U.S. EPA Toxics Release Inventory
Reporting Year 2005 Public Data Release

Summary of Key Findings

U.S. EPA TRI Program

The United States (U.S.) Environmental Protection Agency (EPA) Toxics Release Inventory (TRI) program collects information on the disposal or other releases and other waste management activities for over 650 chemicals from industrial sources in all 50 states and the U.S. territories. The information has been collected annually since 1987. For 2005, the latest year for which data are available, disposal or other releases of TRI chemicals totaled almost 4.34 billion pounds from almost 23,500 U.S. facilities submitting over 89,300 chemical forms.

The 2005 TRI data are now available online in a searchable, sortable format at http://www.epa.gov/triexplorer. We invite you to visit our web site and explore the data to learn more about toxic chemical releases and waste management activities across the U.S., by state, county or even zip code – and more! Summary tables are also available in a separate document as part of this 2005 Public Data Release.

The following information reflects the TRI data as of March 2007.

Overview of the TRI 2005 Public Data Release

The time period covered for this year's data release is January 1 to December 31, 2005. These 2005 data were reported to EPA by July 1, 2005, and were released to the public in March 2007. Data for previous years back to 1988 are also available.

A TRI release to the environment includes disposal or other releases. What does this mean?

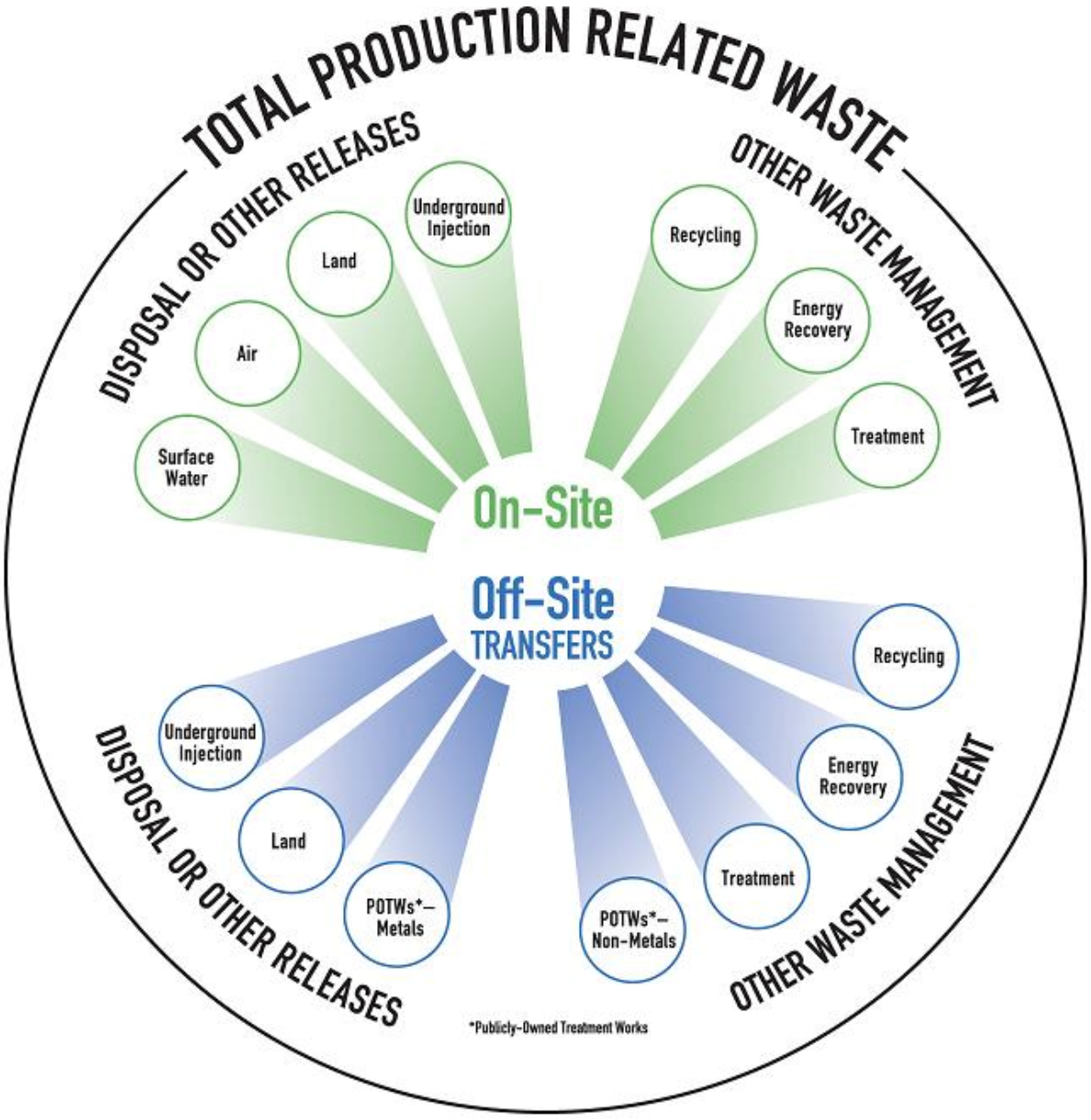
Based on the definition of release in Section 329 of the Emergency Planning and Community Right-to-Know Act (EPCRA), facilities that place TRI chemicals in on-site underground injection wells, landfills, surface impoundments, or send them off-site to other facilities for placement in underground injection wells, landfills, and/or surface impoundments are considered to have disposed of or otherwise released these chemicals. Metals sent to Publicly Owned Treatment Works (POTWs) or other waste treatment facilities are also included.

Other ways facilities release TRI chemicals are by discharging them to an environmental medium on-site such as air emissions and discharges to receiving streams or water bodies. The categories of disposal or other releases can be found at the left side of Figure 1. Generally, when EPA conducts analyses of total disposal and other releases, the focus is on final disposition or release of TRI chemicals and the data used in such analyses come from Sections 5 and 6 of the TRI Reporting Form R. Such analyses do not include transfers to disposal or other releases sent to other TRI facilities that reported the amounts as on-site disposal or other releases since this would double count the amount disposed of or otherwise released during the year.

What is Total Production-related Waste Managed?

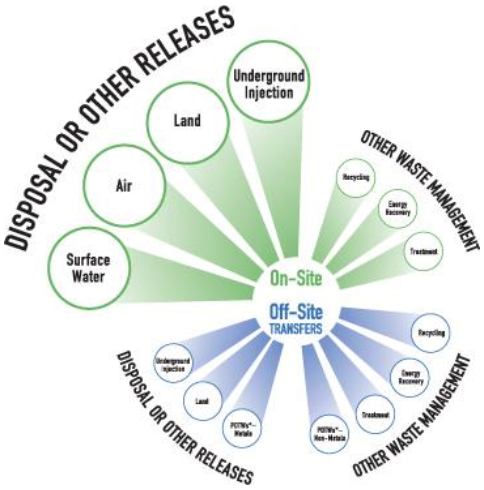
The Pollution Prevention Act of 1990 (PPA) requires facilities to report information about the quantities of TRI chemicals they manage in waste, both on-and off-site, including amounts reported as recycled, burned for energy recovery, treated or disposed of or otherwise released. The total of these amounts is called total production-related waste. This reporting measure shows how much waste was managed by a facility to approximate the quantity amenable to pollution prevention. Generally, when EPA conducts analysis of production-related waste managed, the focus is on the management of waste, and materials may be counted multiple times, for example, if they are recycled multiple times. Data used in this analysis come from Section 8 of the TRI Reporting Form R.

Figure 1. Information Collected Under TRI

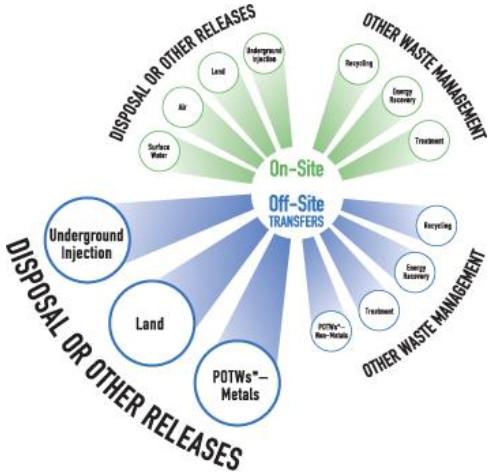


What is included in each of the individual categories of disposal or other releases or waste management?

The following categories are used for presenting this information:



On-site disposal or other releases: On-site disposal or other releases include emissions to the air, discharges to bodies of water, disposal at the facility to land, and disposal in underground injection wells. Disposal or other releases are reported to TRI by media type. Air releases are separately reported for fugitive and point source releases. Disposal to land is separately reported as disposal in RCRA Subtitle C (hazardous waste) and other landfills, in RCRA Subtitle C (hazardous waste) surface impoundments and other surface impoundments, as land treatment and as other land disposal (such as waste piles, spills or leaks). Injection into underground wells is separately reported for Class I wells (hazardous waste) and Class II-V wells. (On-site disposal or other releases are reported in Section 5 of the TRI Reporting Form R.) Some types of disposal are controlled to limit potential for human exposures and environmental contamination.



Off-site disposal or other releases (transfers off-site to disposal or other releases): Off-site disposal or other release is a discharge of a chemical to the environment that occurs as a result of a facility's transferring a waste containing a TRI chemical to another location (i.e., off-site) for disposal or other release (reported in Section 6 of the TRI Reporting Form R). These types of transfers are categorized as off-site disposal or other release because, except for location, the outcome of transferring the chemical off-site is the same as disposing of it or releasing it on-site. For each transfer, the amount of the chemical in the waste, type of management activity (chosen from a list of codes referred to as "M" codes) undertaken by the receiving facility, and the address of the receiving site are reported.

Total on- and off-site disposal or other releases: sum of on-site disposal or other releases and off-site disposal or other releases.

Other waste management of TRI chemicals: As discussed above, on- and off-site information about facilities' management of TRI chemicals includes amounts of the chemicals recycled, burned for energy recovery, and treated, as reported in Section 8 of the TRI Reporting Form R.

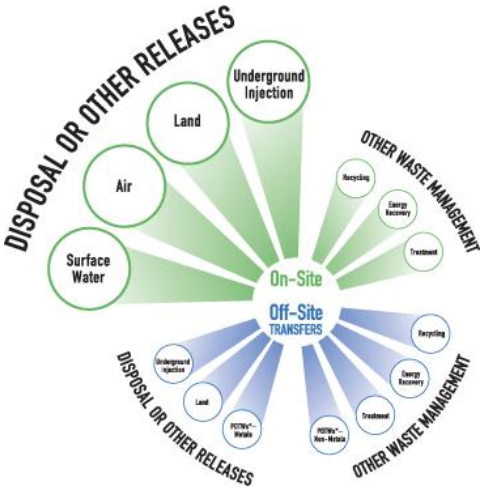
What are the time periods used for presenting TRI data?

To ensure comparable data are used when representing data trends, several different time periods for data are presented. The data included in each time period differ because the reporting requirements have changed over time. Chemicals that have been removed from the TRI list are excluded from all analyses. Time periods used for the Public Data Release include:

> ***2001-2005***: includes all chemicals and all industries reporting for 2001 through 2005. This time period includes information on all chemicals currently subject to reporting from all facilities currently subject to reporting.
>
> ***2000-2005***: excludes lead and lead compounds because reporting thresholds for lead were lowered beginning with the 2001 reporting year.
>
> ***1998-2005***: excludes all Persistent, Bioaccumulative, Toxic (PBT) chemicals and vanadium and vanadium compounds. Some PBT chemicals were added and reporting thresholds were lowered for others beginning with the 2000 reporting year. The reporting definition for vanadium was changed and vanadium compounds were added to the list for 2000, however vanadium and its compounds are not classified as a PBT chemical.
>
> ***1988-2005***: excludes aluminum oxide, ammonia, hydrochloric acid, sulfuric acid, PBT chemicals, vanadium and vanadium compounds. These chemicals have had changes to reporting requirements or have been added to the TRI chemical list since 1988. Also, excludes chemicals added to the list in 1990, 1994 and 1995. Also, excludes reporting from industries added to the reporting requirements beginning with the 1998 reporting year (these industries are metal mining, coal mining, electrical utilities, chemical wholesale distributors, petroleum bulk terminals/bulk storage, hazardous waste treatment facilities and solvent recovery facilities).

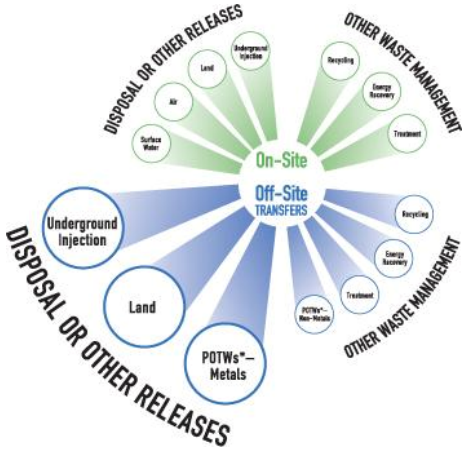
Overview of the TRI 2005 Data

What was the total reported for disposal or other releases for 2005?
Over 4.34 billion pounds were disposed of or otherwise released to the environment in 2005 by facilities that are required to report to EPA under EPCRA section 313. Most of the chemicals are managed on-site.



- 88% (3.82 billion pounds) was disposed of or otherwise released **on-site**, including
  - 1.51 billion pounds (35%) of air emissions
  - 787 million pounds (18%) in surface impoundments other than RCRA Subtitle C surface impoundments
  - 626 million pounds (14%) in Class I underground injection wells, RCRA Subtitle C (hazardous waste) landfills and other landfills
  - 596 million pounds (14%) of other land disposal (such as waste piles, spills or leaks)
  - Surface water discharges (5.5%), Class II-V underground injection wells (0.5%), land treatment (0.5%), and RCRA Subtitle C surface impoundments (0.1%) make up the remaining 7%.

- 12% (533 million pounds) was sent **off-site** for disposal or other releases, including
  - 346 million pounds (8%) to Class I underground injection wells, RCRA Subtitle C landfills and other landfills
  - 73 million pounds (2%) of metals sent for solidification and/or stabilization
  - 47 million pounds (1%) sent for other land disposal (such as waste piles),
  - with the remaining 1% disposed of or released in other ways.



As noted above, 14% of total disposal or other releases were in on-site Class I wells, RCRA Subtitle C and other landfills and 8% were in off-site Class I wells, RCRA Subtitle C and other landfills. These facilities may limit contamination and human exposure by disposing of or otherwise releasing waste in certain ways. For example, disposal of harmful materials in Class I Underground Injection wells located in isolated formations beneath the lowermost underground source of drinking water limits potential for contamination. Similarly, disposal to landfills that are designed with liners, covers, leak detection systems, and groundwater monitoring systems also limits the potential for human exposure and contamination.

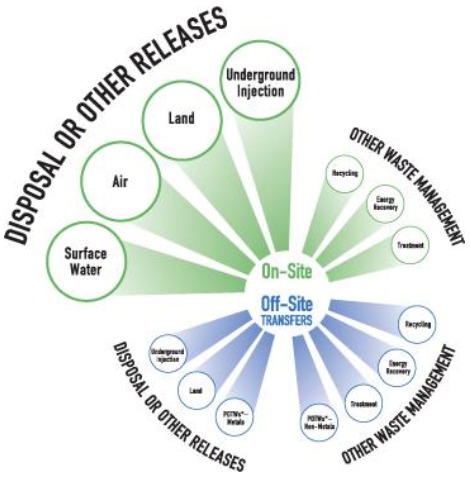
How much total production-related waste was managed during 2005?
Total production-related waste managed was 25.1 billion pounds in 2005:

- 8.97 billion pounds (36%) was recycled on- and off-site.
- 8.64 billion pounds (34%) was treated on- and off-site.
- 4.45 billion pounds (18%) was the quantity disposed of or otherwise released on- and off-site.
- 3.02 billion pounds (12%) was combusted for energy recovery on- and off-site.

> *Total Production-related Waste Management, including quantity disposed of or otherwise released, focuses on waste management and, therefore, includes counting a waste as many times as it is managed during the year. For example, a waste that is managed by facility A by being sent to facility B for disposal may be reported by both facilities. In another example, waste that is recycled several times is counted each time to calculate the total quantity recycled during the year. Total production-related waste management analyses focus on management and are different than analyses of total disposal or other releases, which focus on ultimate disposition or release of a chemical. In analyses of total disposal and other releases, chemicals are counted only once rather than each time they are managed. Also, total disposal or other releases may include amounts reported as non-production-related waste managed (i.e., waste due to remedial, catastrophic and one-time events). The numbers may also be different due to the differences in reporting requirements for Section 5 and 6 and Section 8 of the TRI Reporting Form R.*

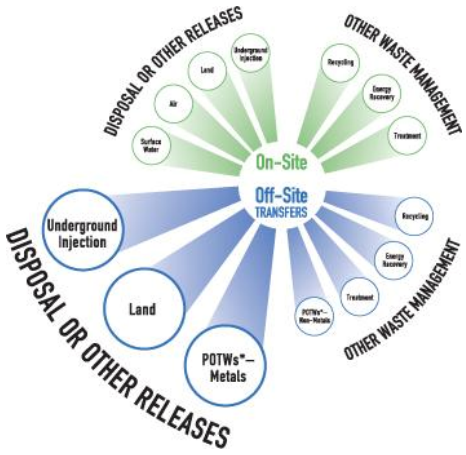
How do the 2005 TRI data compare to the 2004 TRI data?
In this section, we present both net changes from 2004 to 2005, and underlying shifts in management methods.

Overall, when compared to quantities reported for the previous year (2004), total disposal or other releases of TRI chemicals showed an **increase** of 117 million pounds (3%).



- On-site disposal or other releases **increased** by 92 million pounds (2%).
  - Surface impoundments other than RCRA Subtitle C surface impoundments **increased** by 67 million pounds (9%),
  - Land disposal other than landfills (such as waste piles, spills and leaks) **increased** by 54 million pounds (10%),
  - RCRA Subtitle C landfills **increased** by 3 million pounds (2%),
  - Surface water releases **increased** by 5 million pounds (2%),
  - Land treatment **increased** by 1 million pounds (6%), and
  - Class I underground injection wells **increased** by over 163,000 pounds (0.1%),
  - However, air emissions **decreased** by 29 million pounds (2%)
  - Class II-V underground injection wells **decreased** by 8 million pounds (27%), and
  - RCRA Subtitle C surface impoundments **decreased** by 3 million pounds (43%).

- Off-site disposal or other releases **increased** by 25 million pounds (5%).
  - Landfills other than RCRA Subtitle C landfills **increased** by 20 million pounds (8%), and
  - Land disposal other than landfills (such as waste piles, spills and leaks) **increased** by 7 million pounds (16%).



What are some of the reasons for the overall increase in disposal or other releases from 2004 to 2005?

The reasons for the 3% increase are complicated:

- Changes to the metal mining sector, which in 2005 reported 27% of total disposal or other releases, can lead to noticeable changes in the aggregate results:
  - A 2003 court case involving reporting of chemicals in waste rock by metal mines resulted in significant decreases by this industry sector.
  - Changes in ore composition can result in large increases or large decreases from year to year.
  - Without the metal mining sector, total disposal or other releases increased 1% from 2004-2005.
- Analysis of total releases in states impacted by Hurricanes Katrina and Rita shows a 1% drop in national total disposal or other releases due to decreases associated with these areas.
- A few large facilities can be a determining factor in the National trend. Based on an analysis of facilities reporting in both 2001 and 2005, we found that the total disposal or other releases for the group of "smaller" facilities (those reporting less than 100,000 pounds) **increased** by 57% from 2001 to 2005 while the total for the group of "larger" facilities (those reporting 100,000 pounds or more) **decreased** by 9% and for six facilities with the very largest change (more than 80 million pounds) total disposal or other releases **decreased** by 80%.

Which industry sectors reported the largest increases in disposal or other releases, 2004-2005?

- The metal mining sector reported the largest total disposal or other releases in 2005 (1.17 billion pounds) and the largest **increase** in disposal or other releases from 2004: 96 million pounds (9%).
- Electric utilities reported the second largest total disposal or other releases in 2005 (1.10 billion pounds), and the second largest **increase** from 2004: 39 million pounds (4%).
- The primary metals sector reported 479 million pounds in 2005, an **increase** of 12 million pounds (3%) from 2004.

Which industry sectors reported the largest decreases in disposal or other releases, 2004-2005?

- The chemical manufacturing sector reported 531 million pounds in 2005, a **decrease** of 23 million pounds (4%) from 2004.
- Petroleum refiners reported 68 million pounds in 2005, a **decrease** of 7 million pounds (10%) from 2004.
- The transportation equipment industry reported 69 million pounds in 2005, a **decrease** of 4 million pounds (6%) from 2004.

How did total production-related waste managed change from 2004 to 2005?
There was a shift in how TRI chemicals were managed from 2004 to 2005.

Total production-related waste **decreased** by 3% (803 million pounds) from 2004 to 2005. This included an overall **increase** in the quantity disposed of or otherwise released of 3% (118 million pounds) and **decreases** in some other types of waste managed.

- Treatment on-site **decreased** by 5% (416 million pounds).
- Recycling both on-site and off-site **decreased** by 3% (290 million pounds).
- Energy recovery both on-site and off-site **decreased** by 7% (227 million pounds).

- However, treatment off-site **increased** by 2% (11 million pounds)

Which types of facilities had the largest disposal or other releases in 2005?

As part of the annual PDR, EPA has historically provided a list of facilities that have the largest disposal or other releases of TRI chemicals to the environment. It is important to note that these facilities do not necessarily pose the greatest risk to the environment. As explained in detail in the EPA report, ***Factors to Consider When Using TRI Data*** (available at www.epa.gov/tri/tridata), total quantities of TRI chemicals released or otherwise disposed of is one important factor among several that determine the potential risk that may be posed.

EPA presents the "Top 50" facilities with largest disposal or other releases in charts that are available on this web site (www.epa.gov/tri/tridata/tri05/index.htm). It is important to note that there is a huge variation in the amounts of TRI chemicals released per facility. In 2005, the range of TRI disposal or other releases is from 0 to 499 million pounds. The average disposal or other

releases of TRI chemicals per facility is approximately 189,500 pounds. The reason some facilities have disposal or other releases far in excess of the average are several:

- Certain industry sectors, such as mining and primary metals, and electric utilities, handle large volumes of material and, not surprisingly, the totals for TRI chemicals are also larger than average. Also, from year-to-year constituent concentrations in raw materials can change.
- Even within a given sector, certain facilities are simply larger (in terms of economic parameters such as production levels, sales, employment, etc.) and so they handle relatively large amounts of input material to produce large amounts of output material (product).
- Facilities differ in their relative efficiency in handling material, i.e., for a given unit of output, facilities differ in the amount of release or waste that is produced.

Facilities with the largest disposal or other releases are mining facilities. The top 7 facilities, which each had over 43 million pounds of total on and off-site disposal or other releases are mining operations. Other facilities in the Top 50 include a variety of industries, including hazardous waste management facilities, chemical manufacturers, primary metals facilities, and electric utilities. These top facilities reported disposal-or-other-release totals ranging from 12 million to 35 million pounds for 2005.

EPA also presents facility rankings taking into account the management methods used for the TRI chemicals. In addition to presenting the Top 50 facilities with largest total on- and off-site disposal or other releases, we also present the Top 50 facilities with total disposal or other releases, subtracting out the totals that are managed in Class I underground injection wells, Subtitle C landfills, and other landfills. As discussed above, this second group of rankings is perhaps a better, although still imperfect, indication of the amount of TRI chemicals that may be available to the environment. In this second group of rankings, a limited number of facilities that manage TRI chemicals mostly or totally in Class I wells or landfills drop down in the rankings, or drop out of the Top 50 altogether. (The top 7 mining facilities mentioned above remain the top 7 in these rankings, however.)

Finally, for similar reasons, EPA has provided two sets of rankings (top 20) of US counties with the largest releases. One set of rankings shows total disposal or other releases, and the second shows total disposal or other releases, adjusted to subtract out quantities in Class I wells and landfills. As with facilities, the very top (in this case 7) counties do not change, but there is some shifting in the next 13 to reflect that some counties are home to Class I wells or landfills, and when those totals are not counted, they are no longer among the counties with the most TRI chemical releases.

Generally, national total and trends tend to reflect reporting by these facilities with the largest total disposal or other releases but may not necessarily reflect state and local totals and trends. Over the longer term, 2001-2005, total disposal or other releases decreased by 22%. However, as noted above, an analysis of facilities reporting in both 2001 and 2005 found that the total disposal or other releases for group of "smaller" facilities (those reporting less than 100,000 pounds and representing over 85% of TRI facilities) **increased** while the total for the group of facilities reporting larger amounts **decreased**.

Federal Facilities

All federal facilities, whether operated by federal agencies or contractors (e.g. some military bases), are required to report to EPA's TRI Program.

- For 2005, 304 federal facilities reported 98 million pounds of total on- and off-site disposal or other releases and 231 million pounds of total production-related waste managed.
- Disposal or other releases by federal facilities **increased** by 9 million pounds (10%) from 2004 to 2005.
- Total production-related waste managed at federal facilities **increased** by 11 million pounds (5%) from 2004 to 2005.

> **What are some of the reasons for the increase from 2004 to 2005?**
> *The Tennessee Valley Authority utilities reported 78% of the total disposal or other releases from federal facilities for 2005 and an increase in total disposal or other releases of 7 million pounds (10%) from 2004 to 2005. Two TVA facilities reported increases totaling over 5 million pounds in transfers to land disposal, other than landfills, of barium compounds.*

2005 Chemical Snapshots

PERSISTENT BIOACCUMULATIVE TOXIC (PBT) CHEMICALS

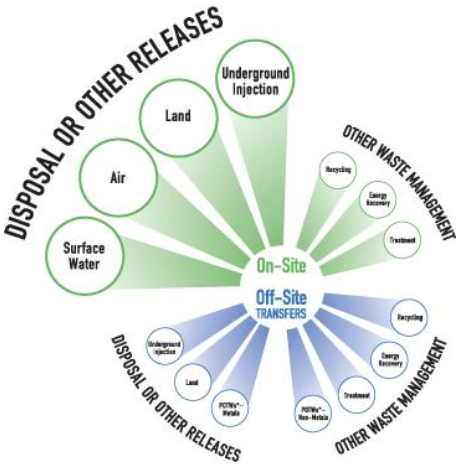
2005 is the sixth year that TRI includes data, at reduced reporting thresholds, on PBT chemicals such as dioxins, mercury, and polychlorinated biphenyls (PCBs). It is the fifth year of TRI reporting data for lead and lead compounds at reduced thresholds.

> **Why is there particular concern for PBT chemicals?**
> *PBT chemicals are of particular concern not only because they are toxic, but also because they remain in the environment for long periods of time and are not readily destroyed (they persist) and build up or accumulate in body tissues (they bioaccumulate).*

What were the top PBT chemicals disposed of or otherwise released for 2005?

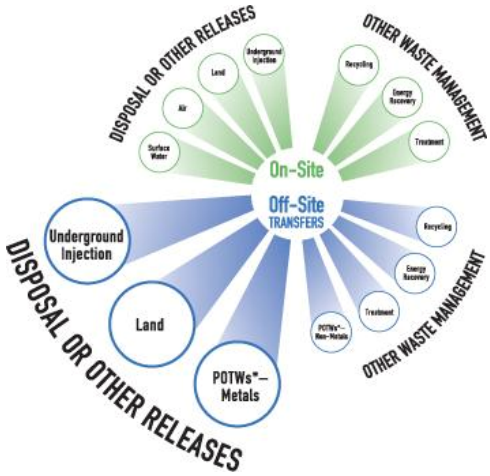
- 98% (469 million pounds) of total disposal or other releases of PBT chemicals in 2005 was accounted for by lead and lead compounds.
- Disposal or other releases of other PBT chemicals in 2005 included:
  - 4.4 million pounds of mercury and mercury compounds,
  - 2.0 million pounds of polycyclic aromatic compounds (PACs), and
  - 1.1 million pounds of polychlorinated biphenyls (PCBs).
- 85,501 **grams** (approximately 189 pounds) of total disposal or other releases of PBT chemicals in 2005 were accounted for by dioxin and dioxin-like compounds.

What was the total PBT disposal or other releases for 2005?
Total disposal or other releases of PBT chemicals reported was 477 million pounds in 2005.



- 93% (443 million pounds) were disposed of or otherwise released **on-site**, including
  - 55% (261 million pounds) in other land disposal (such as waste piles).
  - 30% (142 million pounds) in on-site surface impoundments other than RCRA Subtitle C surface impoundments.
  - 7% (33 million pounds) to Class I wells, RCRA Subtitle C landfills and other landfills.

- 7% (34 million pounds) were disposed of or otherwise released **off-site**.
  - 3% (16 million pounds) of **off-site** disposal and other releases were to Class I wells, RCRA Subtitle C landfills and other landfills.
  - 2% (9 million pounds) were metals sent off-site for solidification/stabilization.



How do the 2005 PBT data compare to the 2004 PBT data?
Overall, when compared to quantities reported for the previous year (2004), total disposal or other releases of persistent bioaccumulative and toxic (PBT) chemicals **increased** by 25 million pounds or 5% from 2004 to 2005.

- Lead and lead compounds **increased** by 26 million pounds (6%)
- Mercury and mercury compounds **decreased** by over 420,000 pounds (9%)
- Polychlorinated biphenyls (PCBs) **decreased** by over 737,000 pounds (39%).
- Polycyclic aromatic compounds **decreased** by over 108,000 pounds (5%).

On- and off-site disposal or other releases of PBT chemicals in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled 49 million pounds in 2005 (10% of total disposal or other releases). They **decreased** by 9 million pounds (16%) from 2004 to 2005.

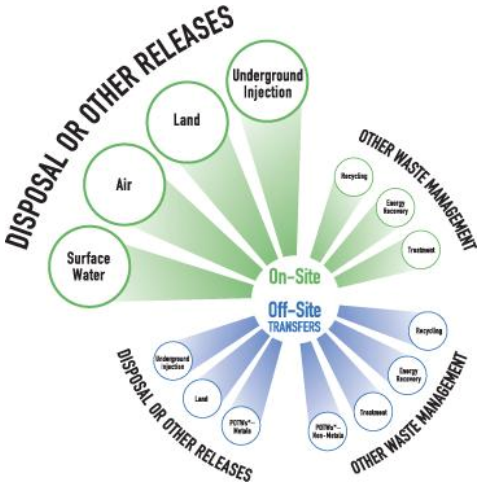
- On-site RCRA Subtitle C landfills **decreased** by 7.5 million pounds (31%)
- Other on-site landfills **decreased** by 2.2 million pounds (12%)
- Off-site RCRA Subtitle C landfills **decreased** by over 579,000 pounds (20%)
- Other off-site landfills **increased** by 1.3 million pounds (11%)

Air releases of PBT chemicals **decreased** by almost 654,000 pounds (27%).

LEAD AND LEAD COMPOUNDS

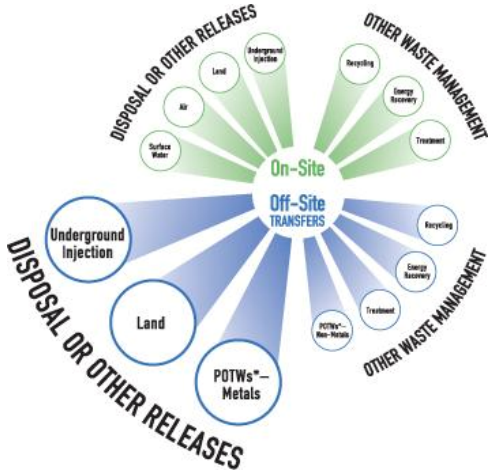
The reporting threshold for lead and lead compounds was lowered beginning with the 2001 reporting year so this is the fifth year of reporting under the lowered threshold.

What was the total reported disposal or other releases of lead and lead compounds for 2005?
Total disposal or other releases of lead and lead compounds was 469 million pounds for 2005.



- 93% (437 million pounds) was disposed of or otherwise released **on-site**, including:
  - 258 million pounds (55%) of land disposal other than landfills (such as waste piles, spills or leaks);
  - 141 million pounds (30%) to surface impoundments, other than RCRA Subtitle C surface impoundments; and
  - Over 987,000 pounds (0.2%) of air emissions.

- 7% (32 million pounds) were **off-site** disposal or other releases, including
  - 13 million pounds (3%) of land disposal other than landfills (such as waste piles, spills or leaks)
  - 9 million pounds (2%) of metals sent to solidification/stabilization.



How do the 2005 data compare to 2004 data for lead and lead compounds?
From **2004 to 2005** disposal or other releases for lead and lead compounds **increased** by 26 million pounds or 6%.

- The metal mining sector accounted for 84% (395 million pounds) of the total disposal or other releases in 2005. The mining sector had an **increase** of 7% (24 million pounds) from 2004 to 2005.
- Without the metal mining sector, total on- and off-site disposal or other releases of lead and lead compounds **increased** by 2% (1.8 million pounds) from 2004 to 2005, including.
  - **Increase** of 3.2 million pounds (over 200%) from electronic/electrical equipment sector
  - **Increase** of 2.53 million pounds (130%) from stone/clay/glass/cement sector, and
  - **Increase** of 2.48 million pounds (10%) from primary metals.
  - Hazardous waste management facilities had a **decrease** of 8 million pounds (31%) from 2004 to 2005.

On- and off-site disposal or other releases of lead and lead compounds in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled 46 million pounds in 2005

(10% of total disposal or other releases). The net **decrease** was 8 million pounds (18%) from 2004 to 2005.

- On-site RCRA Subtitle C landfills **decreased** by 7 million pounds (32%)
- Other on-site landfills **decreased** by 2 million pounds (13%)
- Off-site RCRA Subtitle C landfills **decreased** by over 319,000 pounds (14%)
- Class I wells on-site **decreased** by over 10,000 pounds (3%).
- However, other off-site landfills **increased** by 1.5 million pounds (13%) and

Off-site Class I wells **increased** by over 21,000 pounds (30%).

How do the 2005 data compare to 2001 (first year of reporting under the lowered threshold) data for lead and lead compounds?

From **2001 to 2005**, lead and lead compounds disposal or other releases **increased** by 49 million pounds or 12%.

- The metal mining sector had an **increase** of 58 million pounds (17%) from 2001 to 2005.
- Without the metal mining sector total disposal or other releases of lead and lead compounds **decreased** by 8 million pounds (10%) from 2001 to 2005.
- Some industry sectors reported **decreases**, including:
  - Primary metals facilities, with a **decrease** of 6.3 million pounds (18%) from 2001 to 2005; and
  - Hazardous waste management facilities, with a **decrease** of 5.7 million pounds (23%) from 2001 to 2005.
- Other industries reported **increases**, including:
  - Electronic/electrical equipment, with an **increase** of 3.0 million pounds (189%) from 2001 to 2005; and
  - Stone/Clay/Glass/Cement products with an increase of 2.3 million pounds (103%).

How much lead and lead compounds in total production-related waste was managed in 2005?

For 2005, total production-related waste managed for lead and lead compounds was 1.04 billion pounds. A little more than half of the lead waste was recycled.

- 55% (566 million pounds) was recycled on- and off-site.
  - 183 million pounds was recycled on-site by primary metals facilities
  - 171 million pounds was recycled off-site and an additional 103 million pounds was recycled on-site by electronic/electrical equipment manufacturers.
- 45% (472 million pounds) was the quantity of lead and lead compounds managed by disposal or other releases.
  - Metal mining with 394 million pounds
  - Primary metals facilities with 34 million pounds
  - Hazardous waste management facilities with 20 million pounds.

Why is the quantity disposed of or otherwise released different from above?

Metal mines reported 395 million pounds of total disposal or other releases. Almost 400,000 pounds of this was reported as remedial, catastrophic or one time releases not associated with production-related waste. Therefore, when looking at total production-related waste the quantity disposed of or otherwise released as part of production-related waste is less (394 million pounds) because it does not include the non-production-related waste.

How do the production-related waste managed 2005 data compare to 2004 and to 2001 for lead and lead compounds?
Total production-related waste managed for lead and lead compounds **decreased** by 13% (158 million pounds) from 2004 to 2005 and had an overall **decrease** of 17% (207 million pounds) from 2001 to 2005.

- Recycling **decreased** by 24% from 2004 to 2005 and by 31% from 2001 to 2005.
- Quantity disposed of or otherwise released **increased** by 5% from 2004 to 2005 and by 11% from 2001 to 2005.

Of the industry sectors reporting the largest amounts of lead and lead compounds in production-related waste managed:

- The metal mining sector reported an **increase** of 7% from 2004 to 2005 and of 17% from 2001 to 2005.
- Primary metals reported a **decrease** of 37% from 2004-2005 and the same from 2001-2005; and
- Electronic/electrical equipment reported a **decrease** of 1% from 2004-2005 and 8% from 2001-2005.

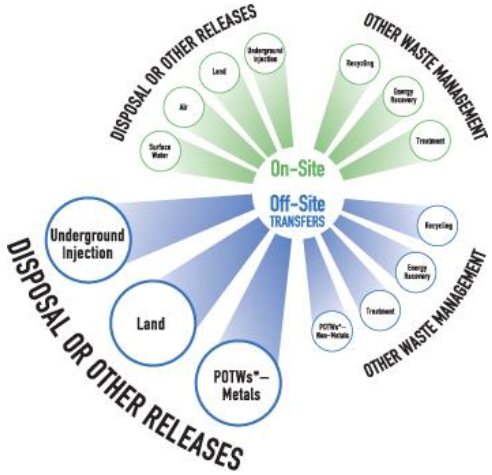
MERCURY AND MERCURY COMPOUNDS

The reporting threshold for mercury and mercury compounds was lowered to 10 pounds beginning with reporting year 2000, so this is the sixth year of reporting under the lowered threshold.

What was the total mercury and mercury compounds disposal or other releases for 2005?
Total disposal or other releases of mercury and mercury compounds was 4.4 million pounds in 2005.

- 96% (4.2 million pounds) were **on-site** disposal or other releases, including
  - ► 2.5 million pounds (56%) of land disposal other than landfills (such as waste piles, spills or leaks)
  - ► 1.2 million pounds (28%) of surface impoundments, other than RCRA Subtitle C surface impoundments
  - ► over 141,000 pounds (3%) of air emissions
- Two metal mining facilities accounted for 66% (2.9 million pounds) of the total on- and off-site disposal or other releases of mercury and mercury compounds for 2005.
  - ► These facilities reported disposal or other releases mainly to on-site land disposal other than landfills (such as waste piles) and surface impoundments, other than RCRA Subtitle C surface impoundments.

- 4% (189,005 pounds) were **off-site** disposal or other releases.
  - 2% (69,454 pounds) were metals sent for stabilization/solidification and
  - 1% (42,431 pounds) went to RCRA Subtitle C landfills



Which industry sectors reported the largest disposal or other releases of mercury and mercury compounds in 2005?

- The metal mining industry reported the largest disposal or other releases of mercury and mercury compounds (84% or 3.7 million pounds of the total mercury and mercury compounds disposal or other releases).
- Electric utilities reported the largest air emissions of any industry sector, with 68% (96,663 pounds) of all air emissions of mercury and mercury compounds.
- Hazardous waste/solvent recovery facilities reported the largest off-site disposal or other releases (off-site transfers to disposal) of mercury and mercury compounds with 53% (100,561 pounds) of all off-site disposal or other releases.

How do the 2005 data compare to data for 2004 for mercury and mercury compounds?
From **2004 to 2005**, disposal or other releases for mercury and mercury compounds **decreased** by 9% (over 420,000 pounds).

- Without the two largest metal mining facilities, total on- and off-site disposal **decreased** 13% (over 224,000 pounds).
- Total on-site disposal or other releases **decreased** by 8% (almost 381,000 pounds), including
  - **A decrease** of almost 256,000 pounds (17%) in surface impoundments, other than RCRA Subtitle C surface impoundments, and over 160,000 pounds (6%) in other land disposal (waste piles, spills and leaks).
  - On-site air emissions **decreased** by 2,116 pounds (1.5%).
- Total off-site disposal or other releases **increased** by 17% (over 39,000 pounds).

Air emissions of mercury and mercury compounds.
Electric utilities reported 68% of all air emissions of mercury and mercury compounds in 2005. While overall air emissions of mercury and mercury compounds decreased, air emissions from electric utilities increased by almost 2,100 pounds (2%), from 94,571 pounds in 2004 to 96,663 pounds in 2005.

On- and off-site disposal or other releases of mercury and mercury compounds in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled almost 433,000 pounds in 2005 (10% of total disposal or other releases). They **decreased** by almost 4,300 pounds (1%) from 2004 to 2005.

- Off-site RCRA Subtitle C landfills **decreased** by over 45,100 pounds (52%).
- However, on-site RCRA Subtitle C landfills **increased** by over 36,100 pounds (12%)

How do the 2005 data compare with the 2000 (the first year of reporting under the lowered threshold) data for mercury and mercury compounds?

From **2000 to 2005** (over six years), disposal or other releases for mercury and mercury compounds **increased** by 17% (almost 652,000 pounds).

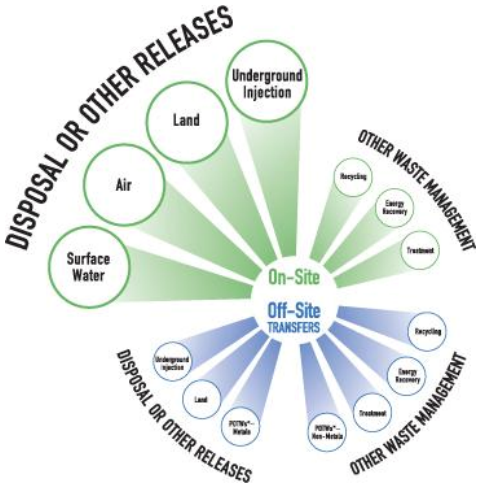
- Total on-site disposal or other releases **increased** by 22% (over 749,000 pounds)
- Total off-site disposal or other releases **decreased** by 34% (over 97,000 pounds)
- Two metal mining facilities reported a combined **increase** of almost 740,000 pounds from 2000 to 2005.
  - ► Without reporting by these two facilities, disposal or other releases of mercury and mercury compounds **decreased** by 6% (almost 88,000 pounds) from 2000 to 2005.
- On-site air emissions of mercury and mercury compounds **decreased** by almost 20,000 pounds (13%) from 2000 to 2005.

DIOXIN AND DIOXIN-LIKE COMPOUNDS

Dioxin and dioxin-like compounds were added to the TRI list for reporting year 2000 at a reporting threshold of 0.1 grams.

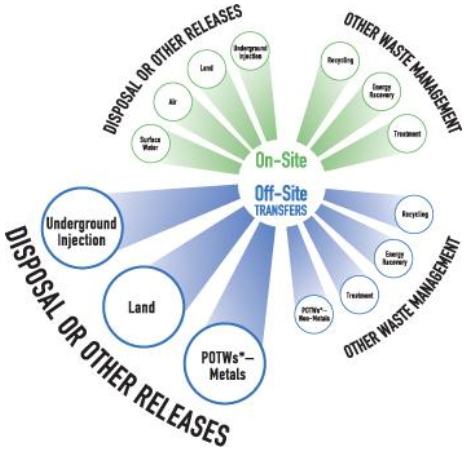
What was the total disposal or other releases for dioxin and dioxin-like compounds for 2005?

Total disposal or other releases for dioxin and dioxin-like compounds was 85,501 grams (approximately 189 pounds) in 2005.



- 60% (51,674 grams or 114 pounds) were **on-site** disposal or other releases, including
  - ► 1,267 grams or 2.8 pounds (1.5%) of air emissions

- 40% (33,827 grams or 75 pounds) were **off-site** disposal or other releases, including
  - ► 22,539 grams or 50 pounds (26%) of disposal in off-site landfills other than RCCA Subtitle C landfills
  - ► 10,277 grams or 23 pounds (12%) in off-site RCRA Subtitle C landfills



How do the 2005 data compare to data for 2004 data for dioxins and dioxin-like compounds?
From **2004 to 2005**, total disposal or other releases of dioxin and dioxin-like compounds **decreased** by 25,951 grams or 57 pounds (23%).

> **What are some of the reasons for the decrease in total disposal or other releases of dioxin and dioxin-like compounds from 2004 to 2005?**
> *Two chemical manufacturers reported decreases totaling 27,914 grams from 2004-2005. These two facilities accounted for half of the total for 2004 and almost one-third of the total for 2005.*

- On-site disposal or other releases **decreased** by 23% (15,145 grams or 33 pounds).
  - ► However, on-site air emissions **increased** by 29 grams or less than 0.1 pound (2%) from 2004 to 2005.

> **Air emissions of dioxin and dioxin-like compounds.**
> *One electric utility reported 10% of all air emissions of dioxin and dioxin-like compounds in 2005 and reported a decrease of 12.4 grams from 2004-2005. On the other hand, two cement facilities reported a total increase of 83 grams in air emissions of dioxin and dioxin-like compounds from 2004 to 2005.*

- Off-site disposal or other releases **decreased** by 24% (10,806 grams or 24 pounds).

On- and off-site disposal or other releases of dioxins and dioxin-like compounds in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled 76,421 grams or 169 pounds in 2005 (89% of total disposal or other releases). They **decreased** by 23,725 grams or 52 pounds (24%) from 2004 to 2005.

- On-site landfills other than RCRA Subtitle C landfills **decreased** by 2,024 grams or 4.5 pounds (7%)
- Off-site landfills other than RCRA Subtitle C landfills **decreased** by 10,637 grams or 23 pounds (32%)
- On-site RCRA Subtitle C landfills **decreased** by 12,846 grams or 28 pounds (41%)
- However, off-site RCRA Subtitle C landfills **increased** by 2,112 grams or 4.7 pounds (26%).

How do the 2005 data compare to data for 2000 (the first year of reporting) for dioxins and dioxin-like compounds?
From **2000 to 2005**, total disposal or other releases of dioxin and dioxin-like compounds **decreased** by 13,353 grams or 29 pounds (14%).

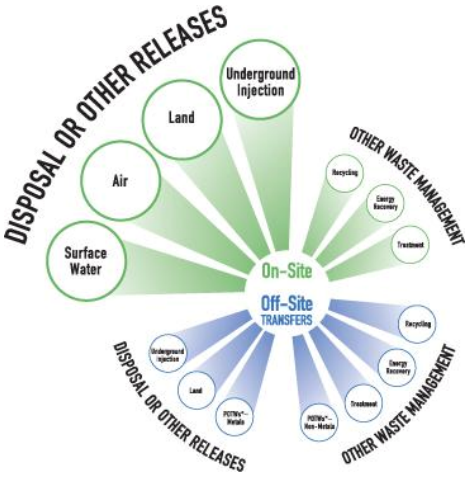
- On-site air emissions **decreased** by 2,481 grams or 5.5 pounds (66%) from 2000 to 2005.

CARCINOGENS

EPA has separated carcinogens for additional analysis in 2005. For this analysis, EPA included all TRI chemicals that appear as known or suspected carcinogens in one of three sources, National Toxicology Program (NTP), International Agency for Research on Cancer (IARC) and/or 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Hazardous Safety and Health Administration (OSHA). There were 179 on the TRI list for 2005; 34 of the 179 carcinogens were not reported for 2005.

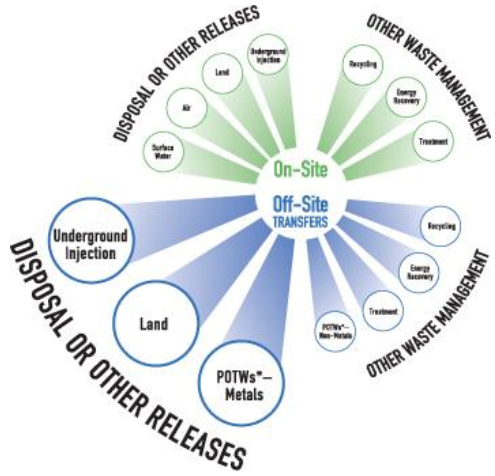
What was the total carcinogen disposal or other releases for 2005?

Total disposal or other releases of carcinogens reported was 923 million pounds in 2005. Most releases were to some form of land disposal.



- 91% (839 million pounds) were disposed of or otherwise released **on-site**, including
  - 33% (308 million pounds) in other land disposal (such as waste piles, spills or leaks).
  - 33% (300 million pounds) in on-site surface impoundments other than RCRA Subtitle C surface impoundments.
  - 12% (113 million pounds in on-site air releases and
  - 12% (107 million pounds) to Class I wells, RCRA Subtitle C landfills and other landfills.

- 9% (84 million pounds) were disposed of or otherwise released **off-site**.
  - 5% (50 million pounds) of **off-site** disposal and other releases were to Class I wells, RCRA Subtitle C landfills and other landfills.



What were the top carcinogens disposed of or otherwise released in 2005?

- 51% (470 million pounds) of total disposal or other releases of carcinogens in 2005 was accounted for by lead and lead compounds.
- 20% (188 million pounds) was arsenic and arsenic compounds.
- Other disposal or other releases of carcinogens in 2005 included:
  - 55 million pounds of styrene (with 51 million pounds of that as air releases),
  - 52 million pounds of chromium compounds.

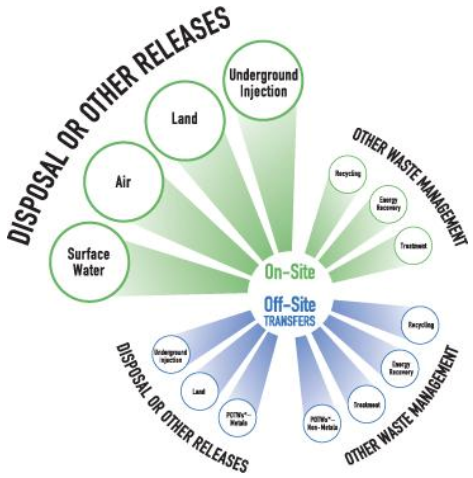
How do the 2005 carcinogen data compare to the 2004 carcinogen data?
Overall, when compared to quantities reported for the previous year (2004), total disposal or other releases of carcinogens **increased** by 72 million pounds or 9% from 2004 to 2005. However, air releases **decreased** by 8 million pounds or 7%.

- Arsenic and arsenic compounds **increased** by 65 million pounds (54%),
- Lead and lead compounds **increased** by 26 million pounds (6%),
- Chromium compounds **decreased** by 4.3 million pounds (8%),
- Formaldehyde **decreased** by 3.1 million pounds (12%), including a 1-million-pound decrease in air emissions (9%), and
- Dichloromethane air releases **decreased** by 1.3 million pounds (17%).

Looking at TRI data over the years

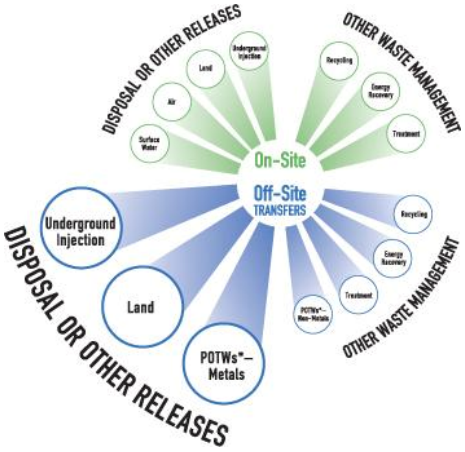
TRI DATA, 2001-2005
Over the five years from 2001 to 2005, total on- and off-site disposal or other releases of TRI chemicals **decreased** by 22% (by 1.23 billion pounds). The number of facilities reporting **decreased** by 9%.

- The metal mining sector reported an overall **decrease** of 1.10 billion pounds (49%).
- Without the metal mining sector, total disposal or other releases **decreased** by 4% (by 125 million pounds).



- On-site disposal or other releases **decreased** by 1.3 billion pounds (25%).
  - ► Land disposal **decreased** by 1.2 billion pounds (39%), with metal mining accounting for a **decrease** of 1.1 billion pounds.
  - ► Total air emissions **decreased** by 118 million pounds (7%), with chemical manufacturing accounting for a **decrease** of 32 million pounds and plastics products accounting for a **decrease** of 20 million pounds.
  - ► However, underground injection **increased** by 15 million pounds (7%), with chemical manufacturing accounting for an **increase** of 14 million pounds.
  - ► Surface water releases **increased** by 7 million pounds (3%), with the food products industry accounting for an **increase** of 22 million pounds and chemical manufacturing accounting for a **decrease** of 18 million pounds.

- Off-site disposal or other releases **increased** by 44 million pounds (9%).
  - ► Land disposal **increased** by 31 million pounds (8%), with primary metals accounting for an **increase** of 53 million pounds and hazardous waste management facilities a **decrease** of 23 million pounds,



What are some of the reasons for the overall decrease in disposal or other releases from 2001 to 2005?
The metal mining sector had a decrease of 49% (1.10 billion pounds) from 2001 to 2005. This sector may have been adjusting their reporting to conform to a court case, Barrick v. EPA. The decrease could also be due other factors, such as changes in composition of the ore.

Total production-related waste managed decreased by 8% (2.06 billion pounds) from 2001 to 2005.

- Quantity disposed of or otherwise released **decreased** by 22% (1.24 billion pounds)
- Recycling on- and off-site **decreased** by 7% (633 million pounds)
- Energy recovery on- and off-site **decreased** by 10% (330 million pounds)
- However, treatment on- and off-site **increased** by 2% (147 million pounds)

Average per facility, 2001-2005

	2001	2005	Change
	Pounds/facility	Pounds/facility	Percent
Total Disposal or Other Releases			
All Industry Sectors	216,516	184,965	-15%
Without metal mining	128,201	135,149	+5%
Total Production-Related Waste Managed			
All Industry Sectors	1,055,753	1,069,067	+1%
Without metal mining	963,966	1,015,063	+5%

TRI DATA, 1998-2005

Over the eight years from 1998 to 2005, total on- and off-site disposal or other releases of TRI chemicals **decreased** by 43% (by 2.93 billion pounds). Note that the data reflect the set of chemicals that have been consistently reported since 1998 and do not include the PBTs or vanadium and vanadium compounds. The number of facilities reporting to TRI **decreased** by 13%.

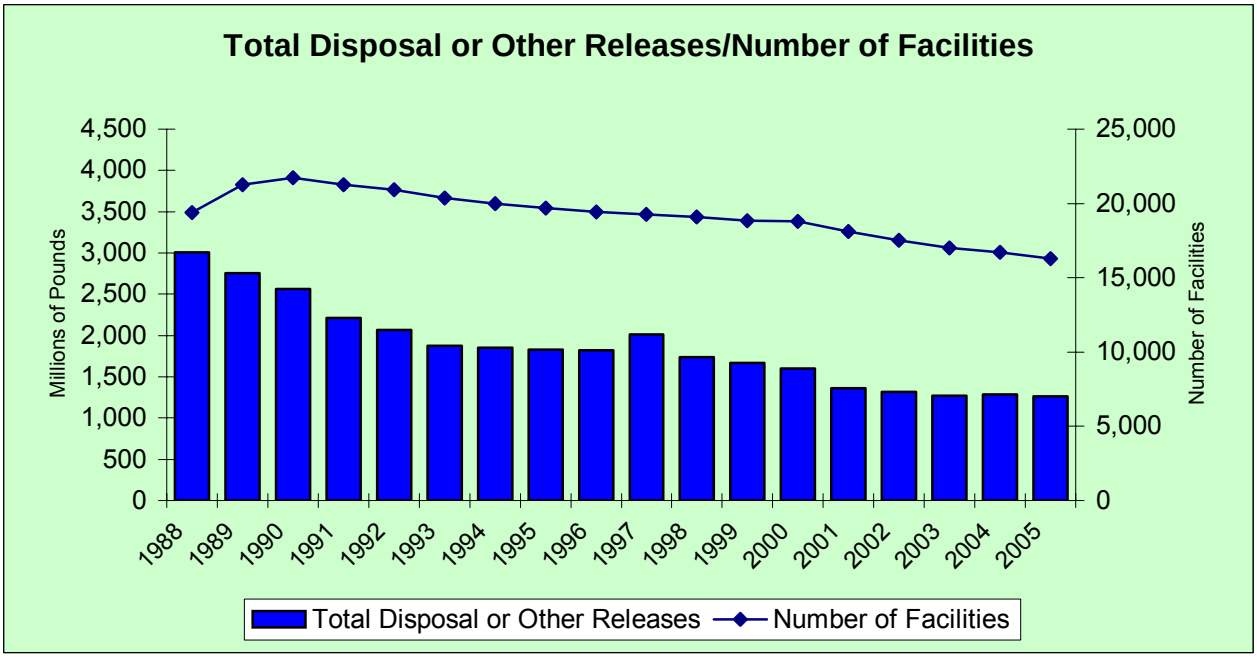
- The metal mining sector reported an overall **decrease** of 2.25 billion pounds (75%).
- Without the metal mining sector, total disposal or other releases **decreased** by 18% (680 million pounds).

Total production-related waste managed decreased by 13% (3.71 billion pounds) from 1998 to 2005.

- Quantity disposed of or otherwise released **decreased** by 43% (2.91 billion pounds)
- Recycling on- and off-site **decreased** by 8% (743 million pounds)
- Energy recovery on- and off-site **decreased** by 13% (451 million pounds)
- However, treatment on- and off-site **increased** by 5% (392 million pounds)

TRI DATA, 1988-2005

Looking at trends in the industries and chemicals that have been consistently reported since that time, over the eighteen years from 1988 to 2005, total on- and off-site disposal or other releases of TRI chemicals **decreased** by 58% (by 1.74 billion pounds). The number of facilities reporting to TRI **decreased** by 16% over that same time period. This decrease only takes into consideration the 1988 core set of chemicals (i.e., those chemicals that have been on the TRI list 1988 and have had the same reporting definition since 1988).



Note: Data are from TRI Form, Sections 5 (all parts) and 6.1 (metals and metal compounds only) and 6.2 (Disposal codes only and metals and metal compounds reported under codes M40 and M61). Does not include delisted chemicals, chemicals added in 1990, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid, PBT chemicals, sulfuric acid, vanadium and vanadium compounds. For the years 1998 and after, does not include industries, other than manufacturing industries, that are required to report for 1998 and later years only. Data as of March 2007.