the seven showed a decrease in releases. The largest changes reported by the top 15 facilities in on-site releases were decreases in the release of nitrate compounds to water by the Delaware City Refinery and the Perdue Georgetown facility, down by 775,029 and 141,578 pounds respectively compared to 2012. Facility specific information is available via the **TRI Facility Profiles**, see **Access to TRI Files** under the **Further Information Section** on page 46.

Although the TRI program itself does not regulate or limit emissions, other DNREC and federal programs do issue permits and limit emissions from operating facilities. TRI data is also shared with other programs within DNREC to verify data accuracy and to provide data and information to those programs.

## **Facilities No Longer Reporting to TRI**

In the normal annual cycle of TRI reporting, some facilities may fall below the reporting thresholds and some facilities may close. In recent years, this involved the annual loss of 3-4 facilities, offset by 1-2 new facilities that started to report each year. For 2013, Chrome Deposit ceased operations and closed in 2012 and NRG Dover converted to natural gas and ceased burning coal and as result did not have to report.

For 2012, the Sunoco plant located in Marcus Hook, PA, part of which is located in Delaware, closed at the end of 2011. Both Occidental Chemical in New Castle and Air Liquide America in Delaware City fell below the reporting thresholds. Pinnacle Foods in Millsboro converted to using only natural gas and as result also fell below reporting thresholds.

For 2011, INVISTA, formerly known as the DuPont Seaford nylon facility, fell below the reporting thresholds as a result of lower production and its power plant conversion from coal to natural gas. Also in 2011, Buck Algonquin, a specialty manufacturer of marine hardware with headquarters in Stevensville, Maryland, closed its Smyrna facility.

## **Persistent Bioaccumulative Toxic (PBT) Chemicals, 2003-2013**

For reporting year 2000 and beyond, the EPA established substantially lower reporting thresholds for 12 existing chemicals and one chemical category that are highly persistent and bioaccumulative in the environment. Six new chemicals and one new category were also added to the PBT list for 2000. The new thresholds apply regardless of whether the PBT chemical is manufactured, processed, or otherwise used. For 2011, four of the 16 new chemicals added (see page 5) are also PACs and they are now included in the PACs category.

**TABLE 7**  
**2013 DELAWARE PBT CHEMICALS**  
**AND REPORTING THRESHOLDS**  
**(pounds/year)**

Chemical or Chemical Category	Threshold (Pounds)	2013 REPORTS
Aldrin	100	0
Benzo[g,h,i]perylene	10	1
Chlordane	10	0
Dioxin and dioxin-like compounds category	0.1 grams	6
Heptachlor	10	0
Hexachlorobenzene	10	1
Isodrin	10	0
Lead	100	6
Lead and lead compounds	100	8
Mercury	10	2
Mercury compounds	10	5
Methoxychlor	100	0
Octachlorostyrene	10	1
Pendimethalin	100	0
Pentachlorobenzene	10	1
Polychlorinated biphenyls (PCBs)	10	1
Polycyclic aromatic compounds category (PACs)	100	6
Tetrabromobisphenol A	100	0
Toxaphene	10	0
Trifluralin	100	0

Table 7 provides a current list of the PBT chemicals and their thresholds, and the number of reports received for each chemical for 2013.

PBTs are receiving increased scrutiny as we learn more about them, and reporting of PBTs is being progressively emphasized. These chemicals are of particular concern because they are not only toxic, but also because they remain in the environment for long periods of time, are not readily destroyed, and accumulate in body tissues.

In 2008, new data elements became available for dioxin and dioxin-like compounds (DLCs). The 17 compounds that fall under the TRI category of DLCs have a wide range (1.0000 to 0.0003) of toxicity; these values are called the Toxic Equivalent Factor (TEF). In order to compare them on an equal toxicity basis, we multiply the TEF by the pounds reported to get the Toxic Equivalent Quantity (TEQ). Facilities reporting on dioxins are also now required to report the

amounts released or managed as waste for each of the 17 DLCs. See **Appendix N** for a copy of the DLC reporting form, Schedule 1. These amounts are provided along with the original amount reported in pounds. See pages 21-23 for additional detail on dioxins.

Table 8 shows the results of PBT reporting for 2011-2012 compared to total 2013 TRI data. The total count of PBT reports, 38, is lower than the counts of 48-49 for recent years. PBT on-site releases for 2013 comprise 0.22% of the total TRI on-site releases. Total PBT wastes are 1.08% of total TRI wastes. No PBT reports can be filed on Form A.

PBT on-site releases were lower for 2013 by 3,719 pounds (68%); with the greatest reduction coming from the Indian River Generating Station with lower lead compounds released to land by 4,158 pounds. Lead compounds, largely released from coal-fired power plants, made up 80% of the total on-site PBT releases for 2013. Since 2003, the trend of PBT on-site releases is down 68%.

The total PBT waste amount increased by 413,800 pounds (10%) for 2013 compared to 2012. The primary reason for this increase was the increased transfers of lead compounds to off-site recycling by the Johnson Controls Distribution facility.

Table 9, on page 23, shows the amounts of each PBT chemical reported as released by the TRI reporting facilities in 2013. Honeywell reported the largest PBT release to air, 445 pounds of polycyclic aromatic compounds (PACs). Dupont Edge Moor reported the largest PBT release to water, 84 pounds of lead compounds. The Indian River Generating Station reported the largest release to land, 6,216 pounds of lead compounds. Over 96% of the PBT amounts transferred off-site for recycle was lead compounds from Johnson Controls Battery Plant and Distribution Center, and Evraz Claymont Steel recycled another 2.5%. Additional detail for mercury and mercury compounds, another important PBT, is in a separate section on page 23.

Three companies (The Delaware City Refinery, IKO, and V&S Galvanizing) reported the entire amount of on-site PBT chemical waste management. The refinery treated 492 pounds of benzo(g,h,i)perylene and 405 pounds of polycyclic aromatic compounds (PACs) on-site. IKO recycled 551 pounds of PACs on-site and V&S Galvanizing recycled 1,669 pounds of lead on-site. **Appendix I** shows the PBT data detail, listing each PBT chemical and the facilities reporting on it.

**TABLE 8**  
**2013 TRI PBT DATA SUMMARY**  
**(IN POUNDS)**

	PBTs only 2011	PBTs only 2012	PBTs only 2013
No. of Facilities	26	21	21
No. of Form A's	NA	NA	NA
No. of Form R's	48	42	38
No. of Chemicals	12	11	11
On-Site Releases			
Air	1,180	1,333	1,499
Water	132	70	175
Land	11,212	11,062	7,073
On-Site Releases	12,523	12,466	8,747
Off-Site Transfers			
POTW's	8	1	3
Recycle	2,967,066	4,102,492	4,525,143
Energy Recovery	0	0	0
Treatment	0	0	0
Disposal	19,352	29,517	23,515
Total Transfers	2,986,426	4,132,010	4,548,661
On-Site Waste Mgmt.			
Recycle	280	1,385	2,220
Energy Recovery	0	0	0
Treatment	570	864	897
Total On-Site Mgmt.	850	2,249	3,117
Total PBT Waste	2,999,799	4,146,725	4,560,525

**TABLE 9**  
**2013 PBT RELEASE SUMMARY**  
 (REPORTED AMOUNTS IN POUNDS)

2013 PBT CHEMICAL	FORM R REPORTS	ON-SITE RELEASES				TRANSFERS OFF SITE	ON-SITE WASTE MGMT.
		TOTAL AIR	TOTAL WATER	TOTAL LAND	ON-SITE TOTAL		
BENZO (G,H,I)PERYLENE	1	0.00	5.00	0.00	5.00	0.00	492.00
DIOXIN AND DIOXIN-LIKE COMPOUNDS	6	0.0200	0.0100	0.0000	0.0300	1.16	0.00
HEXACHLOROBENZENE	1	0.0800	0.5500	0.0000	0.6300	196.78	0.00
LEAD	6	5.61	6.80	74.81	87.22	4,871.80	1,669.00
LEAD COMPOUNDS	8	565.04	155.70	6,269.70	6,990.44	4,542,396.37	0.00
MERCURY	2	17.11	0.00	0.00	17.11	1,086.25	0.00
MERCURY COMPOUNDS	5	172.68	2.01	113.20	287.89	9.65	0.00
OCTACHLOROSTYRENE	1	0.00	0.35	0.00	0.35	4.25	0.00
PENTACHLOROBENZENE	1	0.09	0.09	0.00	0.1800	8.04	0.00
POLYCHLORINATED BIPHENYLS (PCB's)	1	0.00	0.00	0.00	0.0000	4.31	0.00
POLYCYCLIC AROMATIC COMPOUNDS	6	738.24	4.05	615.67	1,357.96	82.20	956.00
<b>TOTALS</b>	<b>38</b>	<b>1,499</b>	<b>175</b>	<b>7,073</b>	<b>8,747</b>	<b>4,548,661</b>	<b>3,117</b>

Source: 2013 DNREC TRI Database, October 2014

Dioxins are reportable in grams and have been converted to pounds for this report.

Four decimal places are used where small amounts are not -0-.

### Dioxin and Dioxin-Like Compounds

The term “dioxins” is used by the EPA TRI program and in this report to indicate the group of 17 dioxins and dioxin-like compounds (DLCs) reportable to TRI, out of a family of several hundred dioxins and dioxin-like compounds, including furans. These dioxins are also part of the PBT category, and you can see the totals for releases and other waste management in Table 9 above. In recent years, on-site release of DLCs has been in the range of 5.2-15.8 grams. For 2013, the amount was 13.7 grams.

On May 10, 2007, the EPA Toxics Release Inventory Program issued a final rule expanding reporting requirements for the DLCs category. The final rule requires that, in addition to the total amount released for the entire category, facilities must report the amount of each individual member for each release and waste management activity on a new form (Schedule 1). The reporting requirements of the final rule applied to the 2008 reporting year and to following years.

The reason for this rule is that the toxicity levels of these 17 DLCs vary greatly, and some compounds in this group have Toxic Equivalent Factors (TEF) **3,333 times less** than others. Because of this great variation, the Toxicity Equivalent Quantity (TEQ) is a way to show toxic chemical amounts on an equal toxicity basis. The EPA and DNREC use the individual mass quantity data to calculate TEQ amounts (Weight X TEF = TEQ). This data is available to the public along with the mass data. Table 10, on the following page, shows all 17 DLCs that are reportable to TRI and some basic information about them.

Among the “dioxins” included in TRI reports is the very toxic 2,3,7,8-TCDD dioxin (#1 in Table 10), which is the congener generally of most concern. All TRI “dioxins” are reportable in grams and were converted to pounds for this report since all other chemicals are reported in pounds (1 gram = 0.002205 pounds). You can see that TRI dioxin numbers 1 and 2 have the highest TEF (1.0000), and numbers 7 and 17 have the lowest (0.0003). This is a range of 3,333 to 1. In order to show the toxicity effects of the 17 dioxins on an equal basis, the amounts released in pounds are multiplied by their TEF. The resulting TEQ allows them to be compared on an equal toxicity level.

**TABLE 10**  
**DIOXIN TOXIC EQUIVALENT FACTORS (TEF)**

TRI No.	Dioxin Chemical (DLC) Name	Abbreviated Name	CAS	TEF
1	2,3,7,8-tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD	1746-01-6	1.0000
2	1,2,3,7,8-pentachlorodibenzo-p-dioxin	1,2,3,7,8-PeCDD	40321-76-4	1.0000
3	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	1,2,3,4,7,8-HxCDD	39227-28-6	0.1000
4	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	1,2,3,6,7,8-HxCDD	57653-85-7	0.1000
5	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	1,2,3,7,8,9-HxCDD	19408-74-3	0.1000
6	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	1,2,3,4,6,7,8-HpCDD	35822-46-9	0.0100
7	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	1,2,3,4,6,7,8,9-OCDD	3268-87-9	0.0003
8	2,3,7,8-tetrachlorodibenzofuran	2,3,7,8-TCDF	51207-31-9	0.1000
9	1,2,3,7,8-pentachlorodibenzofuran	1,2,3,7,8-PeCDF	57117-41-6	0.0300
10	2,3,4,7,8-pentachlorodibenzofuran	2,3,4,7,8-PeCDF	57117-31-4	0.3000
11	1,2,3,4,7,8-hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF	70648-26-9	0.1000
12	1,2,3,6,7,8-hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF	57117-44-9	0.1000
13	1,2,3,7,8,9-hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF	72918-21-9	0.1000
14	2,3,4,6,7,8-hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF	60851-34-5	0.1000
15	1,2,3,4,6,7,8-heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF	67562-39-4	0.0100
16	1,2,3,4,7,8,9-heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF	55673-89-7	0.0100
17	1,2,3,4,6,7,8,9-octachlorodibenzofuran	1,2,3,4,6,7,8,9-OCDF	39001-02-0	0.0003

Also, you can see how, for a dioxin like numbers 1 and 2, where the TEF is highest at 1.000, the TEQ amounts are greater than the weight percentages. Conversely, for dioxin numbers 7 and 17, where the TEF values are a low 0.003, the TEQ amounts are smaller than their weight percentages. For example, the Indian River Generating Station reported dioxin number 7 (TEF = 0.003) as 57.75% of the total weight, but this was only 0.91% of the TEQ. The total on-site release amounts in pounds and their corresponding TEQ amounts reported by the six facilities that reported on dioxins in Delaware for 2013 were calculated and are presented in the Table 11. The 2013 total of 0.0303 pounds, or 13.7287 grams, was released on-site, which is up from the 2012 total of 0.02754 pounds, or 12.4925 grams. Because of the differences in distribution of individual dioxins and dioxin-like compounds, the rankings changed when comparing by pounds or by TEQ. In addition, the pounds released or managed as waste are shown in **Appendix I**.

**TABLE 11**  
**FACILITIES SORTED BY DIOXIN TOXIC EQUIVALENT QUANTITY (TEQ)**

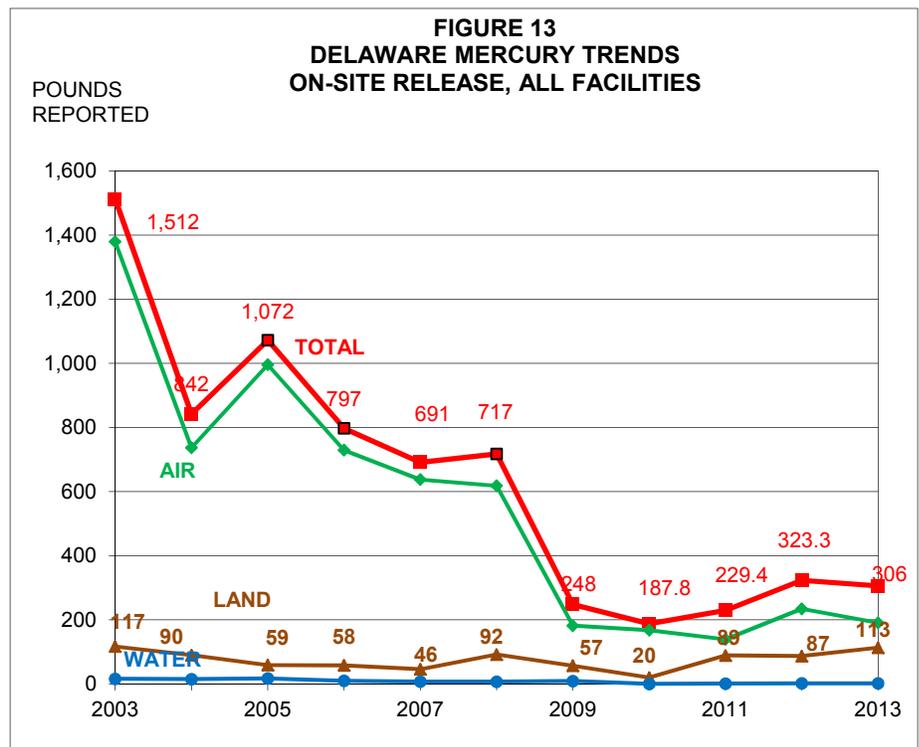
<b>SORTED BY TOTAL ON-SITE TEQ</b>	TOTAL ON-SITE	ON-SITE	TOTAL ON-SITE	ON-SITE
<b>FACILITY</b>	TEQ, LBS.	TEQ RANK	LBS. RELEASE	LBS. RANK
EVRAZ CLAYMONT STEEL	0.0012463	1	0.010087	1
EDGE MOOR/HAY ROAD POWER PLANTS	0.0002280	2	0.006811	2
DELAWARE CITY REFINERY	0.0001430	3	0.001168	4
DUPONT EDGE MOOR	0.0000323	4	0.011878	3
INDIAN RIVER POWER PLANT	0.0000059	5	0.000312	5
FORMOSA PLASTICS	0.0000005	6	0.000011	6
<b>TOTALS</b>	0.0016559		0.030267	

### 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. Control of mercury and mercury compounds is becoming increasingly important as we learn more about mercury, and that mercury is a serious pollutant. Children, including unborn babies, exposed to mercury compounds can have impaired functions, including verbal, attention, motor control, and intelligence. Adults may be at lower risk than children, but mercury in fish consumed by adults may lead to problems similar to those found in children, as well as reproductive and cardiovascular problems. A significant source of mercury pollution comes from the air, as mercury released from power plants is deposited on water and land, where runoff may also migrate to the water. Many lakes and streams are impaired as a result of mercury releases from coal-burning power plants. As mercury makes its way into the food chain, restrictions on eating fish harvested from these water bodies are becoming more commonplace.

For 2013, total on-site releases of mercury and mercury compounds decreased 18 pounds (5%) to a total of 306 pounds. This was largely the result of decreases in releases to air by Evraz Claymont Steel. On-site releases of mercury and mercury compounds on a whole are down 80% since 2003.

Figure 13 shows the combined trend for mercury and mercury compounds, and how the trend is greatly influenced by on-site releases to air. The reduction from 2002-2004 was from reduced amounts reported by Occidental Chemical as it began closing its Delaware facility. Occidental reported a peak release of 1,097 pounds in 2000. As of 2012, Occidental fell below the reporting threshold. Indian River Generating was the largest contributor for on-site mercury releases in

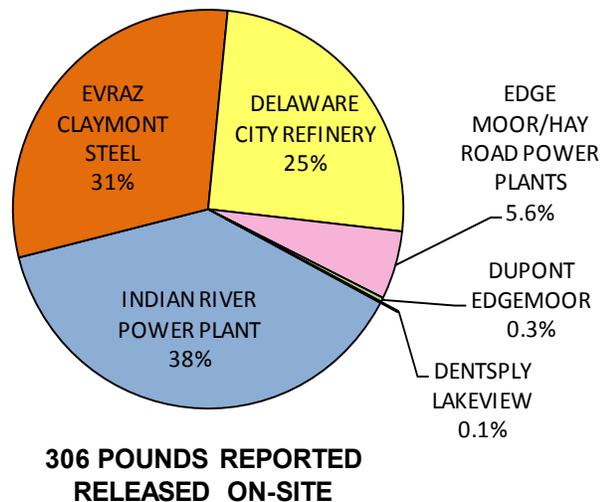


2013, with the majority of releases to land. Evraz Claymont Steel facility reported the second highest release amount of mercury, with releases only to air.

Figure 14 shows the percentage contributed by each of the facilities that reported a mercury or mercury compound release in 2013. On-site release amounts for mercury and mercury compounds can also be found in **Appendix F** on page F-9 and **Appendix I** on page I-1.

Nationwide, the top three states releasing mercury and mercury compounds on-site for 2013 were: Nevada, 4,382,061 pounds mostly to on-site land from several mining facilities; Alaska, 406,360 pounds mostly to on-site land from several mining facilities; and Utah, 115,870 pounds mostly to on-site land from mining facilities. Delaware is #44 in the national rankings for total mercury and mercury compound releases (including on-site releases and off-site disposals) with 310 pounds.

**FIGURE 14**  
**2013 ON-SITE MERCURY RELEASES**  
**FROM DELAWARE FACILITIES**



## Carcinogenic TRI Chemicals

Some chemicals are reportable under TRI because they are carcinogens, and are known or suspected to cause cancer in humans. Table 12 shows those carcinogens that were reported by Delaware facilities for 2013. Each chemical is determined to a carcinogen by

**TABLE 12  
CARCINOGENS REPORTED BY  
DELAWARE FACILITIES FOR 2013**

CHEMICAL NAME	IARC	NO. OF REPORTS
4,4'-METHYLENEBIS(2-CHLOROANILINE)	1	2
ARSENIC COMPOUNDS	1	1
ASBESTOS (FRIABLE)	1	1
BENZENE	1	1
CHROMIUM COMPOUNDS	1	4
ETHYLENE OXIDE	1	1
NICKEL COMPOUNDS	1	4
VINYL CHLORIDE	1	1
1,3-BUTADIENE	2A	1
CREOSOTE	2A	1
HYDRAZINE SULFATE	2A	1
LEAD	2A	6
LEAD COMPOUNDS	2A	8
POLYCHLORINATED BIPHENYLS	2A	1
TRICHLOROETHYLENE	2A	1
2,4-DIMETHYLPHENOL	2B	1
COBALT COMPOUNDS	2B	1
DICHLOROMETHANE	2B	1
ETHYLBENZENE	2B	3
HEXACHLOROBENZENE	2B	1
HYDRAZINE	2B	1
NAPHTHALENE	2B	5
NICKEL	2B	4
NITROBENZENE	2B	1
P-CHLOROANILINE	2B	1
POLYCYCLIC AROMATIC COMPOUNDS	2B	6
PROPYLENE OXIDE	2B	1
STYRENE	2B	3
TETRACHLOROETHYLENE	2B	1
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2B	3
VINYL ACETATE	2B	1
<b>CHEMICALS = 31</b>	<b>REPORTS = 68</b>	

Source: 2013 DNREC TRI Database, October 2014

decreased 84% (717,462 pounds) since the peak in 1998. The large decrease in on-site releases was primarily due to Formosa Plastics, who made adjustments in their release calculations for vinyl acetate. Other carcinogens saw smaller increases in releases, with some facilities reporting decreases.

either the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP). Next to the chemical is their rating is listed as: Known (1), Probable (2A), or Possible (2B) carcinogen. Of the 4.0 million pounds of TRI chemicals reported by facilities in Delaware as released on-site to the environment in 2013, 3.5% (139,449 pounds) were known or suspected carcinogens. For additional information on cancer rates and causes, please go to the Division of Public Health cancer web site listed in the **"For Further Information"** section on page 47.

### **Carcinogen Trends, 2003-2013**

Thirty-seven facilities reported on carcinogens for 2013, two more than in 2012. The number of carcinogen reports increased by two to 68 in 2013, and the total number of reported carcinogenic chemicals was increased by two to 31. On-site releases of all carcinogens decreased 30% (58,643 pounds) compared to 2012, and have

Table 13 shows amounts released on-site for carcinogens from 2003-2013, and Figure 15 shows the trend, which has been generally down during this time period.

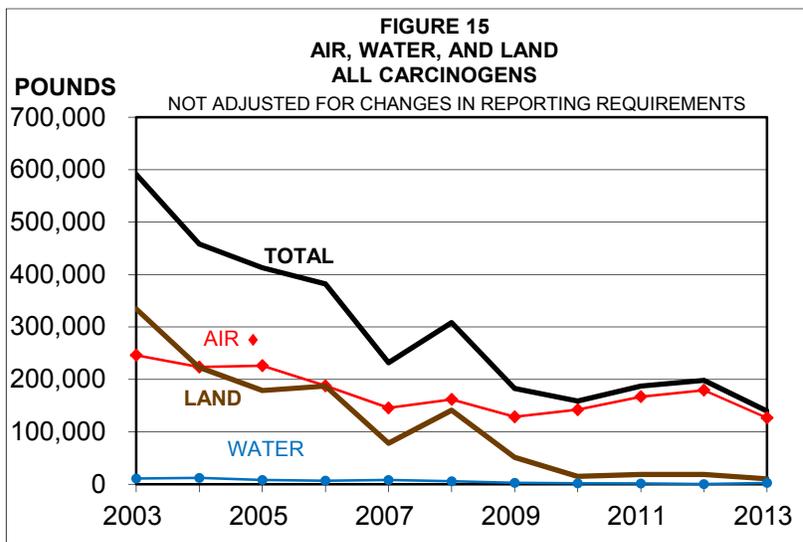
**TABLE 13**  
2003-2013 TRI CARCINOGENS  
REPORTED ON-SITE RELEASES, NOT ADJUSTED

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>KNOWN</b>											
AIR	123,191	96,562	98,107	66,475	56,287	69,781	60,664	63,975	70,033	73,545	58,914
WATER	9,339	9,817	4,643	5,222	6,435	4,452	2,059	576	1,318	121	429
LAND	312,576	173,414	134,194	143,115	46,021	104,112	26,843	8,843	552	558	411
<b>KNOWN TOTAL</b>	<b>445,106</b>	<b>279,793</b>	<b>236,944</b>	<b>214,812</b>	<b>108,743</b>	<b>178,345</b>	<b>89,567</b>	<b>73,394</b>	<b>71,903</b>	<b>74,224</b>	<b>59,753</b>
<b>PROBABLE</b>											
AIR	24,216	27,417	23,600	18,946	18,628	14,604	11,112	15,175	16,040	7,008	7,480
WATER	4	4	4	4	4	5	5	1,146	124	58	163
LAND	0	0	0	0	8,212	8,661	7,115	5,404	17,458	17,017	8,991
<b>PROBABLE TOTAL</b>	<b>24,220</b>	<b>27,421</b>	<b>23,604</b>	<b>18,950</b>	<b>26,845</b>	<b>23,270</b>	<b>18,232</b>	<b>21,725</b>	<b>33,623</b>	<b>24,083</b>	<b>16,633</b>
<b>POSSIBLE</b>											
AIR	98,699	99,543	104,480	102,414	70,722	77,436	56,817	63,059	80,974	98,864	60,152
WATER	1,431	2,308	3,416	1,544	1,655	1,170	522	38	25	20	2,053
LAND	21,714	49,266	44,500	44,251	24,005	28,203	17,459	615	562	901	947
<b>POSSIBLE TOTAL</b>	<b>121,844</b>	<b>151,117</b>	<b>152,396</b>	<b>148,210</b>	<b>96,382</b>	<b>106,809</b>	<b>74,798</b>	<b>63,713</b>	<b>81,561</b>	<b>99,785</b>	<b>63,152</b>
<b>TOTAL AIR</b>	<b>246,106</b>	<b>223,522</b>	<b>226,188</b>	<b>187,836</b>	<b>145,637</b>	<b>161,821</b>	<b>128,593</b>	<b>142,210</b>	<b>167,047</b>	<b>179,417</b>	<b>126,545</b>
<b>TOTAL WATER</b>	<b>10,773</b>	<b>12,129</b>	<b>8,062</b>	<b>6,770</b>	<b>8,094</b>	<b>5,627</b>	<b>2,586</b>	<b>1,761</b>	<b>1,468</b>	<b>199</b>	<b>2,555</b>
<b>TOTAL LAND</b>	<b>334,290</b>	<b>222,680</b>	<b>178,694</b>	<b>187,366</b>	<b>78,238</b>	<b>140,976</b>	<b>51,417</b>	<b>14,862</b>	<b>18,572</b>	<b>18,476</b>	<b>10,348</b>
<b>GRAND TOTAL</b>	<b>591,169</b>	<b>458,331</b>	<b>412,943</b>	<b>381,972</b>	<b>231,970</b>	<b>308,424</b>	<b>182,596</b>	<b>158,832</b>	<b>187,087</b>	<b>198,092</b>	<b>139,449</b>

For 2013, on-site releases of all carcinogens are down 30%, or 58,643 pounds. Figure 15 shows a trend for each of the category releases by media and the total reported carcinogen release. As in Figure 15, the general trend has been down. Releases to air and land largely influenced the total, depending on the year, while releases to water play a much smaller part.

### Known Carcinogens

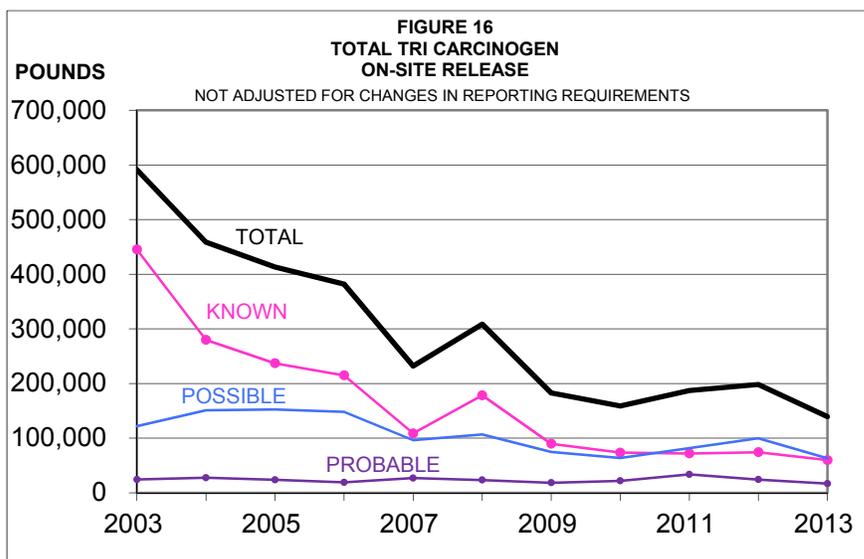
Known Carcinogens, although having the least number of reports, is significant because of its high toxicity classification. Known carcinogens reported 43% of the total on-site carcinogen releases for 2013. Figure 16, on the next page, shows the trend of each of the three carcinogen groups and their effect on the total on-site release. On-site releases of known carcinogens are down 14,470 pounds (20%) since 2012, largely a result of the decrease in release of vinyl chloride to air at Formosa Plastics. On-site releases of known carcinogens are down 523,380 pounds (89.8%) since 1998.



About 98.6% of the total known carcinogen amount was reported released on-site to air, 0.7% to land, and 0.7% to water for 2013. Releases to air of known carcinogens are 43% of all carcinogen on-site releases to air. Reported releases to air of known carcinogens

decreased by 20% (14,631 pounds) in 2013, and are down 90% from the amount reported in 1998.

Vinyl chloride, with a total release to air of 47,277 pounds and only reported by Formosa



Plastics, is the highest (79%) of the total releases in the known carcinogen category and also the highest of all 31 carcinogens reported. Vinyl chloride contributed 80% of the known carcinogen category releases to air in 2013, 37% of all carcinogen releases to air, and 34% of carcinogen total on-site releases in 2013. The second highest known carcinogen in 2013 was benzene. Benzene,

largely released to air, and all from the Delaware City Refinery, has declined 84% from 57,959 pounds released in 1995 (from the Delaware City Refinery and the now closed Metachem facility) to 9,113 pounds in 2013. Benzene made up 15% of the known carcinogen releases to air for 2013, down from 23% for 1995.

Ethylene oxide, all of which was released to air (2,432 pounds), ranks third in total on-site releases in the known carcinogen category. Croda reported all of the ethylene oxide releases on-site for 2013, up from 2,245 pounds reported for 2012.

Nickel compounds rank fourth in total on-site releases in the known carcinogen category at 556 pounds. The Evraz Claymont Steel facilities and DuPont Edge Moor reported most of the nickel compounds released for 2013. Total releases of nickel compounds include 4.7% released to air, 47.8% released to water, and 47.5% released to land. Nickel compounds contributed 62% (266 pounds) of all the known carcinogen releases to water, with arsenic compounds releases contributing 31% (131 pounds).

### Probable Carcinogens

This category has the least number of chemicals (7) and amounts released on-site (12%), but has some important chemicals in it, such as lead, trichloroethylene (TCE), and polychlorinated biphenyls (PCBs). The majority (54%) of the six probable carcinogens reported was released on-site to land, while 45% was released to air, and 1% was released to water during 2013.

Lead compounds had the highest reported amount of on-site release of a probable carcinogen, with 6,990 pounds for 2013, a decrease from 11,239 pounds reported in 2012. The Indian River Generating Station reported the highest release, 6,217 pounds to land and 74 pounds released to air, or 90% of the 8 facilities reporting lead compounds. Evraz Claymont Steel facility was second, reporting 250 pounds released to air, 53 pounds released to land, and 54 pounds released to water. The remaining 9 facilities had smaller amounts

reported as released to air, water, or land.

TCE reported by Handy Tube was the second highest release of a probable carcinogen with 6,046 pounds reported as released to air. On-site releases increased 1,436 pounds (31%) from 2012. TCE releases have trended downward, declining by 79% from 1995-2013, down from 29,332 pounds reported for 1995 to 6,046 pounds for 2013.

The probable carcinogen on-site release total decreased by 7,450 pounds (31%) for 2012-2013 and is now at 16,663 pounds, 31% of the 1998 amount.

### **Possible Carcinogens**

This category has the most chemicals, reports, and amounts, reporting 45% of all on-site release amounts for carcinogens. About 95% of the total possible carcinogen amount is reported as released on-site to air, 3% to land, and 1% to water. The trend for 2013 is down by 37%, or 36,633 pounds, and down 71%, or 157,068 pounds, since 1998. The highest chemical release in this category is vinyl acetate at 40,740 pounds, all of which was reported released to air by Formosa Plastics. Vinyl acetate makes up 65% of all possible carcinogen on-site releases. Reported on-site releases of vinyl acetate decreased by 38,254 pounds (48%) for 2013.

Styrene is the second highest release in the possible carcinogen category for 2013, with reports totaling 10,247 pounds, all but 336 pounds to air. Justin Tanks reported 9,688 pounds of styrene released to air and 331 pounds released to land, down from 12,555 pounds reported for 2012 and 98% of the total styrene release for 2013. The other facilities reporting styrene were BASF Seaford with 233 pounds and the Delaware City Refinery with 18 pounds. Reported styrene releases for 2013 increased by a total of 991 pounds (8.4%).

As before, in [Limitations of TRI Data](#) on Pages 4-5, we urge caution when using this data, as **the TRI data does not indicate the amount, if any, of human exposure.**

---

## **Trend Analysis**

### **Effect of Chemical and Facility Group Additions, 1990-2013**

Although the TRI program began with reporting for 1987, the next two years were marked with a change each year in the manufacturing, processing, and otherwise use threshold amounts. For 1987, the thresholds were 75,000 pounds for manufacturing and processing, and 10,000 pounds for otherwise use. For 1988, the thresholds were 50,000/10,000 pounds, and for 1989 and beyond, the thresholds were 25,000/10,000 pounds. It is not possible to make a meaningful comparison of trends during this time, as the number of facilities and the number of reports varied because of the changing reporting criteria.

Significant groups of chemicals and facilities were added to the TRI program:

- **Chemical List Changes -1995**

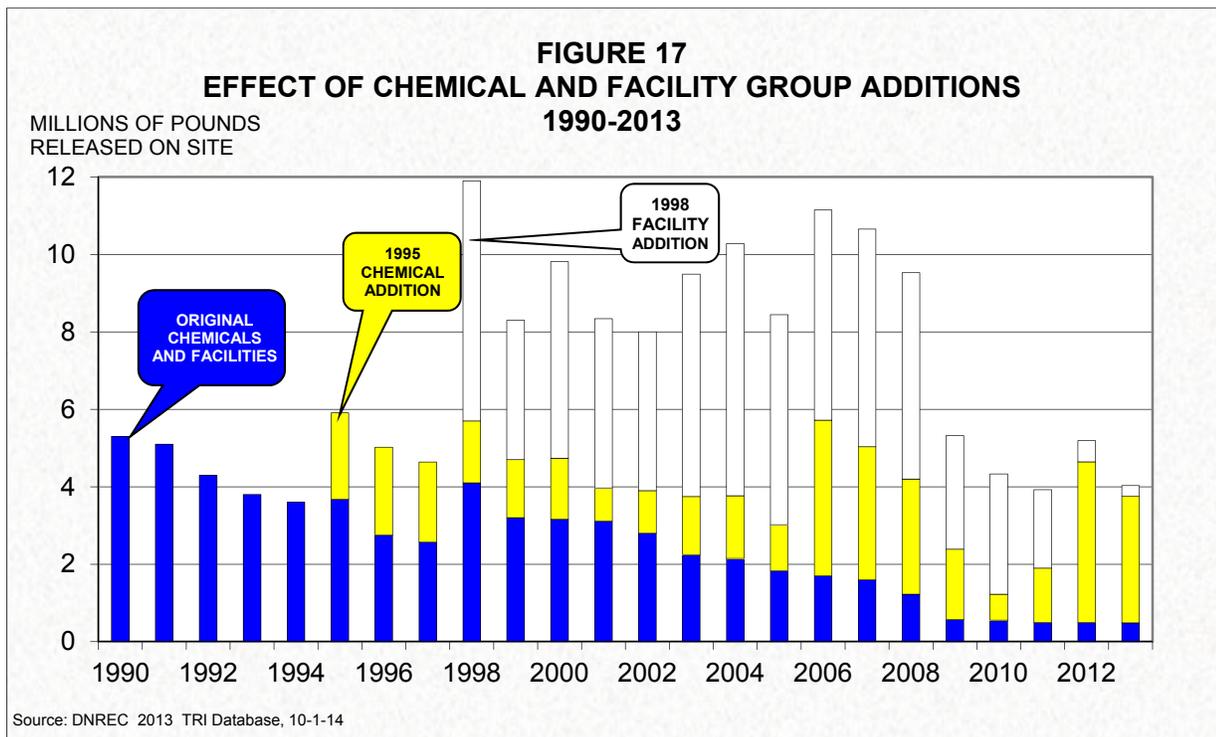
For reporting year 1995 and beyond, the EPA significantly expanded the list of chemicals. The list increased by 282 chemicals and chemical categories, added to the original list of 238 chemicals. Also during 1989-1995, other chemicals and categories were added or deleted, including chemical categories which are highly persistent and bioaccumulative in the environment (PBTs), bringing the total chemical count for 1995 to 581 and the chemical category count to 30. See details on the PBT chemical reports starting on page 33, and in Appendix I.

Other additions to the chemical list have occurred over time, including recently. In the 2011 reporting year, 16 new carcinogens, four of which are in the polycyclic aromatic compounds (PAC) category, were added to the list of reportable chemicals. For 2012, Hydrogen Sulfide was added to the list of reportable chemicals. Hydrogen Sulfide reports increased on-site treatment reported amounts by 329 million pounds in 2012 and is discussed in greater detail in *On-site Waste Management Trends* on page 36. These additions bring the total chemical count to 593 listed chemicals and 30 chemical categories.

- **Industry Expansion - 1998**

Beginning with the 1998 reporting year, the EPA added seven industries to the list of facilities covered under TRI. Prior to the 1998 reporting year, only manufacturers (and Federal facilities were required to report (see Table 1 on page 3). The greatest impact to Delaware is the Electric Utilities (NAICS 221). The industry expansion significantly increased the amount of reported releases. This did not necessarily represent an increase in toxic releases in Delaware, but rather provided additional information to the public. Other smaller groups as noted above, or even individual chemicals, are also added or deleted over time.

Figure 17 shows these effects starting in 1990 and following the trend of each group since it was added to the TRI program. Data from the beginning of the TRI program in 1987-89 is excluded because reporting requirements changed significantly and a valid comparison of that data with later data is not feasible.



The trend of each group and the reports affecting the trends will be discussed in this Trend Analysis section. All groups have changed over time, with increases and decreases reflecting both changes in business conditions and improvements in analysis. Table 14 shows the amount reported in millions of pounds for each group at the time it was added, the 2013 reported amount, and the amount of change since the time it was added. If each group had remained constant at the time of its addition, amounts reported for 2013 would be 13.73 million pounds instead of the 4.0 million pounds actually reported for 2013. Due to several factors, including facility efforts to reduce pollution, increased regulation, partial or complete shutdown of facilities, and declining business conditions, the reporting facilities in Delaware have effected a reduction of 9.70 million pounds, or 71%.

**TABLE 14**  
**TREND OF ON-SITE RELEASES FOR CHEMICAL AND FACILITY ADDITIONS**

GROUP	STARTING YEAR AMOUNT Millions of Pounds	2013 AMOUNT Millions of Pounds	CHANGE SINCE STARTING Millions of Pounds	PERCENT CHANGE
Original Facilities and Chemicals	5.30	0.48	- 4.82	-91%
1995 Chemical Addition	2.23	3.27	1.04	47%
1998 Facility Addition	6.20	0.28	- 5.92	-95%
TOTAL	13.73	4.03	- 9.70	-71%

**TABLE 15**  
**2003-2013 TRI DATA SUMMARY**  
**(IN POUNDS)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
No. of Facilities	85	74	73	70	69	69	63	61	63	60	62
No. of Form As	55	52	53	45	44	31	29	31	34	33	33
No. of Form Rs	327	310	294	287	295	288	227	197	209	202	195
No. of Chemicals	103	103	103	101	102	100	90	79	90	88	91
<b>On-Site Releases</b>											
Air	7,308,283	7,935,921	6,478,578	6,341,764	6,920,245	5,845,072	3,194,221	3,519,986	2,416,526	1,109,209	998,934
Water	918,650	1,231,061	1,211,798	4,022,175	3,327,675	2,796,686	1,590,679	600,479	1,230,737	3,777,904	2,881,902
Land	1,268,396	1,111,392	752,894	781,701	406,188	885,976	537,489	210,747	278,669	306,702	151,956
<b>Unadjusted On-Site Release</b>	<b>9,495,329</b>	<b>10,278,374</b>	<b>8,443,270</b>	<b>11,145,640</b>	<b>10,654,109</b>	<b>9,527,735</b>	<b>5,322,389</b>	<b>4,331,212</b>	<b>3,925,932</b>	<b>5,193,815</b>	<b>4,032,792</b>
<b>Off-site Transfers</b>											
POTWs	1,452,241	1,466,469	1,514,575	1,421,647	1,243,125	1,117,335	636,602	996,970	1,048,588	814,866	935,842
Recycle	8,376,865	9,910,935	11,345,835	8,534,537	8,181,423	7,535,371	5,367,592	5,662,694	8,027,133	9,383,706	9,009,366
Energy Recovery	2,834,075	2,755,903	2,724,080	4,180,596	4,910,600	3,695,215	2,330,189	1,857,131	2,110,293	2,556,954	1,874,068
Treatment	370,950	174,893	194,679	237,073	171,044	150,297	140,248	336,190	274,727	963,123	1,112,090
Disposal	4,084,899	3,919,638	4,400,538	4,739,232	7,145,314	3,129,281	2,785,524	4,563,328	2,307,186	2,419,683	1,571,572
<b>Total Transfers</b>	<b>17,119,029</b>	<b>18,227,837</b>	<b>20,179,707</b>	<b>19,113,085</b>	<b>21,651,506</b>	<b>15,627,498</b>	<b>11,260,156</b>	<b>13,416,312</b>	<b>13,767,928</b>	<b>16,138,331</b>	<b>14,502,937</b>
<b>On-Site Waste Mgmt.</b>											
Recycle	22,404,667	8,772,135	10,079,028	10,594,593	10,945,896	10,870,477	5,630,119	7,678,337	7,974,584	9,326,213	11,642,121
Energy Recovery	16,323,700	23,440,027	19,624,524	17,937,031	20,387,061	20,932,200	14,670,034	-	9,172,883	16,227,012	15,659,902
Treatment	30,443,585	31,807,455	38,330,991	39,516,068	39,879,302	42,281,742	38,179,139	32,895,795	38,585,960	376,100,649	375,430,183
<b>Total On-Site Mgmt.</b>	<b>69,171,952</b>	<b>64,019,617</b>	<b>68,034,543</b>	<b>68,047,692</b>	<b>71,212,259</b>	<b>74,084,419</b>	<b>58,479,292</b>	<b>40,574,132</b>	<b>55,733,427</b>	<b>401,653,874</b>	<b>402,732,206</b>
<b>Total Waste</b>	<b>95,786,309</b>	<b>92,525,828</b>	<b>96,657,520</b>	<b>98,306,417</b>	<b>103,517,874</b>	<b>99,239,652</b>	<b>75,061,836</b>	<b>58,321,655</b>	<b>73,427,286</b>	<b>422,986,019</b>	<b>421,267,934</b>

NOT ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS  
 SOURCE: DNREC 2013 DATABASE, OCTOBER 2014

## Release and Waste Management Trends, 2003-2013

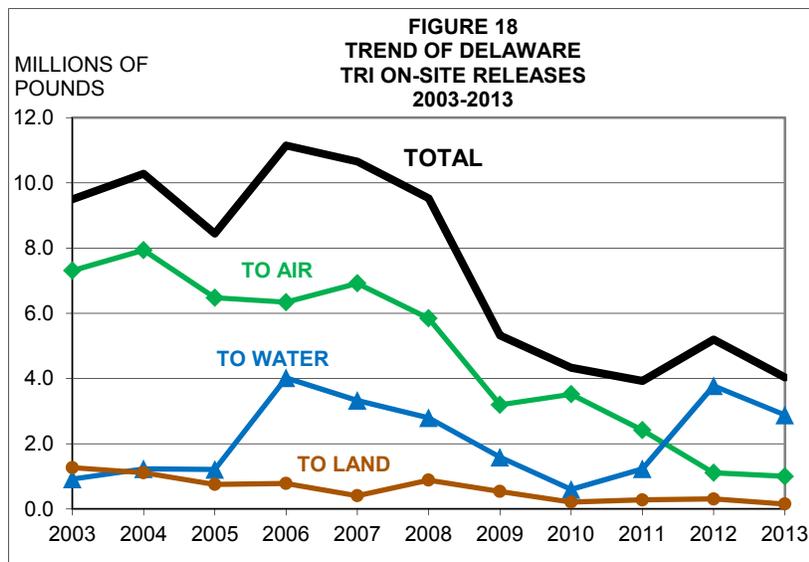
Table 15 on page 31 shows amounts reported for each of the last 10 years. Earlier data is available back to 1987, the first year of the TRI program. Changes in reporting requirements over time have caused an increase both in the total number of chemicals and in the total number industries that are subject to reporting. Significant changes to the TRI reporting requirements occurred in 1995, 1998 and 2000, when large increases in chemicals (1995), industries subject to reporting (1998), and reductions in PBT thresholds (2000) occurred. The 2012 reporting year marked the addition of hydrogen sulfide to the list of reportable chemicals. Comparison of this data with earlier data must be done carefully, as some chemicals and/or industries may not have been required to report over the entire time.

The analysis presented in this section uses 2003 as a base year for presenting trends for all reportable chemicals and facilities. Sections covering on-site releases and off-site transfers are **not adjusted** for any changes in reporting requirements. However, in on-site releases section, further analysis is presented on on-site releases, showing the impact of the Delaware City Refinery on the overall releases using 2009 as a base year. The on-site management section discusses the impact of the addition of hydrogen sulfide to the list of reportable chemicals.

### On-Site Releases, 2003-2013

Figure 18 shows the on-site release trends during 2003-2013. On-site releases include emissions to the air, discharges to bodies of water and releases at the facility to land, including on-site landfills. On-site release amounts decreased by 22.4% for 2013 (1,161,025 pounds) following a 32.3% increase (1,267,885 pounds) for 2012.

Significant changes in the amounts reported for 2012-2013 include the facilities and chemicals shown in Table 16 on the next page. To put the changes in perspective for 2013, there were 74 reports with a higher amount and 93 reports with a lower amount. There were 5 reports with an increase greater than 10,000 pounds and 14 reports with a decrease greater than 10,000 pounds.

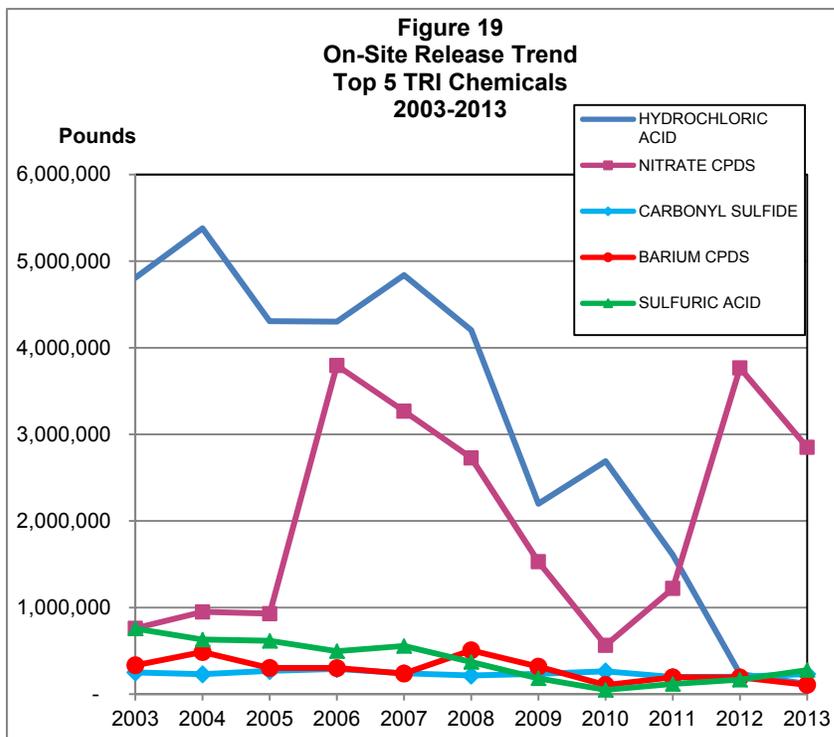


**TABLE 16**  
**REPORTS OF MAJOR CHANGES IN ON-SITE RELEASES FOR 2013 FROM 2012**

FACILITY	CHEMICAL	MEDIA	CHANGE IN ON-SITE RELEASES (pounds)
Delaware City Refinery	Nitrate compounds	Water	-775,000
Perdue Georgetown	Nitrate Compounds	Water	-142,000
Indian River Generating Station	Barium Compounds	Land	-91,000
Indian River Generating Station	Hydrochloric Acid	Air	-56,000
Dupont Edge Moor	Carbonyl Sulfide	Air	+32,000
Delaware City Refinery	Sulfuric Acid	Air	+110,000

Some of these changes (higher or lower), like the changes in hydrochloric acid amounts, may have been caused by normal year-to-year variations in production levels at the facility, the chemical content of raw materials, or by the new Delaware Regulation 1146, which started to take effect in 2009. Some changes may also have been caused by improvements in the way facilities estimate amounts. These changes are the primary reasons for the reductions and increases in the totals for 2012-2013. Changes are also discussed in the **Facilities No Longer Reporting Section** on page 18. Facility specific information is available via the **TRI Facility Profiles**, see **Access to TRI Files** under the **Further Information Section** on page 46. In addition, you may contact a facility for a more in-depth discussion of the reasons for specific changes, and consult Table 15 on page 31 and the appendices in this report for the exact amounts that were reported.

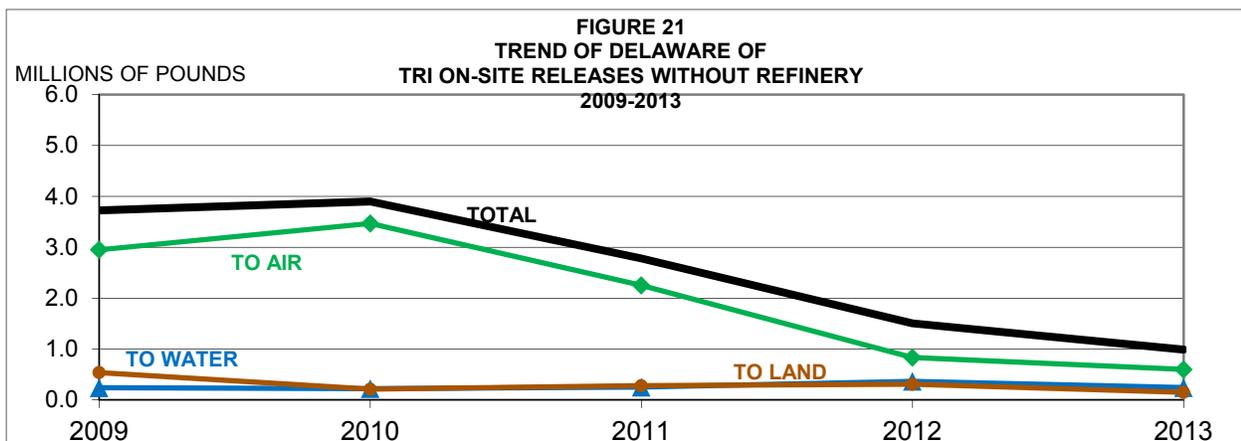
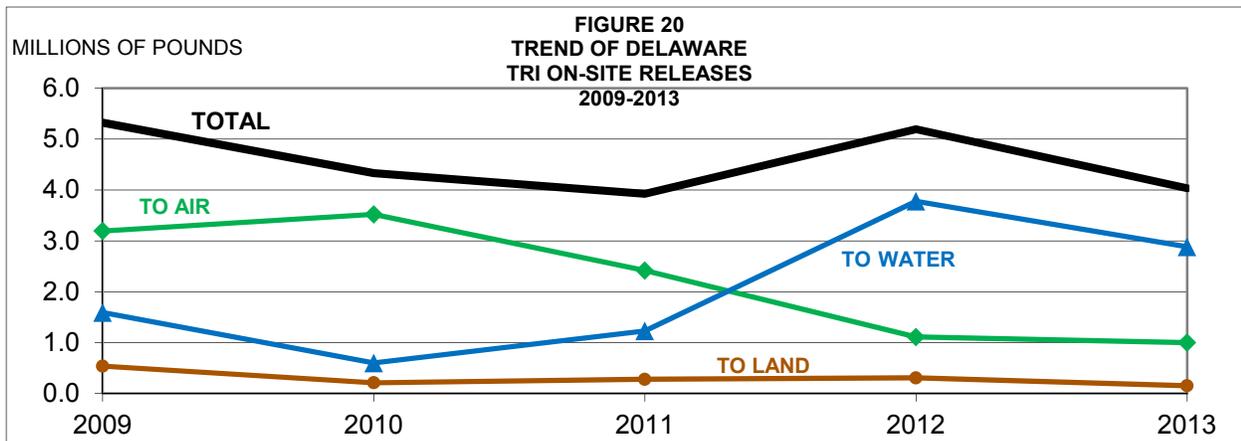
Figure 19 shows the trend since 2003 for the top five chemicals based on on-site release amounts reported for 2013 in Delaware. These five chemicals represent 89% of all on-site releases from the 89 chemicals reported in 2013. Nitrate compound releases trended downward from 2006 through 2010, when the Delaware City Refinery was in the process of shutting down and preparing to be sold. From 2010 through 2012, nitrate compound releases trended upward with the refinery coming back online and being in full operation. Nitrate compound releases accounted for 71% (2.8 millions pounds) of all on-site releases in 2013. Sulfuric acid ranked second in on-site releases, accounting for 7% (277,754 pounds). Sulfuric acid releases have trended



upward with the refinery coming back online and being in full operation. Nitrate compound releases accounted for 71% (2.8 millions pounds) of all on-site releases in 2013. Sulfuric acid ranked second in on-site releases, accounting for 7% (277,754 pounds). Sulfuric acid releases have trended

down from 2008 through 2010, but have trended upward since 2010 with the Delaware City Refinery coming back online. Carbonly sulfide ranked third in on-site releases, accounting for 6% (231,708 pounds). Dupont Edge Moor releases over 99% of the carbonly sulfide reported to air, with release amounts varying year to year. Hydrochloric acid accounted for 3% of the total in on-site releases. Releases of hydrochloric acid have trended down significantly since 2007. Part of the reason for this downward trend is Delaware Regulation 1146, which began to be implemented in 2009 at the electric generating facilities (see page 39 and page K-7 in **Appendix K** for details). The significant effects of the regulation can be seen at Indian River Generating Station, which reduced in hydrochloric acid releases by 95% (2.2 million pounds) since 2010. Barium compounds also accounted for 3% of the total in on-site releases, with releases trending downward since 2008.

Figure 20 shows the on-site releases to air, water and land over the last 5 reporting years from 2009 through 2013. As the figure depicts, total releases mirror the trend of releases to water. This is due to nitrate compounds reported as released to water by the Delaware City Refinery, which accounted for 65% of all onsite releases in 2013. Figures 20 and 21 provide a side by side comparison showing the impact the refinery has on the overall on-site releases. Figure 21 shows all other on-site releases, with the releases of the Delaware City Refinery removed. Onsite releases reported from all other facilities have dropped by 73% (2.7 million pounds) since 2009, while total on-site releases, including the refinery releases, are down by 24% (1.3 million pounds) compared to 2009. With the refinery removed, releases follow the trend of releases to air, which have reduced significantly since 2009. As discussed on the



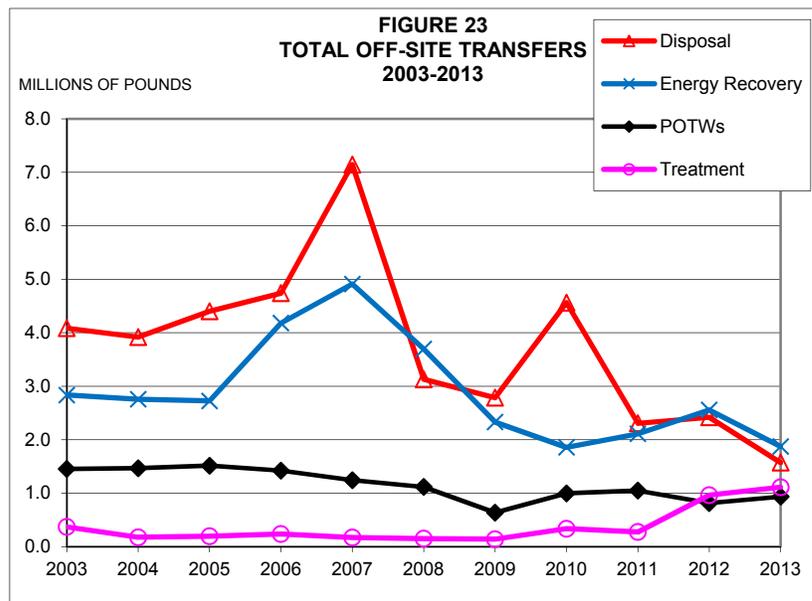
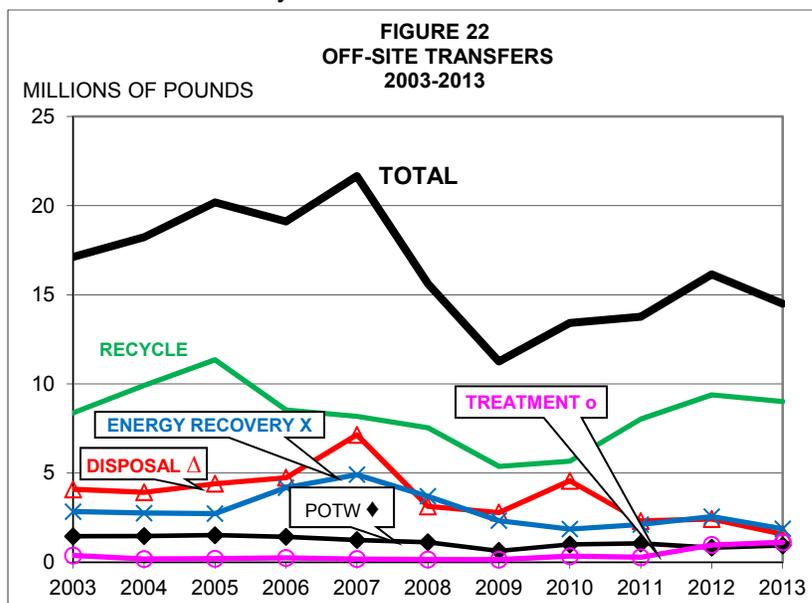
previously, Delaware Regulation 1146 was a major factor in onsite release reductions. Another reason for the decrease in on-site releases is the economy, which effects production at the facilities and ultimately many of their on-site releases have declined in recent years and indirectly caused part of the reduction.

### Off-Site Transfers, 2003-2013

An off-site transfer is a transfer of toxic chemicals as wastes to another facility that is physically separate from the reporting facility and may even be out-of-state. Chemicals are reported as transferred to an off-site facility when they are transported away from the reporting facility for the purposes of treatment at a publicly-owned treatment works (POTW, typically a waste water treatment plant), recycle, disposal, energy recovery, or non-POTW treatment facility. Although the off-site transfers may be of less immediate local concern than on-site releases, the transfers to POTWs, treatment, and disposal facilities still represent toxic chemicals as wastes that must be ultimately accounted for.

As noted on page 11 and seen in Table 15 on page 31, the amounts reported as transferred off-site are over three times greater than the amounts of on-site releases. Figures 22 and 23 show the trends in amounts of TRI chemicals in wastes transferred off-site for all facilities and chemicals reporting since 2003. To increase clarity, the lower portion (0 - 8 million pounds) of Figure 22 is expanded in Figure 23. For comparison, please look at the corresponding values in Table 15. Off-site transfers decreased 12% (1,794,000 pounds) in 2013, driven by decreases in amounts sent off-site for recycle, energy recovery and disposal, but partially offset by an increase in POTW and off-site treatment amounts.

Table 17, on the following page, shows that the largest off-site transfer decrease was



for manganese compounds sent off-site for disposal by DuPont Edge Moor, followed by the recycling of n,n-dimethylformamide by Rohm & Haas - B2 B3 B8. Noramco sent less toluene off-site for energy recovery and Evraz Claymont Steel sent less zinc compounds off-site for recycle. Johnson Controls Distribution Center sent more lead compounds off site for recycle, Noramco sent more n-butyl alcohol off site for energy recovery, BASF Newport sent more methanol for recycle in 2013, compared to 2012. Seventy-two reports showed decreases, while 46 reported increases for 2013.

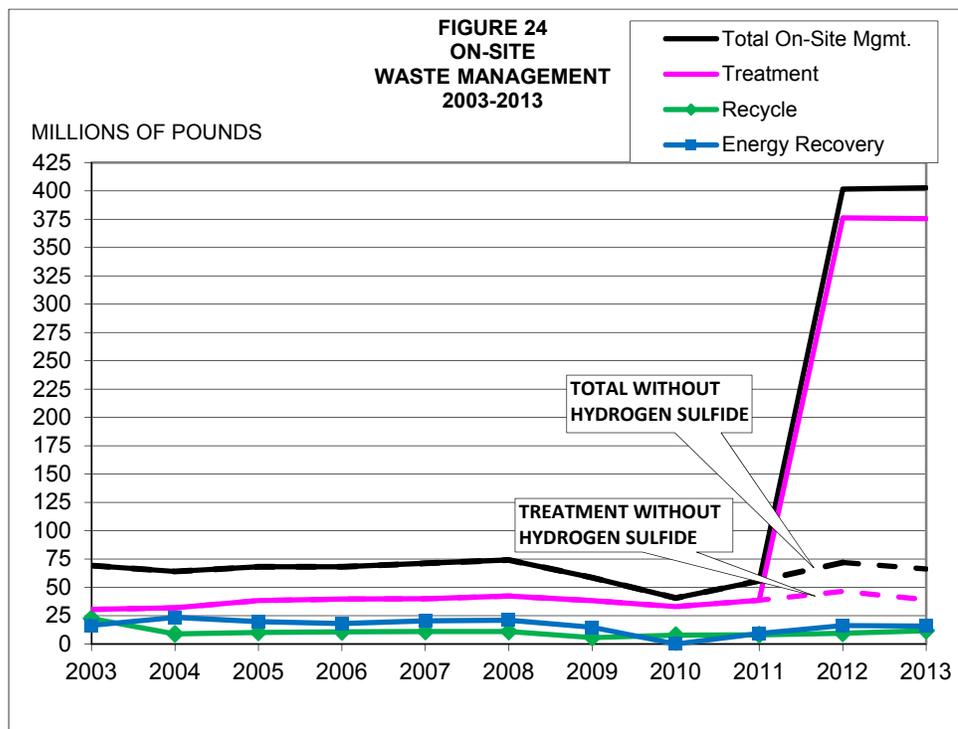
**TABLE 17**  
**MAJOR CHANGES IN OFF-SITE TRANSFERS FOR 2013 FROM 2012**

FACILITY	CHEMICAL	OFF-SITE METHOD	CHANGE (pounds)
DuPont Edge Moor	Manganese Compounds	Disposal	-817,000
Rohm&Haas - B2 B3 B8	N,N-dimethylformamide	Recycle	-756,000
Noramco	Toluene	Energy Recovery	-360,000
Evraz Claymont Steel	Zinc Compounds	Recycle	-350,000
BASF Newport	Methanol	Recycle	+143,000
Noramco	N-Butyl Alcohol	Energy Recovery	+175,000
Johnson Controls Battery Plant	Lead Compounds	Recycle	+522,000

**On-Site Waste Management, 2003-2013**

At some facilities, wastes are managed on-site instead of being sent off-site for processing or disposal. On-site waste management (recycle, recovered for energy, or treated at the facility) is the processing of chemicals in wastes that do not leave the site of the reporting facility. These activities generally represent a lower risk to the environment, as the materials are typically destroyed, although a small fraction escapes treatment and these amounts are reported under on-site releases.

Although these amounts represent a loss of raw materials and/or finished product to the facility as waste, they are not as much of a threat to the environment as the on-site release categories since these amounts are treated or recycled and not disposed of or released to the on-site environment. There is, of course, the risk that these chemicals may



be accidentally released on-site to the environment during the waste management process. Also, most waste management operations are not 100% efficient, so a portion of the waste being treated in these operations will be released on-site and must be accounted for in the on-site releases reported by the facility.

Figure 24, on the previous page, shows the trends for the three on-site waste management activities since 2003. Overall, on-site waste management amounts increased 0.3% (1,078,332 pounds) in 2013 compared to 2012. The on-site management of hydrogen sulfide accounted for 84% (336,501,000 pounds) of all on-site waste management activities, with the Delaware City Refinery treating the largest amount at 336,215,000 pounds.

The Delaware City Refinery is the only facility in the state that reports on-site energy recovery as part of its air pollution control requirements. On-site energy recovery was down 27% (683,000 pounds) compared to 2012, with the refinery reporting benzene as having the largest decrease in energy recovery compared to 2012.

Changes greater than one million pounds reported in on-site waste management for 2013 are:

**TABLE 18**  
**MAJOR CHANGES IN ON-SITE WASTE MANAGEMENT FOR 2013 FROM 2012**

FACILITY	CHEMICAL	ON-SITE WASTE MANAGEMENT METHOD	AMOUNT OF CHANGE (pounds)
DuPont Edge Moor	Hydrochloric Acid	Treatment	-5,375,000
Rohm & Haas B2,B3,B8	N,n-dimethylformamide	Recycle	-1,351,000
DuPont Edge Moor	Chlorine	Treatment	-1,268,000
Delaware City Refinery	Carbonyl Sulfide	Treatment	+1,028,000
Air Liquide – Medal	N-hexane	Recycle	+1,525,000
Air Liquide – Medal	Methanol	Recycle	+1,838,000
Delaware City Refinery	Hydrogen Sulfide	Treatment	+6,952,000

These changes were balanced by smaller increases and decreases from other reports. Thirty-eight reports showed an increase in a waste management amount, while 30 reports showed a decrease for 2013. Total pounds for on-site waste management, excluding the addition of hydrogen sulfide, have decreased by 2.9 million pounds, or 4%, over the last 10 years or since 2003. The on-site waste management amount totals are in Table 15 on page 33, and Figure 6 on page 12 shows the relative amounts.

## Receiving TRI Chemicals in Wastes

When a facility transfers TRI chemical waste off-site, these wastes go to a receiving facility. Table 19 shows the total amounts of TRI chemicals reported as sent to 18 Delaware facilities from both in-state and out-of-state TRI facilities for 2013. The DNREC TRI program does not receive reports from any out-of-state TRI facilities that transfer wastes into Delaware; this data was obtained from the EPA.

**TABLE 19**  
**SUMMARY OF REPORTED TRI TRANSFERS**  
**TO DELAWARE FACILITIES**  
**FROM OTHER TRI FACILITIES IN 2013**

(IN POUNDS)

DELAWARE RECEIVING FACILITY	TOTAL TRANSFERS TO DELAWARE FROM DELAWARE TRI FACILITIES	TOTAL TRANSFERS TO DELAWARE FROM OUT-OF-STATE TRI FACILITIES	TOTAL TRANSFERS RECEIVED BY DELAWARE FACILITIES
ASHWORKS		4,221	4,221
CIRILLO BROS		0	0
CLEAN EARTH OF DELAWARE	3	0	3
DELAWARE RECYCABLE PRODUCTS	10,820		10,820
DIAMOND STATE RECYCLING CORP.	367,094		367,094
DSWA CHERRY ISLAND LANDFILL	17,063		17,063
DSWA GEORGETOWN LANDFILL	1		1
DSWA SANDTOWN LANDFILL	8		8
DUPONT EXPERIMENTAL STATION		2,937	2,937
FCC ENVIRONMENTAL		11,676	11,676
INDUSTRIAL RESOURCE NETWORK		250	250
KENT COUNTY WASTEWATER TREATMENT PLANT	44,903		44,903
KENT SCRAP METAL	94,392		94,392
MIDDLETOWN-TOWNSEND-ODESSA TREATMENT PLANT	3		3
RECYCLERS OF DELAWARE		3,810	
SEAFORD WASTEWATER TREATMENT PLANT	1,856		1,856
WASTE MANAGEMENT OF DELAWARE	563		
WILMINGTON WASTEWATER TREATMENT PLANT	878,525		878,525
<b>TOTAL TRI TRANSFERS REPORTED</b>	<b>1,415,231</b>	<b>22,893</b>	<b>1,433,751</b>

Source: U.S. EPA 2013 Data Run, August 27, 2014

The top receiving facility is the Wilmington Wastewater Treatment Plant, receiving TRI chemicals in wastewater from regional customers. Diamond State Recycling Corp. received the second largest amount, for recycle, from two Delaware customers. Kent Scrap Metal received the third highest amount, from one facility. The fourth largest amount transferred to a Delaware facility was to the Kent County Wastewater Treatment Plant, receiving TRI chemicals for treatment from two facilities in the county. DSWA Cherry Landfill received the fifth highest amount, from three facilities in Delaware. These five receiving facilities accounted for 99% of all TRI chemicals received in Delaware from all in-state and out-of-state TRI facilities.

---

## **Pollution Prevention/Reduction Programs in Delaware**

Data for TRI reportable chemicals and other chemicals is becoming increasingly more available to the public. This data availability has focused public attention and awareness on the existence and quantity of these chemicals and on their management and possible reduction. Although EPCRA does not require a facility to reduce releases of chemicals reportable under its programs, many companies and facilities are aware of the public availability of the data in this and other EPCRA reports and have implemented programs to reduce or eliminate releases of these chemicals. These programs may take the form of efficiency improvements, reuse, recycle, energy and material recovery, or material substitutions. The benefits of these programs are reduced raw material and waste disposal costs and reduced risks associated with the toxic chemicals. Also, these reductions demonstrate corporate responsibility to the facility's neighbors and improve the corporate image with the public.

There are numerous programs within DNREC that impact the management of TRI chemicals through the issuance of permits or through other regulatory and non-regulatory activities. Most releases reported under TRI are also regulated through air emission, water discharge, and/or land disposal permits. Potential sources of toxics undergo technical reviews through which potential threats to the environment and to human health are reviewed and identified prior to issuance of a permit. For example, the Engineering and Compliance Branch in the Division of Air Quality enforces a provision in the Clean Air Act Amendments of 1990 that targets the control of hazardous air pollutants (HAPs). Nearly all HAPs are also reportable TRI chemicals. In addition, the Engineering and Compliance staff monitors TRI data to assess whether a facility complies with its air permits for TRI chemicals. Another example is the work performed by the Accidental Release Prevention (ARP) program. The ARP staff uses the TRI data to detect deficiencies at a facility that might result in an increased risk of an accidental release.

DNREC's Division of Air Quality has monitored ambient air quality at locations around the State. For more information, please refer to the [Delaware Air Quality Report](#) paragraph in the ***For Further Information*** section on page 47 of this report.

In 2006, Delaware promulgated 7 DE Admin Code 1146, Electric Generating Unit (EGU) Multi-Pollutant Regulation, to establish sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and mercury (Hg) air emissions limitations for coal-fired and residual oil-fired EGUs located in Delaware. Within 7 DE Admin Code two phases of emissions limitations were established, with the first phase that became effective in 2009, and a more restrictive second phase of emissions limitations that became effective in January of 2013. Significant reductions in NO<sub>x</sub>, SO<sub>2</sub> and Hg emissions have been achieved by the Delaware EGUs subject to Delaware 7 DE Admin Code 1146, and full compliance with the regulation's more restrictive second phase emissions limitations for 2013 and related consent decrees have been achieved.

The reduction in NO<sub>x</sub>, SO<sub>2</sub>, and mercury emissions is:

1. Reducing the impact of those emissions on public health;
2. Aiding in Delaware's attainment of the State and National Ambient Air Quality Standard (NAAQS) for ground level ozone and fine particulate matter;
3. Helping to address local scale fine particulate and mercury problems attributable to coal and residual oil-fired electric generating units;
4. Improving visibility and helping to satisfy Delaware's EGU-related haze obligations.

In May 2011, the EPA proposed its "National Emissions Standards for Hazardous Air

Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance (<http://www.epa.gov/ttn/atw/utility/fr16fe12.pdf> update for 2011) for Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units”. The EPA finalized these standards effective April 16, 2012 for new or reconstructed units and effective April 15, 2015 for existing units. The rule establishes emissions standards intended to:

1. Reduce the emissions of hazardous air pollutant (HAP) metals such as mercury (Hg), arsenic (As), nickel (Ni), cadmium (Cd), chromium (Cr), lead (Pb) and selenium (Se).
2. Reduce the emissions of acid gases including hydrogen chloride (HCl) and hydrogen fluoride (HF).
3. Reduce the emissions of particulate matter.

Subsequent to publishing the final rule “National Emissions Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units”, EPA received petitions for reconsideration of the rule that may affect the new source standards. The latest updates of the air toxics standards for utilities can be found at: <http://www.epa.gov/ttnatw01/utility/utilitypg.html>.

## **National Perspective**

The national 2013 TRI preliminary data was recently released by the EPA. Placing the 2013 Delaware reports alongside the 2013 EPA data yields some rankings that provide a perspective for Delaware in the national TRI picture. Changes in the 2013 final national values because of report additions or revisions may change these rankings.

**TABLE 20**  
**RANKING OF ON-SITE RELEASES FOR SELECT STATES**

<b>State</b>	<b>Rank, Based on Pounds</b>	<b>Total On-Site Release (Pounds)</b>	<b>Rank, Based on Release Per Person</b>	<b>Rank, Based on Pounds Release Per Square Mile</b>
Alaska	1	970,183,000	1	9
Utah	2	521,218,000	2	1
Nevada	3	365,242,000	3	2
Texas	4	197,332,000	23	22
Delaware	44	4,033,000	32	6

The reported totals for seven states were each over 100 million pounds for 2013.

This data shows that Delaware ranks 44<sup>th</sup> in the nation in total on-site releases by state for all TRI chemicals. This is 0.11% of the total on-site release amounts nationwide. Rankings can also be based on other criteria. Because Delaware has a small population (#45) and area (#49), releases are spread over fewer people and a smaller area, increasing the ranking on a per-person or per-square mile basis. Although Alaska reports, by far, had the highest amount of on-site releases, this state only received 218 reports from 34 facilities, less than Delaware’s 228 reports from 61 facilities. Alaska reports are largely from mining operations, with over 951 million pounds (98% of the state total) reported released on-site for just two chemicals; lead compounds and zinc compounds.

Figure 27 shows the amounts of TRI on-site releases reported by four nearby states for 2009 through 2013. Pennsylvania reported the highest amount in on-site releases for 2013 at 48.8 million pounds and Virginia reported the second highest at 39 million pounds. On-site releases for the region have trended downward over the 5 year span; however both Virginia and New Jersey had increases for 2013 compared to 2012. Overall on-site releases for the 5 states are down 53% (121 million pounds) compared to 2009.

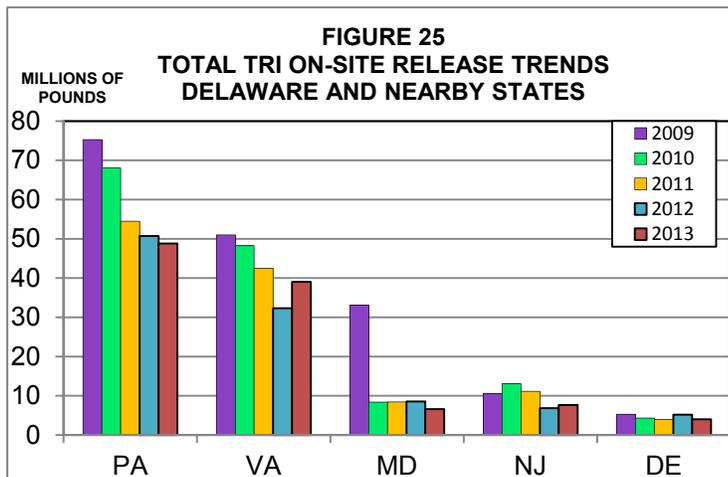


Table 21 shows that 97 facilities had more **total on-site releases** than all the facilities in Delaware combined.

**TABLE 21**  
**SELECT FACILITY TOTAL ON-SITE RELEASES COMPARED TO DELAWARE**

Facility, State	Rank	Total On-Site Release (Pounds)
Red Dog Operations, Alaska	1	906,386,000
Kennecott Copper Mine, Utah	2	290,490,000
Kennecott Barneys Canyon Mining, Utah	3	193,037,000
<b>All Facilities Combined, Delaware</b>	Lower than #97	4,032,792

Ninety-nine facilities each reported over 4 million pounds released on-site for 2013.

Nationwide, 35 facilities each released more **dioxins\* on-site** than all the facilities in Delaware combined. Table 22 shows the top three facilities in the nation compared to the Delaware total on-site release of dioxins.

**TABLE 22**  
**COMPARISON OF DIOXIN TOTALS FOR TOP 3 FACILITIES TO DELAWARE TOTAL**

Facility, State	Rank	Total On-Site Dioxin Release (Grams)
Dow Chemical, Texas	1	6,615.9
US Magnesium, Utah	2	4,218.4
US Ecology, Texas	3	3730
<b>All Facilities Combined, Delaware</b>	36	13.73

Seventeen facilities each reported over 50 grams of dioxins\* released on site for 2013 and four of these released over 1,000 grams. These amounts reported do not differentiate between the highly toxic and the less toxic dioxins and dioxin-like compounds in this group.

\* See pages 3, 5, 23-24, 35-37 for notes on "Dioxins."

**TABLE 23**

**COMPARISON OF MERCURY TOTALS FOR TOP 3 FACILITIES TO DELAWARE TOTAL**

<b>Facility, State</b>	<b>Rank</b>	<b>Total On-Site Dioxin Release (Grams)</b>
Dow Chemical, Texas	1	6,615.9
US Magnesium, Utah	2	4,218.4
US Ecology, Texas	3	3730
<b>All Facilities Combined, Delaware</b>	36	13.73

Some facilities in Delaware do rank near the top of the national rankings for specific categories. Relevant national rankings for facilities in Delaware for on-site releases and total waste reported are presented in the *TRI Facility Profiles* (see *Access to TRI Files* under the *Further Information Section* on page 46).

### **Nearby Facilities in Adjacent States**

Some facilities, although not in Delaware, may be important to the environment in Delaware. These facilities are located near our border and may release TRI chemicals, particularly to the air or water, which may migrate into Delaware. Table 24 on the next page is a listing of some nearby facilities with significant TRI release amounts. This data is from EPA's preliminary 2013 TRI data set, which was gathered in September 2014.

**TABLE 24**  
**2013 On-Site Releases From Nearby Facilities in Adjacent States**

Facility		State	Chemical	Media	Amount (Pounds)
DuPont Chambers Works, Deepwater	1 ★	New Jersey	Nitrate compounds	Water	2,315,714*
DuPont Chambers Works, Deepwater		New Jersey	Sodium nitrite	Water	68,032***
National Refrigerants, Rosenhayn	2 ★	New Jersey	HCFC-22	Air	68,639***
Paulsboro Refining, Paulsboro	3 ★	New Jersey	Hydrogen Cyanide	Air	244,870**
Paulsboro Refining, Paulsboro		New Jersey	Nitrate Compounds	Water	562,108*
QG, LLC, Altglen	4 ★	Pennsylvania	Toluene	Air	451,505**
PES Refinery, Philadelphia	5 ★	Pennsylvania	Benzene	Air	35,179**
PES Refinery, Philadelphia		Pennsylvania	Hydrogen Cyanide	Air	147,860**
PES Refinery, Philadelphia		Pennsylvania	N-hexane	Air	40,487**
PES Refinery, Philadelphia		Pennsylvania	Sulfuric Acid	Air	240,740**
Arkema, Bristol	6 ★	Pennsylvania	Methyl methacrylate	Air	29,000**
RR Donnelley, Lancaster	7 ★	Pennsylvania	Toluene	Air	328,113**
Montgomery Chem., Conshohocken	8 ★	Pennsylvania	Methanol	Air	8,360**
Plymouth Tube, Salisbury	9 ★	Maryland	Trichlorethylene	Air	57,435**
Grace Davison Curtis Bay Works, Baltimore	10 ★	Maryland	Ammonia	Air	106,354**
Crown Food Packaging, Baltimore	11 ★	Maryland	N- Butyl Alcohol	Air	81,624**
Salisbury Feed & Grain	12 ★	Maryland	N-Hexane	Air	140,000**
Brandon Shores Power Plant, Baltimore	13 ★	Maryland	Hydrochloric acid	Air	1,121,288**
Brandon Shores Power Plant, Baltimore		Maryland	Hydrogen Fluoride	Air	111,688**
Brandon Shores Power Plant, Baltimore		Maryland	Sulfuric Acid	Air	130,927*
Erachem, Baltimore	14 ★	Maryland	Nitrate Compounds	Water	576,079*
Perdue Farms, Accomac	15 ★	Virginia	Nitrate Compounds	Water	1,518,935*

\* Delaware State total releases for this chemical are higher

\*\* Exceeds the Delaware State total for this chemical

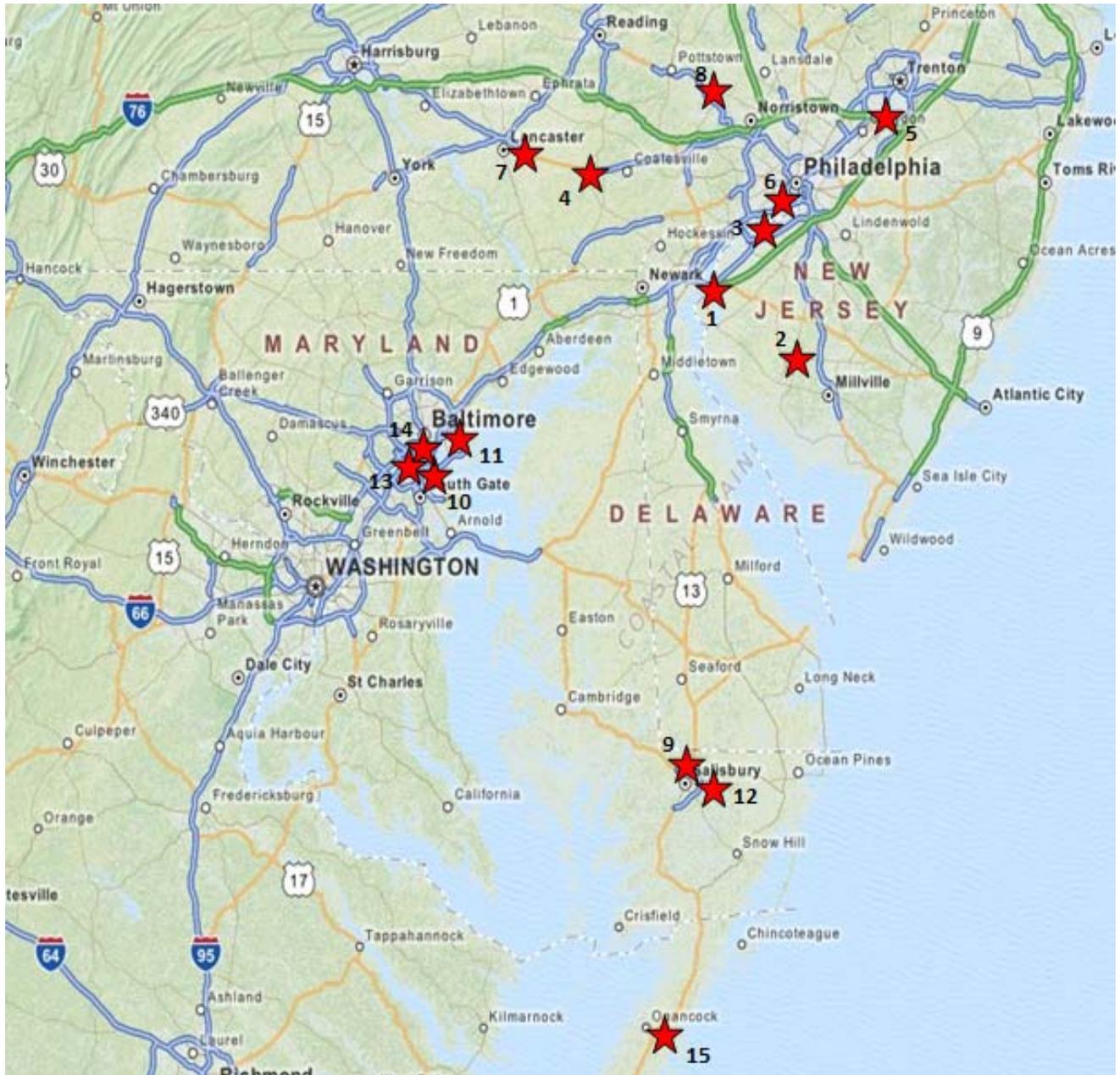
\*\*\* Chemical not reported in Delaware for 2013

★ See location number on the Figure 28 map on next page

As noted on pages 4-5, these amounts do not indicate the amount of human exposure. However, they do provide a comparison between releases in Delaware and some TRI chemicals released by nearby facilities in neighboring states.

Figure 26 shows the above nearby facilities and their proximity to Delaware. Each star represents a facility location that reported an on-site release for a TRI chemical.

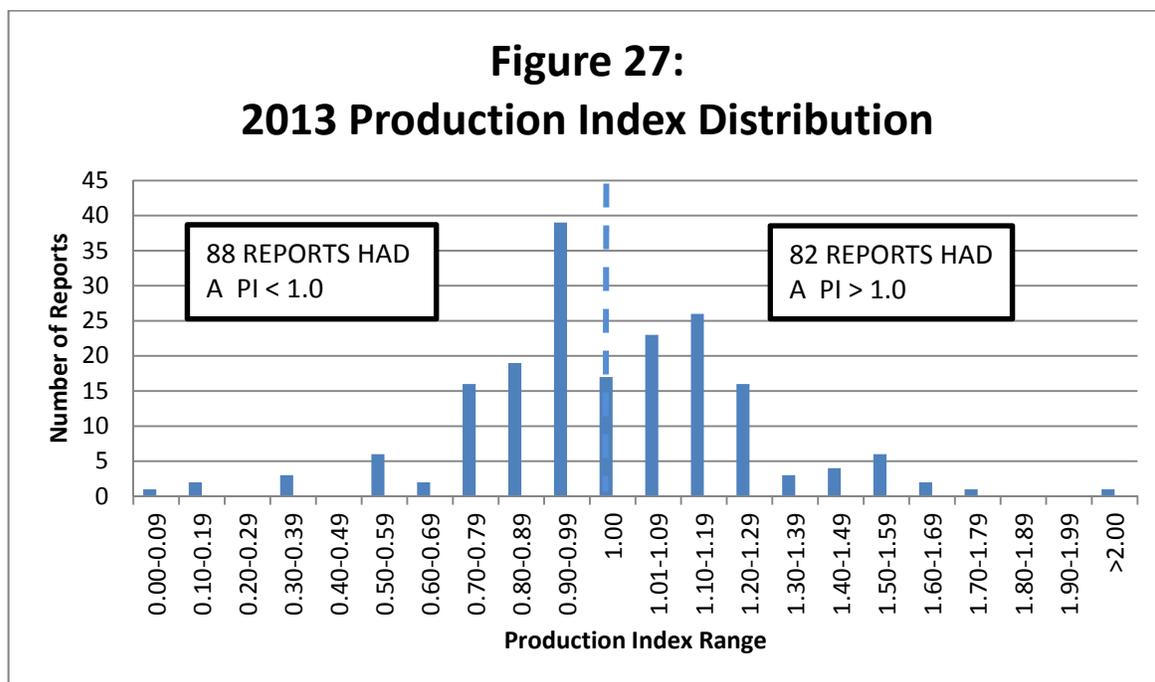
**FIGURE 26  
FACILITIES IN NEARBY STATES**



## TRI and the Economy

Facilities report a Production Index (PI) for each chemical. Along with TRI release and waste management data, this provides one way to estimate the impact of the economy, because the PI is the amount of production or activity directly associated with the demand for the chemical being reported. Some facilities, such as the power plants, can report the same PI for almost all of their chemicals, as they are directly related to the production of power. Other facilities, such as the ones in chemical manufacturing, report different PIs for different chemicals, as they are related more to the manufacture, process, or otherwise use of a specific chemical or line of chemicals. For some facilities, the determination of a PI is not precise, and therefore the PI may not be an exact indicator of production or chemical activity.

PI is reported as a number, representing the ratio of how production increased or decreased compared to the previous year. For example, a facility reporting an increase of 10% would report the PI as 1.10, while a facility reporting a decrease of 10%, would report the production as 90% of the previous year or a PI of 0.90. A facility having the same production level as the previous year would report the PI as 1.0. Figure 27 below, shows the distribution range of PIs reported. For 2013, of the 187 reports with PIs, 82 reported increases in production and 88 reported decreases. The remaining 17 reports had a 2012 production level equal to the previous year. The average PI reported was 1.02 or a 2% increase compared to 2012's production level.



## FOR FURTHER INFORMATION

**Access to the TRI Files** - DNREC is responsible for collecting, processing, and distributing information submitted by Delaware facilities under the TRI program. This 2013 TRI report may be viewed at: <http://www.dnrec.delaware.gov/SERC/Pages/Reports.aspx>. TRI Facility Profiles for each reporting facility in Delaware are also available at the same location. A searchable database for TRI and other EPCRA programs is located at: <http://www.dnrec.delaware.gov/SERC/Information/Pages/DataSearch.aspx>.

The reports submitted by facilities are available for review through the Freedom of Information Act (FOIA) process from DNREC's EPCRA Reporting Program located at 655 South Bay Road, Suite 5N, in Dover. Custom reports can also be generated from the database. For information on placing a request, call the TRI Coordinator at (302) 739-9405 during business hours. An on-line FOIA application is also available at: <http://www.dnrec.delaware.gov/Info/Pages/FOIA.aspx>

**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 (ToxFAQ's) are available upon request from DNREC's TRI program or available through the Agency for Toxic Substances and Disease Registry (ATSDR) at: <http://www.atsdr.cdc.gov/toxfaqs/index.asp> or from the New Jersey Department of Health at: <http://web.doh.state.nj.us/rtkhsfs/indexFs.aspx>

**EPA's TRI Home Page** - The TRI home page provides information on the many facets of the TRI program at the EPA, including an Executive Summary, Q&A's, a link now to the preliminary 2012 national TRI data and later this year to the complete 2012 data, a current list of reportable chemicals, 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/](http://www.epa.gov/tri/).

**TRI Reporting Forms** - Reporting instructions, reporting guidance, and examples of the traditional paper reporting forms are at <http://www2.epa.gov/toxics-release-inventory-tri-program/tri-reporting-forms-and-instructions>.

**Toxics Release Inventory National Analysis** - The EPA's annual TRI report. It covers national information and provides a good perspective on how Delaware compares to other states: <http://www2.epa.gov/toxics-release-inventory-tri-program/2011-tri-national-analysis>. The 2013 edition of this report will be available in early 2015. It can also be obtained by calling the Federal EPCRA Information Hotline at 1-800-424-9346. Other searchable database programs such as Envirofacts, TRI.net, and TRI-CHIP are EPA-developed programs that provide public access to multiple environmental databases, including TRI. Links are available at <http://www2.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools> for data about hazardous waste, water permits, drinking water, Superfund sites, air, water, toxics, and more.

**Chemical Reporting Rule** - The EPA has issued the final Chemical Data Reporting (CDR) Rule. The purpose of this program is to collect information from manufacturers and importers of chemical substances and to make that information available for use by EPA. The rule was enhanced for 2012 reporting. More information can be found at: <http://www.epa.gov/oppt/cdr/index.html>

---

**Delaware Division of 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>.

**Right-to-Know Network** (RTK NET) - Searchable nationwide TRI data is available through RTK NET. RTK NET 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](http://www.rtknet.org).

**The Office of Pollution Prevention & Toxics - (OPPTS)** 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.

OPPTS is at: <http://www.epa.gov/oppt/index.htm>

**Risk Screening Environmental Indicators (RSEI)**. This model was developed by the EPA's Office of Pollution Prevention & Toxics as a risk-screening tool that provides a relative comparison of TRI releases. This application is available by download through the Internet at: [http://www.epa.gov/oppt/rsei/pubs/get\\_rsei.html#new](http://www.epa.gov/oppt/rsei/pubs/get_rsei.html#new).

**International "TRI"**. The United States Toxics Release Inventory (TRI), the oldest and most comprehensive Pollutant Release and Transfer Register (PRTR) system in the world, is one of several similar programs established, or being established, by countries around the world. Industrial facilities in these countries are required to report their emissions and other waste management of toxic chemicals to databases in their respective countries. These databases are designed to track the quantities of chemicals that are released to the air, land or water, or transferred to another site for recycle, treatment or disposal. The term used internationally for these TRI-like systems is Pollutant Release and Transfer Register (PRTR). The web site for these PRTR programs is <http://www.prtr.net/>. EPA also has a web site for PRTR, and it is <http://www2.epa.gov/toxics-release-inventory-tri-program/tri-around-world>. There are now over 50 countries participating in PRTR programs, and links to several international environmental agencies and programs, with more being developed each year.

**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 ambient air quality. 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>.



**Delaware's Department of Natural Resources and Environmental Control** has a variety of environmental information, including this report and other publications and reports, which are available at: <http://www.dnrec.delaware.gov/info/pages/ELibrary.aspx>. Environmental Databases are available at: <http://www.dnrec.delaware.gov/Info/Pages/GISData.aspx>. Notifications of releases in Delaware can be found at: [Delaware Environmental Release Notification System \(DERNS\)](#).

**Other Delaware EPCRA Information** - In addition to TRI, there are other provisions of the Emergency Planning and Community Right to Know Act (EPCRA), which provide information to the public as well as to local emergency planning and response organizations. Delaware has its own EPCRA statute, which established these provisions under State law. For additional information, visit the Delaware EPCRA website and Public Information tab at: <http://www.seec.delaware.gov/epcra.shtml>.

Questions or comments regarding the TRI program are welcome. Please direct questions, comments, or requests to:

Brian Lutes  
TRI Coordinator  
EPCRA Reporting Program  
Emergency Prevention and Response Section  
DNREC Division of Waste and Hazardous Substances  
655 S. Bay Rd., Suite 5N  
Dover, DE 19901  
Tel. (302) 739-9405, Fax (302) 739-3106  
E-mail: [brian.lutes@state.de.us](mailto:brian.lutes@state.de.us)