U.S. EPA Toxics Release Inventory
Reporting Year 2007 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 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 1988. For 2007, the latest year for which data are available, disposal or other releases of TRI chemicals totaled almost 4.1 billion pounds from about 22,000 U.S. facilities submitting approximately 84,900 chemical forms.

The 2007 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 2007 Public Data Release (available at http://www.epa.gov/triinter/tridata/tri07/index.htm). Please read *Background on TRI Data Collection* (available at http://www.epa.gov/tri/tridata/tri07/pdr/Background.pdf) prior to reviewing these key findings, as that document explains the kinds of data collected under TRI and helps with data analysis and interpretation. The following information reflects the TRI data as of March 2009.

Time Period for the TRI 2007 Public Data Release

The time period covered for this year's data release is January 1 to December 31, 2007. These 2007 data were reported to EPA by July 1, 2008. They were released to the public on a form-by-form basis in September 2008, and were released to the public in a consolidated format with summary analysis in March 2009. Data for previous years back to 1988 are also available.

Recent Changes to Reporting Requirements

There were two changes to reporting requirements for the 2007 data. Facilities were required to submit appropriate 2002 North American Industry Classification System (NAICS) designations for their facility rather than the 1987 Standard Industrial Classification (SIC) codes previously used (71 Federal Register 32464 June 6, 2007, see http://www.epa.gov/tri/lawsandregs/naic/). To do trends analysis, EPA has assigned NAICS codes to data for years prior to 2006. The assignments were done based on the NAICS code reported by the facility for 2006 or 2007 or, if not available, the SIC code was translated to the NAICS code, where possible.

EPA also expanded eligibility for Form A, a shortened TRI reporting form, in a rule promulgated on December 18, 2006 (see http://www.epa.gov/tri/lawsandregs/burden/rules/burden/finalrburden.htm). This rule expanded

Form A eligibility for non-PBT chemicals and allowed, for the first time, Form A eligibility for PBT chemicals. For 2007, EPA received 11,705 Form A submissions. For 2005, the last year before the change, EPA received 11,006 Form A submissions.

Methodology for TRI Analysis

EPA takes the data submitted by facilities, conducts extensive quality assurance reviews and compiles the data into two databases:

- Total Disposal or other Releases, and
- Production-Related Waste Managed

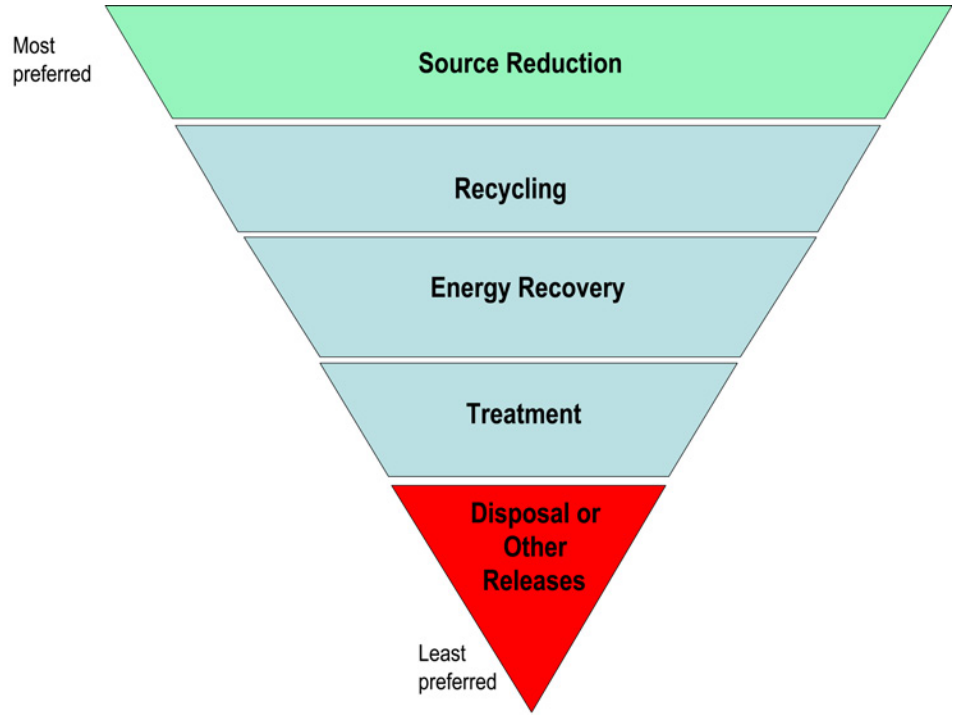
Total disposal or other releases addresses the amount of chemicals disposed of or released on-site and off-site during the year and is based on the definition of release in Section 329 of the Emergency Planning and Community Right-to-Know Act (EPCRA). "Disposal or other releases" represent a wide range of management methods, from highly controlled disposal, such as in hazardous waste landfills, to uncontrolled releases due to accidental leaks or spills. Generally, when EPA analyzes the data on total disposal or other releases, the focus is on final disposition or release of TRI chemicals. The data used in such analyses come from Sections 5 and 6 of the TRI Reporting Form R[1]. *Such analyses do not include amounts that are reported as transferred to other TRI facilities.* Receiving TRI facilities (i.e. facilities that report to TRI and also accept wastes from other TRI-reporting facilities) report these amounts as on-site disposal or other releases. EPA only counts the on-site disposal or other release to avoid double counting the amount disposed of or released during the year.

Production-Related Waste Managed addresses the entire amount of waste generated during normal production processes and how it was 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, as well as waste that is disposed, or otherwise released. While Total Disposal or other Releases focuses on the ultimate disposition of a chemical, Production-related Waste Managed focuses on waste management and counts a waste as many times as it is managed during the year. It does not include non-production related releases, which include releases due to natural disasters, accidentally leaks or other one-time occurrences that are not part of the routine production process. The data used in this analysis come from Section 8 of the TRI Reporting Form R[1]. These data allow tracking of progress in reducing waste generation and movement towards preferred methods of waste management, as illustrated by the waste management hierarchy (Figure 1).

The waste management hierarchy shows that source reduction (i.e., preventing the creation of waste) is the preferred approach, followed by recycling. Waste that cannot be prevented or recycled can be used for energy recovery or treated**.** Disposal or other releases is the least preferred.

[1] TRI reporting Form R can be viewed at http://www.epa.gov/tri/report/index.htm#forms

Figure 1. Waste Management Hierarchy

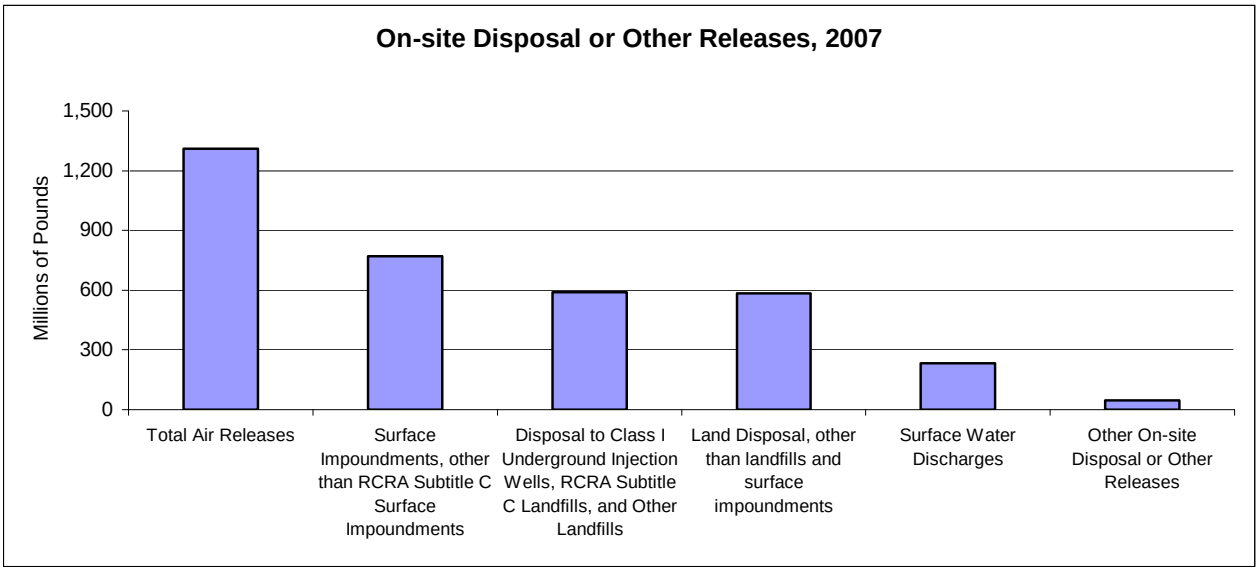


Overview of the TRI 2007 Data

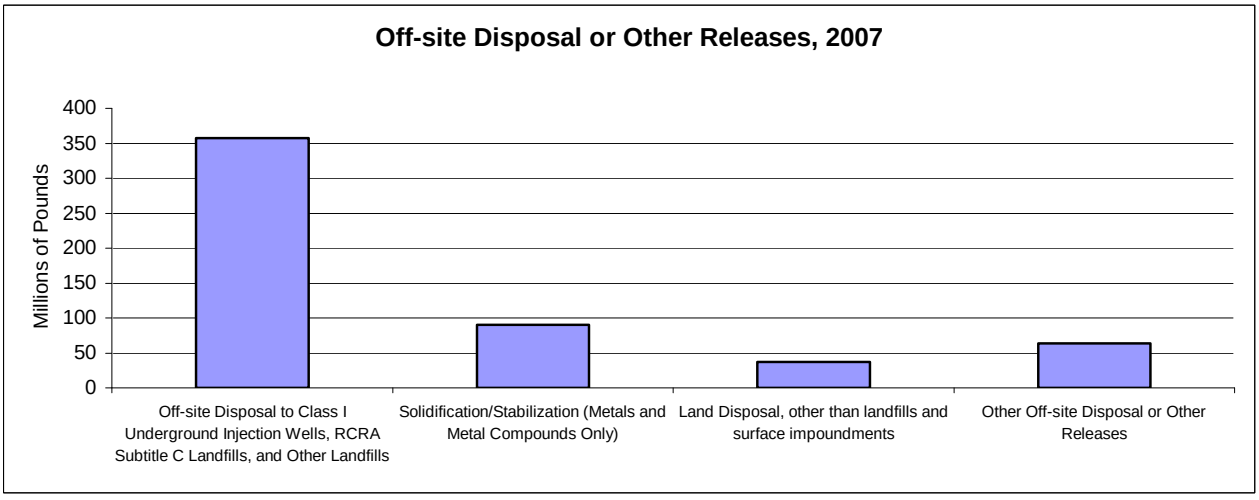
What was the total reported for disposal or other releases for 2007?

Almost 4.1 billion pounds were disposed of or otherwise released in 2007 by facilities that are required to report to EPA under EPCRA Section 313. Most of the chemicals are managed on-site.

- 87% (3.54 billion pounds) was disposed of or otherwise released **on-site**, including
  - 32% (1.31 billion pounds) as air emissions
  - 19% (771 million pounds) in surface impoundments other than hazardous waste (RCRA Subtitle C) surface impoundments
  - 14% (590 million pounds) in Class I underground injection wells, hazardous waste (RCRA Subtitle C) landfills and other landfills
  - 14% (585 million pounds) as other land disposal (such as waste piles, spills or leaks)
  - Surface water discharges (6%), land treatment (0.5%), Class II-V underground injection wells (0.5%), and RCRA Subtitle C surface impoundments (0.1%) make up the remaining on-site disposal or other releases.



- 13% (548 million pounds) was sent **off-site** for disposal or other releases, including
  - 9% (357 million pounds) to Class I underground injection wells, RCRA Subtitle C landfills and other landfills
  - 2% (90 million pounds) of metals sent for solidification and/or stabilization
  - 1% (37 million pounds) sent for "other land disposal" (e.g. waste piles),
  - with the remaining 1% disposed of or released in all other ways combined (such as land treatment, storage, surface impoundments and wastewater treatment).

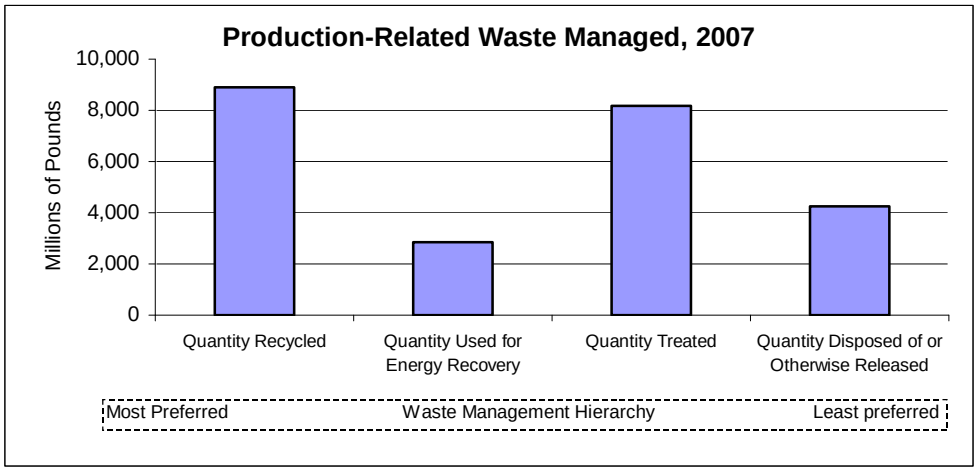


As noted above, 14% of total disposal or other releases were in on-site Class I wells, RCRA Subtitle C and other landfills and 9% were in off-site Class I wells, RCRA Subtitle C and other landfills. These facilities may limit contamination and human exposure by using engineering controls. For example, 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 2007?

Total production-related waste managed was 24.2 billion pounds in 2007:

- 37% (8.90 billion pounds) was recycled on- and off-site.
- 34% (8.18 billion pounds) was treated on- and off-site.
- 18% (4.26 billion pounds) was the quantity disposed of or otherwise released on- and off-site.
- 12% (2.85 billion pounds) was combusted for energy recovery on- and off-site.



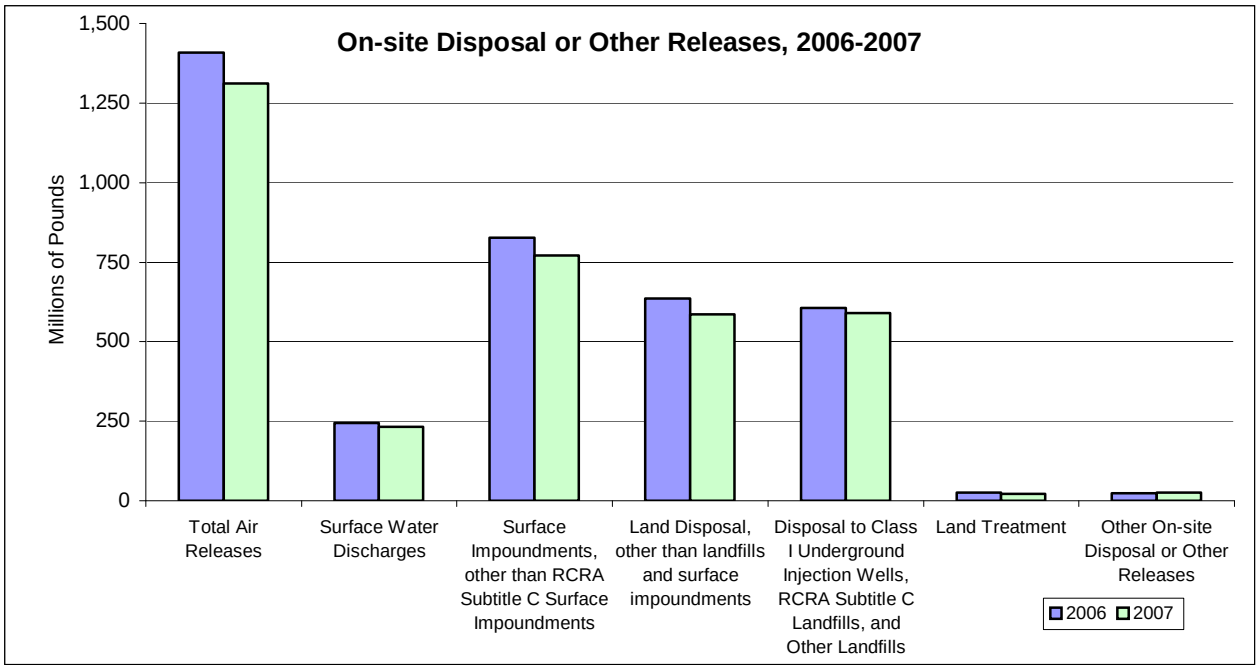
***Total Production-Related Waste Management**, which includes the quantity disposed of or otherwise released, focuses on waste management and, includes counting a waste as many times as it is managed during the year. On the other hand, total disposal or other releases focuses on the ultimate disposition of a chemical. In analyses of total disposal or other releases, chemicals are counted only once rather than each time they are managed. 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. 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 (disposal or other releases) and Section 8 (production-related waste managed) of the TRI Reporting Form R.

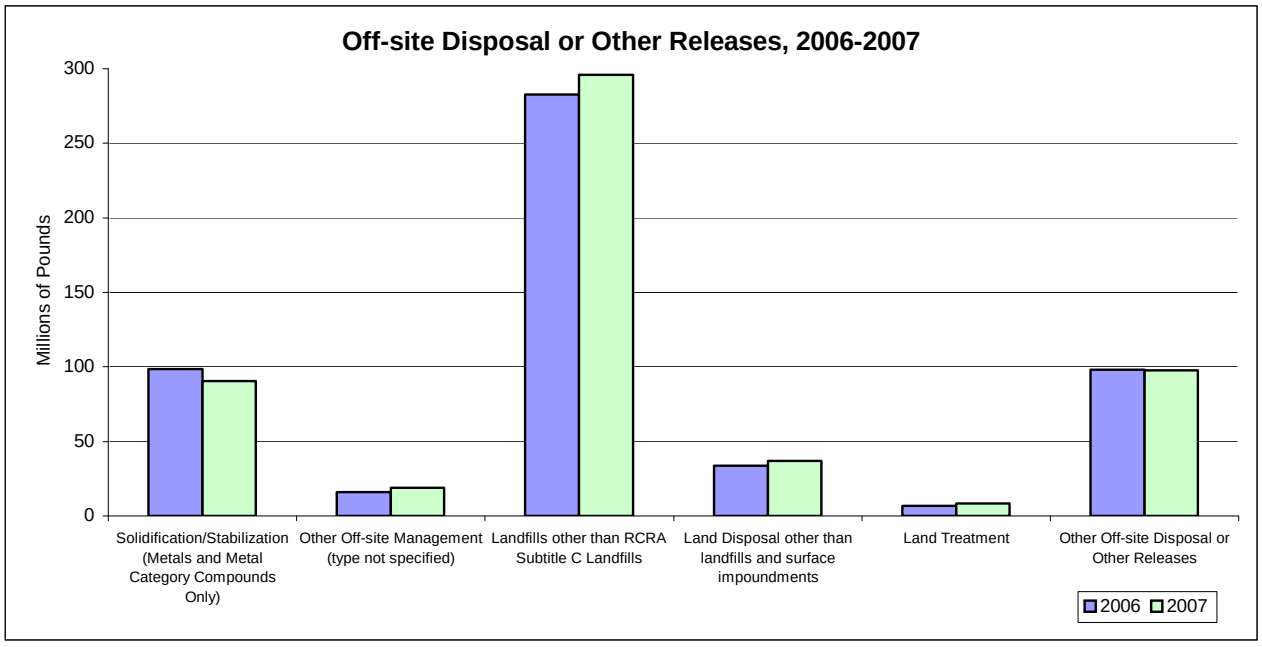
How do the 2007 TRI data compare to the 2006 TRI data?
In this section, we present both net changes from 2006 to 2007, and underlying shifts in management methods.

Overall, when compared to quantities reported for the previous year (2006), total disposal or other releases of TRI chemicals showed a **decrease** of 5% (223 million pounds).

- On-site disposal or other releases **decreased** by 6% (235 million pounds).
    - Air emissions **decreased** by 7% (98 million pounds),
    - Surface impoundments other than RCRA Subtitle C surface impoundments **decreased** by 7% (56 million pounds),
    - Land disposal other than landfills and surface impoundments (such as waste piles, spills and leaks) **decreased** by 8% (50 million pounds),
    - Class I underground injection wells, RCRA Subtitle C (hazardous waste) landfills and other landfills **decreased** by 3% (16 million pounds),
    - Surface water discharges **decreased** by 5% (13 million pounds), and
    - Land treatment **decreased** by 19% (5 million pounds).
    - However, RCRA Subtitle C surface impoundments **increased** by 54% (1.6 million pounds), and
    - Class II-V underground injection wells **increased** by 7% (1.4 million pounds).



- Off-site disposal or other releases **increased** by 2% (12 million pounds).
  - Landfills other than RCRA Subtitle C landfills **increased** by 5% (13 million pounds),
  - Land disposal other than landfills and surface impoundments (such as waste piles, spills and leaks) **increased** by 9% (3.1 million pounds),
  - Other off-site waste management (type not specified) **increased** by 18% (2.9 million pounds), and
  - Land treatment **increased** by 19% (1.3 million pounds).
  - However, solidification/stabilization of metals and metal compounds **decreased** by 8% (8.3 million pounds).

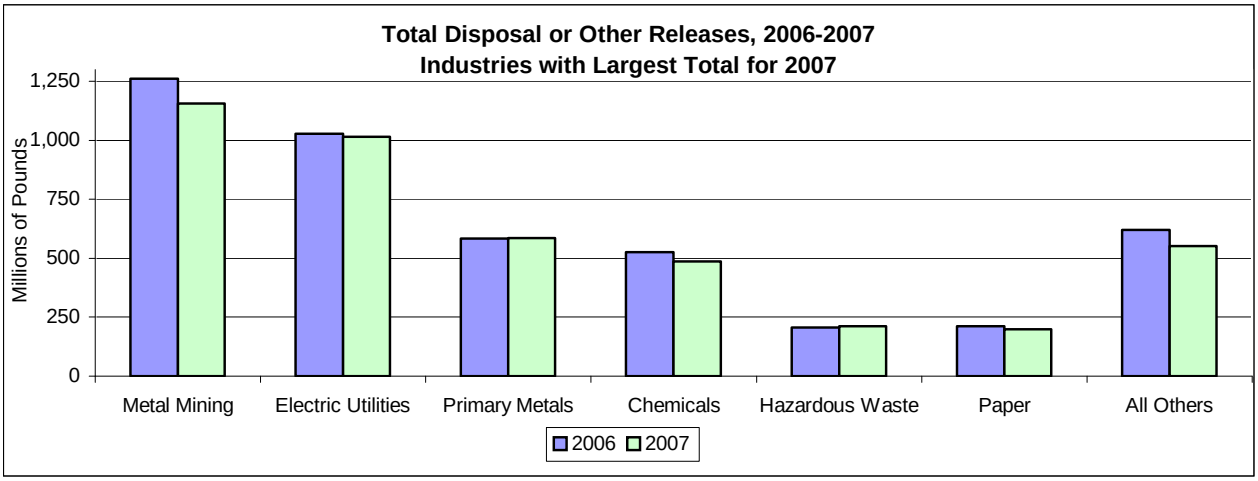


Which industry sectors reported the largest decreases in disposal or other releases, 2006-2007?

- The metal mining sector reported the largest total disposal or other releases in 2007 (1.15 billion pounds) and the largest **decrease** in disposal or other releases from 2006: 106 million pounds (8%)
- The chemical manufacturing sector reported 487 million pounds in 2007 and the second largest **decrease,** of 39 million pounds (7%) from 2006
- The paper sector reported 198 million pounds in 2007, a **decrease** of 13 million pounds (7%) from 2006
- Electric utilities reported the second largest total disposal or other releases in 2007 (1.01 billion pounds) and a **decrease** of 13 million pounds (1%) from 2006

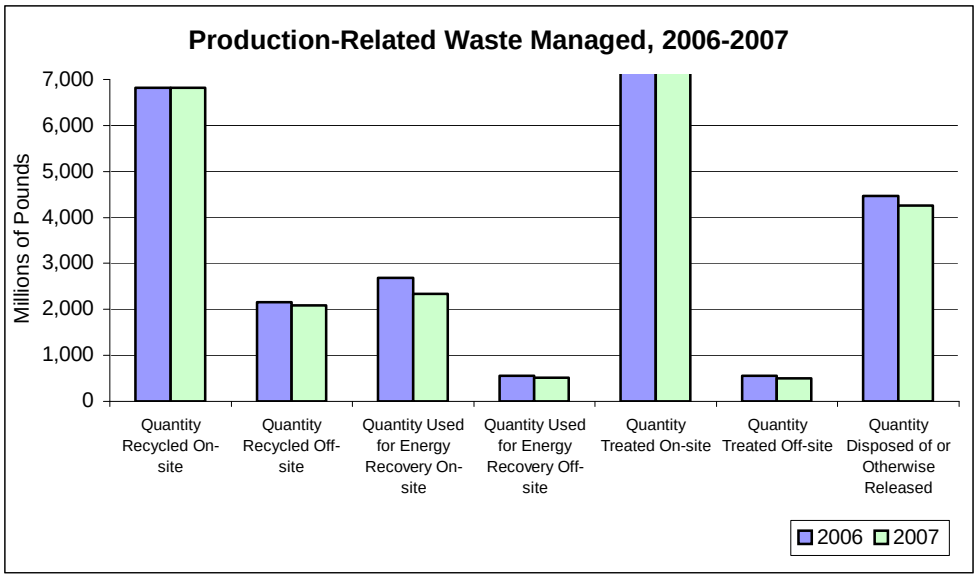
Which industry sectors reported the largest increases in disposal or other releases, 2006-2007?

- The primary metals sector reported 585 million pounds in 2007, an **increase** of 2 million pounds (0.4%) from 2006 and
- The hazardous waste management/solvent recovery facilities reported 213 million pounds in 2007, an **increase** of 5 million pounds (3%) from 2006



How did total production-related waste managed change from 2006 to 2007?

Total production-related waste **decreased** by 1% (333 million pounds) from 2006 to 2007. This included an overall **decrease** in the quantity disposed of or otherwise released of 5% (203 million pounds) and **decreases** in some other types of waste management.



- Energy recovery on-site and off-site **decreased** by 12% (395 million pounds).
- Recycling off-site **decreased** by 3% (74 million pounds).
- Treatment off-site **decreased** by 10% (54 million pounds).
- However, treatment on-site **increased** by 5% (389 million pounds) and
- Recycling on-site **increased** by 0.1% (3.4 million pounds).

Which types of facilities had the largest disposal or other releases in 2007?

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 potential risk to the environment. As explained in detail in the EPA report, ***Factors to Consider When Using TRI Data*** (available at http://www.epa.gov/tri/triprogram/FactorsToConPDF.pdf), 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 (http://www.epa.gov/tri/tridata/tri07/index.htm). It is important to note that there is a huge variation in the amounts of TRI chemicals released per facility. In 2007, the range of TRI disposal or other releases is from 0 to 533 million pounds. The average disposal or other releases of TRI chemicals per facility is approximately 191,446 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, and differ in the amount of release or waste that is produced.

Facilities with the largest disposal or other releases are mining facilities. The top 5 facilities, which each had over 44 million pounds of total on and off-site disposal or other releases, are mining operations. Other facilities in the Top 50 represent a variety of industries, including hazardous waste management facilities, primary metals facilities, chemical manufacturers, and electric utilities. These top facilities reported disposal-or-other-release totals ranging from 12 million to 44 million pounds for 2007. Note that an increase in the amount of toxic chemicals managed at hazardous waste sites can represent a generally positive environmental trend because these facilities are in the business of managing hazardous waste and do so under strict controls.

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. 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 5 mining facilities mentioned above remain the top 5 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 5) counties do not change, but there is some shifting in the next 15 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 facilities with the largest total disposal or other releases but may not necessarily reflect state and local totals and trends. Over the longer term, 2001-2007, total disposal or other releases decreased by 27%. However, an analysis of facilities reporting in both 2001 and 2007 found that the total disposal or other releases for group of “smaller reporting” facilities (those reporting less than 100,000 pounds for 2001 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), that meet the chemical thresholds are required to report to EPA’s TRI Program.

- For 2007, 364 federal facilities reported 95 million pounds of total on- and off-site disposal or other releases and 257 million pounds of total production-related waste managed.
- Disposal or other releases by federal facilities **decreased** by 11 million pounds (11%) from 2006 to 2007.
- Total production-related waste managed at federal facilities **increased** by 2 million pounds (1%) from 2006 to 2007. Recycling on- and off-site **increased** by 13 million pounds and

on-site treatment **increased** by 2.7 million pounds, while quantity released or otherwise disposed of **decreased** by 13 million pounds.

What are some of the reasons for the decrease in disposal or other releases from 2006 to 2007?
The Tennessee Valley Authority utilities, which reported almost two-thirds of the total disposal or other releases from federal facilities for 2007 showed a decrease in total disposal or other releases of 10 million pounds (14%) from 2006 to 2007.

2007 Chemical Snapshots

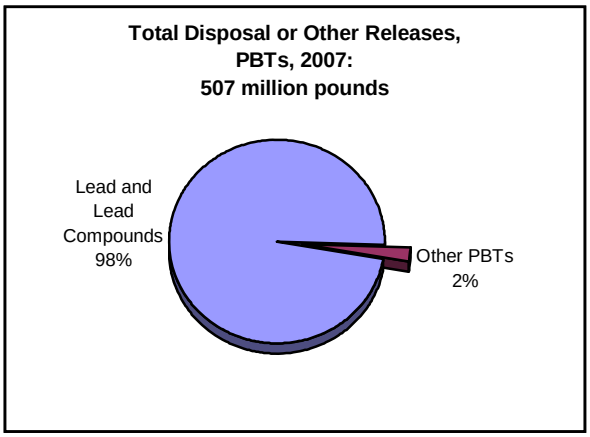
PERSISTENT BIOACCUMULATIVE TOXIC (PBT) CHEMICALS

Since 2000 TRI includes data, at reduced reporting thresholds, on PBT chemicals such as dioxins, mercury, and polychlorinated biphenyls (PCBs). TRI includes data for lead and lead compounds at reduced thresholds since 2001.

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 2007?

- 98% (496 million pounds) of total disposal or other releases of PBT chemicals in 2007 was accounted for by lead and lead compounds.
- Disposal or other releases of other PBT chemicals in 2007 included:
  - 6.9 million pounds of mercury and mercury compounds,
  - 1.4 million pounds of polycyclic aromatic compounds (PACs), and
  - 2.1 million pounds of polychlorinated biphenyls (PCBs).
- 144,729 **grams** (approximately 319 pounds) of total disposal or other releases of PBT chemicals in 2007 were accounted for by dioxin and dioxin-like compounds.



What was the total PBT disposal or other releases for 2007?

Total disposal or other releases of PBT chemicals reported was 507 million pounds in 2007.

- 95% (480 million pounds) were disposed of or otherwise released **on-site**, including
  - 55% (281 million pounds) in other land disposal, other than landfills and surface impoundments (such as waste piles).
  - 31% (158 million pounds) in on-site surface impoundments other than RCRA Subtitle C surface impoundments.
  - 6% (32 million pounds) to Class I wells, RCRA Subtitle C landfills and other landfills.
- 5% (27 million pounds) were disposed of or otherwise released **off-site**.
  - 3% (17 million pounds) of **off-site** disposal or other releases were to Class I wells, RCRA Subtitle C landfills and other landfills.
  - 1% (7 million pounds) were metals sent off-site for solidification/stabilization.

How do the 2007 PBT data compare to the 2006 PBT data?

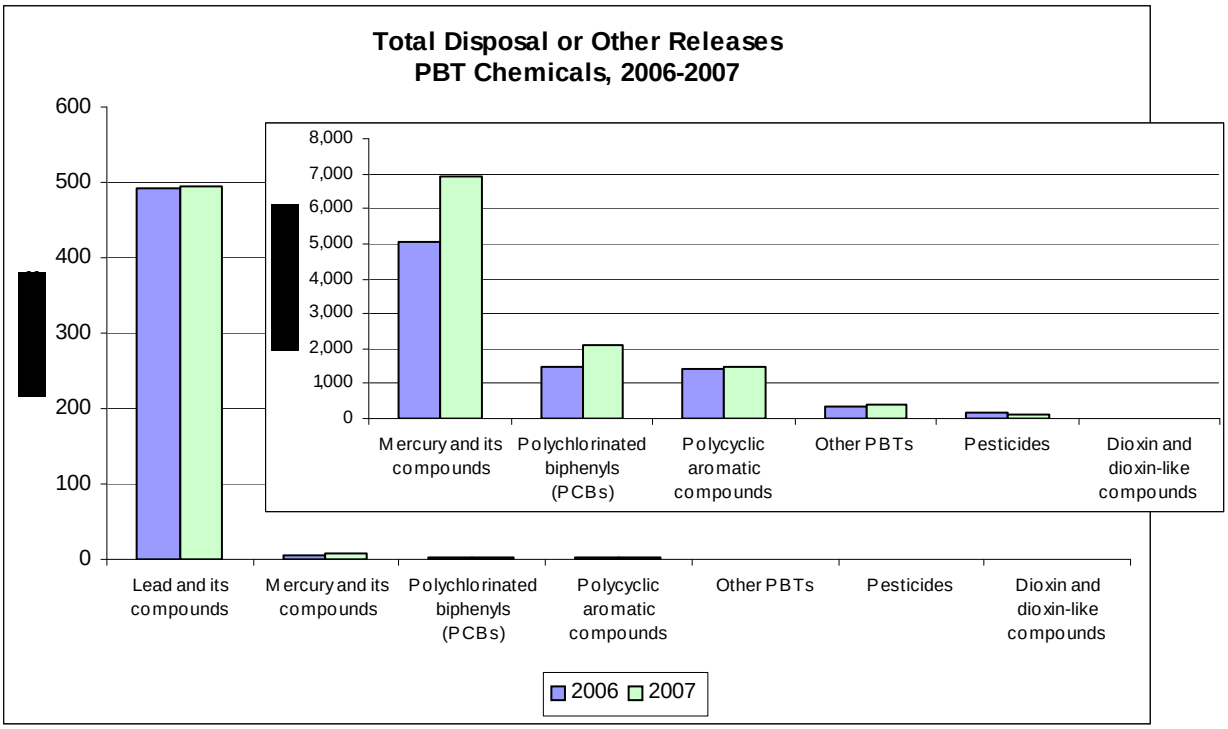
Overall, when compared to quantities reported for the previous year (2006), total disposal or other releases of persistent bioaccumulative and toxic (PBT) chemicals **increased** by 6 million pounds or 1% from 2006 to 2007.

- Lead and lead compounds **increased** by 3.5 million pounds (1%),
- Mercury and mercury compounds **increased** by 1.9 million pounds (38%),
- Polychlorinated biphenyls (PCBs) **increased** by almost 594,000 pounds (40%) and
- Polycyclic aromatic compounds **increased** by over 42,500 pounds (3%).

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 2007 (10% of total disposal or other releases of PBT chemicals). They **increased** by 7 million pounds (16%) from 2006 to 2007.

- On-site RCRA Subtitle C landfills **increased** by almost 575,000 pounds (4%)
- Other on-site landfills **increased** by 4.4 million pounds (43%)
- Off-site RCRA Subtitle C landfills **increased** by over 666,000 pounds (24%)
- Other off-site landfills **increased** by over 973,000 pounds (8%)

Air releases of PBT chemicals **increased** by almost 10,300 pounds (1%).



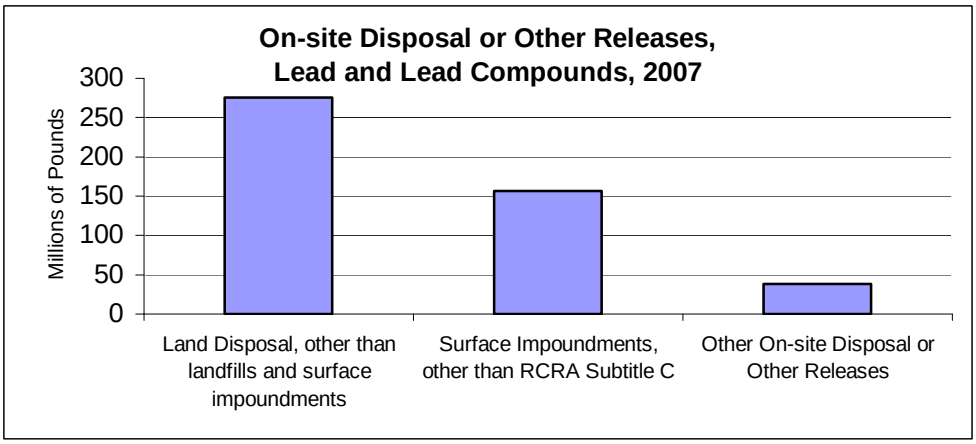
LEAD AND LEAD COMPOUNDS

The reporting threshold for lead (except for lead contained in steel, brass or bronze alloys) and lead compounds was lowered to 100 pounds beginning with 2001.

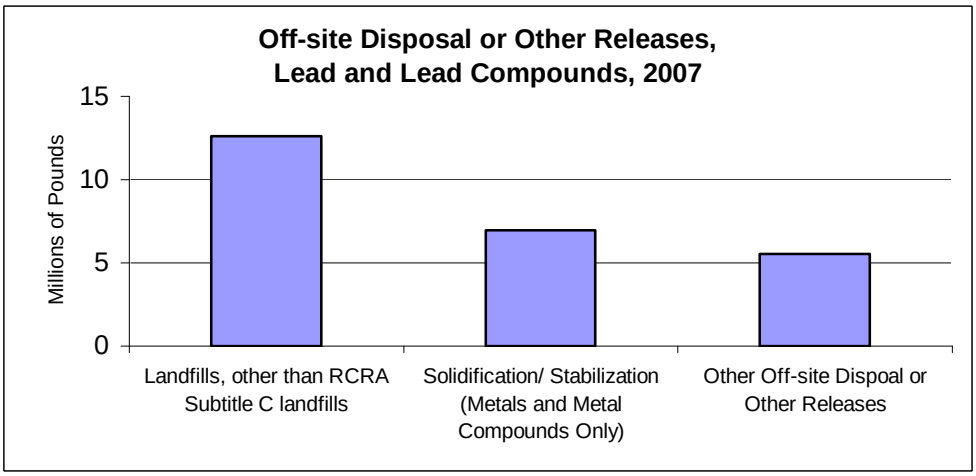
What was the total reported disposal or other releases of lead and lead compounds for 2007?

Total disposal or other releases of lead and lead compounds was 496 million pounds for 2007.

- 95% (471 million pounds) was disposed of or otherwise released **on-site**, including:
  - 56% (276 million pounds) of land disposal other than landfills and surface impoundments (such as waste piles, spills or leaks);
  - 32% (157 million pounds) to surface impoundments, other than RCRA Subtitle C surface impoundments; and
  - 0.2% (over 1.0 million pounds) of air emissions.



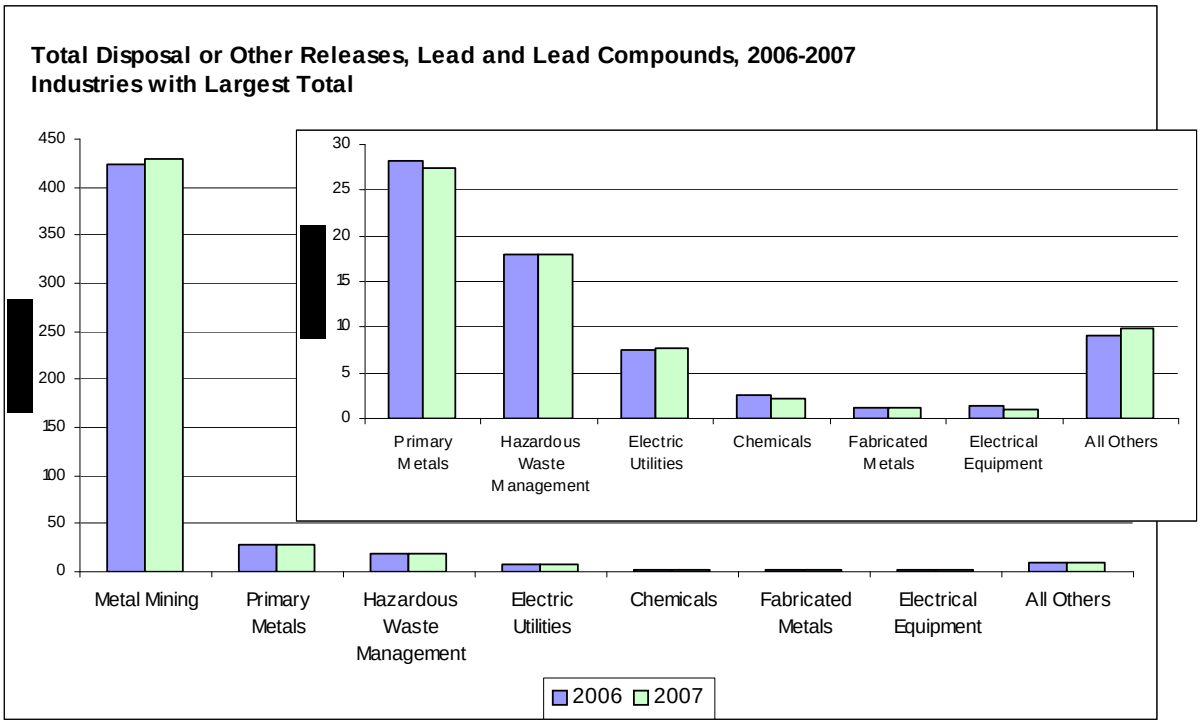
- 5% (25 million pounds) were **off-site** disposal or other releases, including
  - ► 3% (13 million pounds) to landfills other than RCRA subtitle C landfills
  - ► 1% (7 million pounds) of metals sent to solidification/stabilization.



How do the 2007 data compare to 2006 data for lead and lead compounds?

From **2006 to 2007** disposal or other releases for lead and lead compounds **increased** by 3.5 million pounds or 1% and air releases **increased** by 3,735 pounds (0.4%).

- The metal mining sector accounted for 86% (429 million pounds) of the total disposal or other releases in 2007. The mining sector had an **increase** of 1% (4.2 million pounds) from 2006 to 2007.
- Without the metal mining sector, total on- and off-site disposal or other releases of lead and lead compounds **decreased** by 1% (726,000 pounds) from 2006 to 2007, including.
  - ► **Decrease** of 3% (868,000 pounds) from primary metals sector and
  - ► **Decrease** of 33% (458,000 pounds) from electrical equipment sector.
  - ► Transportation equipment manufacturers had an **increase** of about 315,000 pounds (226%) from 2006 to 2007 and
  - ► Electric utilities had an **increase** of over 304,000 pounds (4%).



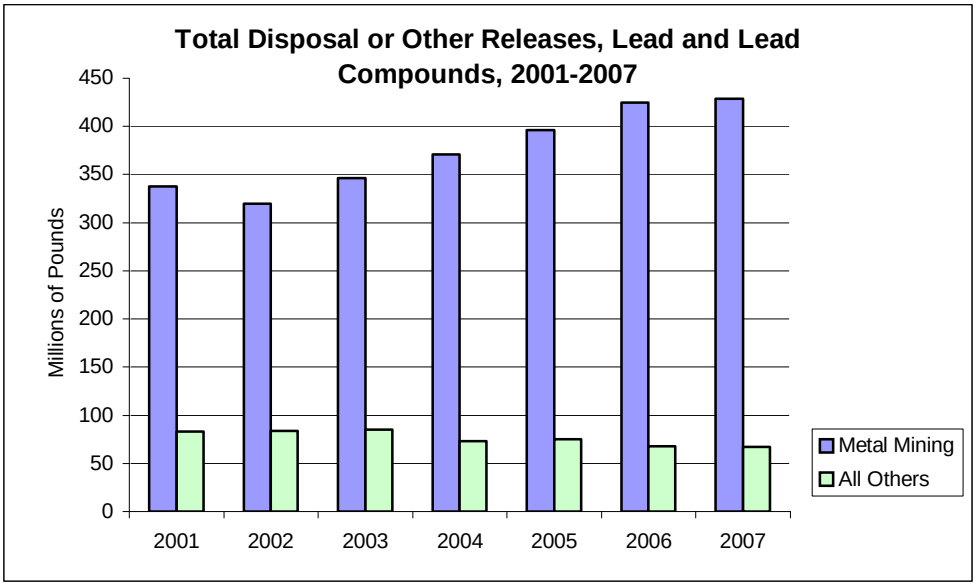
On- and off-site disposal or other releases of lead and lead compounds in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled 45 million pounds in 2007 (9% of total disposal or other releases for lead and lead compounds), an **increase** of 6 million pounds (15%) from 2006 to 2007.

- On-site RCRA Subtitle C landfills **decreased** by over 127,000 pounds (1%)
- Off-site RCRA Subtitle C landfills **increased** by almost 211,000 pounds (9%)
- Other on-site landfills **increased** by 4.5 million pounds (44%)
- Other off-site landfills **increased** by almost 887,000 pounds (8%)
- On-site Class I wells **increased** by almost 220,000 pounds (78%) and
- Off-site Class I wells **decreased** by almost 15,000 pounds (35%).

How do the 2007 data compare to 2001 (first year of reporting under the lowered threshold) data for lead and lead compounds?

From **2001 to 2007**, lead and lead compounds disposal or other releases **increased** by 75 million pounds or 18%.

- The metal mining sector had an **increase** of 91 million pounds (27%) from 2001 to 2007.
- Without the metal mining sector total disposal or other releases of lead and lead compounds **decreased** by 16 million pounds (19%) from 2001 to 2007.
- Other sectors reported **decreases**, including:
  - ► Primary metals facilities, with a **decrease** of 7.9 million pounds (22%) from 2001 to 2007; and
  - ► Hazardous waste management facilities, with a **decrease** of 6.2 million pounds (26%) from 2001 to 2007.



How much lead and lead compounds in total production-related waste was managed in 2007?

For 2007, total production-related waste managed for lead and lead compounds was 1.14 billion pounds. Over half of the lead waste was recycled.

- 56% (637 million pounds) was recycled on- and off-site.
  - 194 million pounds was recycled by primary metals facilities (139 million pounds on-site and 55 million pounds off-site)
  - 324 million pounds was recycled by electrical equipment manufacturers (124 million pounds on-site and 199 million pounds off-site)
- 44% (501 million pounds) was the quantity of lead and lead compounds managed by disposal or other releases.
  - Metal mining, 429 million pounds
  - Primary metals facilities, 32 million pounds
  - Hazardous waste management facilities, 19 million pounds.

Why is the quantity disposed of or otherwise released here (501 million pounds) different from total disposal or other releases above (496 million pounds)?
When looking at total production-related waste, the quantity disposed of or otherwise released includes all reported disposal or other releases except those due to remedial, catastrophic or one-time releases. For lead and lead compounds, this was 3.2 million pounds for 2007. On the other hand, total disposal or other releases, discussed above, excludes amounts that were sent to other TRI facilities and reported as disposed or otherwise released (to avoid double-counting). That amount was 7.9 million pounds for 2007.

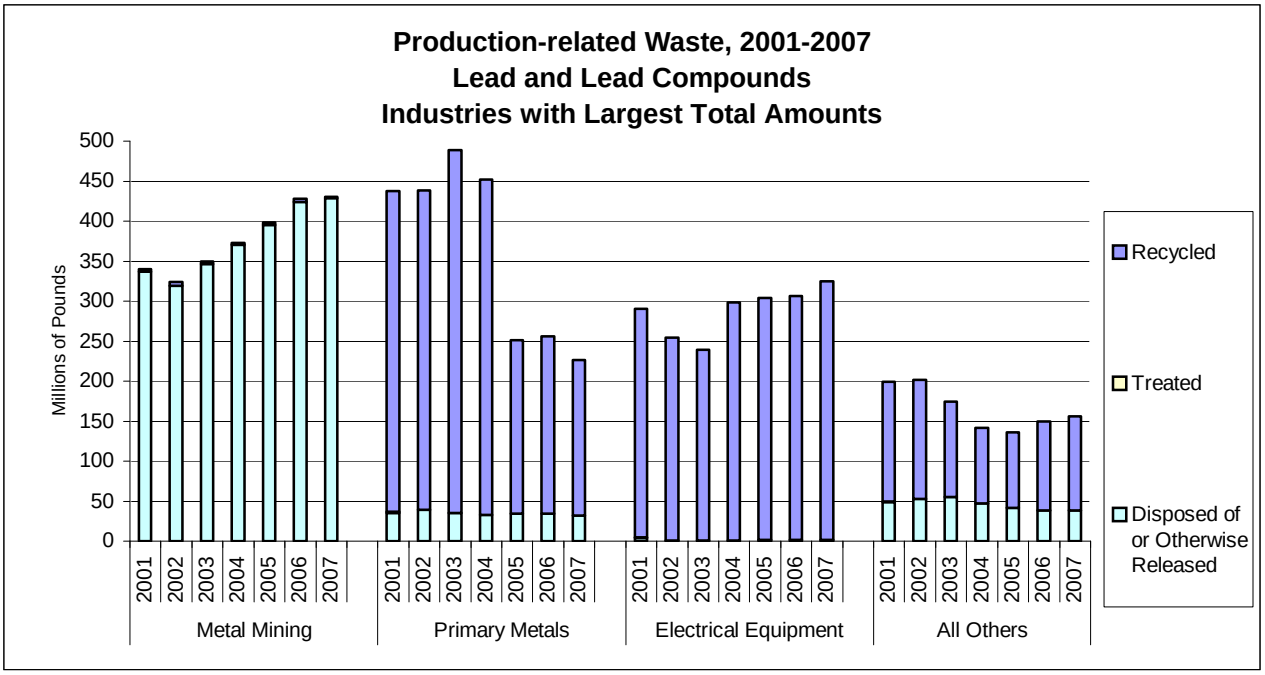
How do 2007 data on production-related waste managed compare to 2006 and to 2001 for lead and lead compounds?

Total production-related waste managed for lead and lead compounds **decreased** by 0.3% (3.4 million pounds) from 2006 to 2007 and had an overall **decrease** of 10% (130 million pounds) from 2001 to 2007.

- Recycling **decreased** by 1% from 2006 to 2007 and **decreased** by 24% from 2001 to 2007.
- Quantity disposed of or otherwise released **increased** by 0.4% from 2006 to 2007 and **increased** by 18% from 2001 to 2007.

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 0.4% from 2006 to 2007 and 26% from 2001 to 2007.
- Electrical equipment reported an **increase** of 6% from 2006-2007 and 12% from 2001-2007.
- Primary metals reported a **decrease** of 11% from 2006-2007 and 48% from 2001-2007.



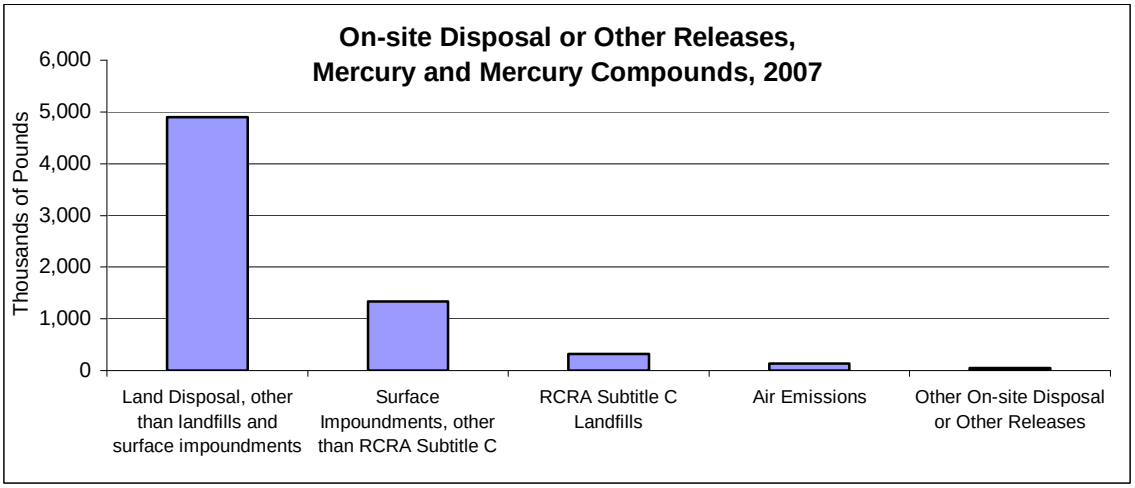
MERCURY AND MERCURY COMPOUNDS

The reporting threshold for mercury and mercury compounds was lowered to 10 pounds beginning with reporting year 2000.

What was the total mercury and mercury compounds disposal or other releases for 2007?

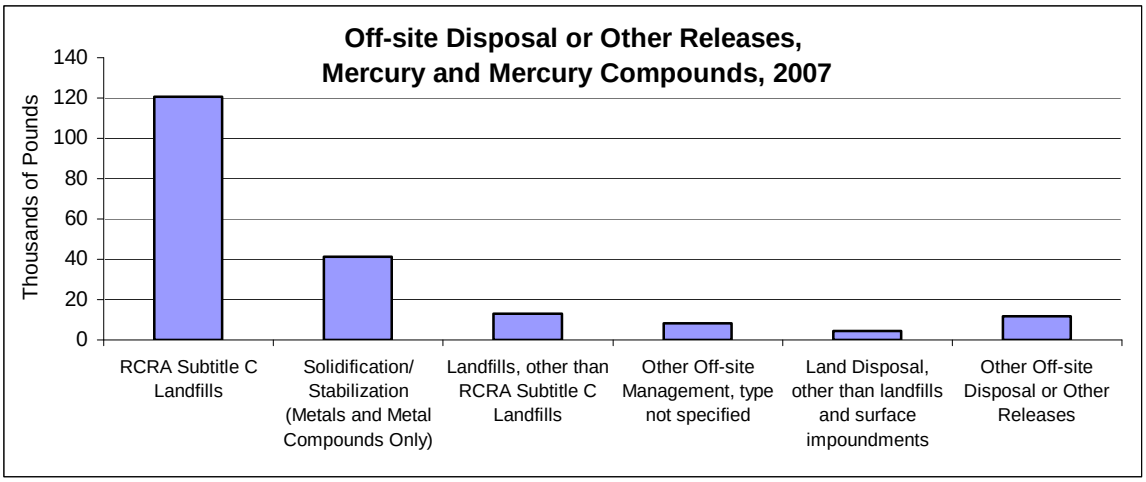
Total disposal or other releases of mercury and mercury compounds was 6.9 million pounds in 2007.

- 97% (6.7 million pounds) was **on-site** disposal or other releases, including
  - 71% (4.9 million pounds) was land disposal other than landfills and surface impoundments (such as waste piles, spills or leaks)
  - 19% (1.3 million pounds) was surface impoundments, other than RCRA Subtitle C surface impoundments
  - 5% (almost 320,000 pounds) of RCRA Subtitle C landfills
  - 2% (over 131,000 pounds) of air emissions



- Two metal mining facilities accounted for 61% (4.2 million pounds) of the total on- and off-site disposal or other releases of mercury and mercury compounds for 2007.
  - These facilities reported disposal or other releases mainly to on-site land disposal other than landfills (such as waste piles) and to surface impoundments, other than RCRA Subtitle C surface impoundments.

- 3% (199,164 pounds) were **off-site** disposal or other releases.
  - 1% (120,714 pounds) went to RCRA Subtitle C landfills
  - 0.6% (41,200 pounds) were metals sent for stabilization/solidification
  - 0.2% (12,947 pounds) went to landfills, other than RCRA Subtitle C landfills
  - 0.1% (8,134 pounds) were other off-site management, type not specified
  - 0.1% (4,451 pounds) went to land disposal, other than landfills and surface impoundments.



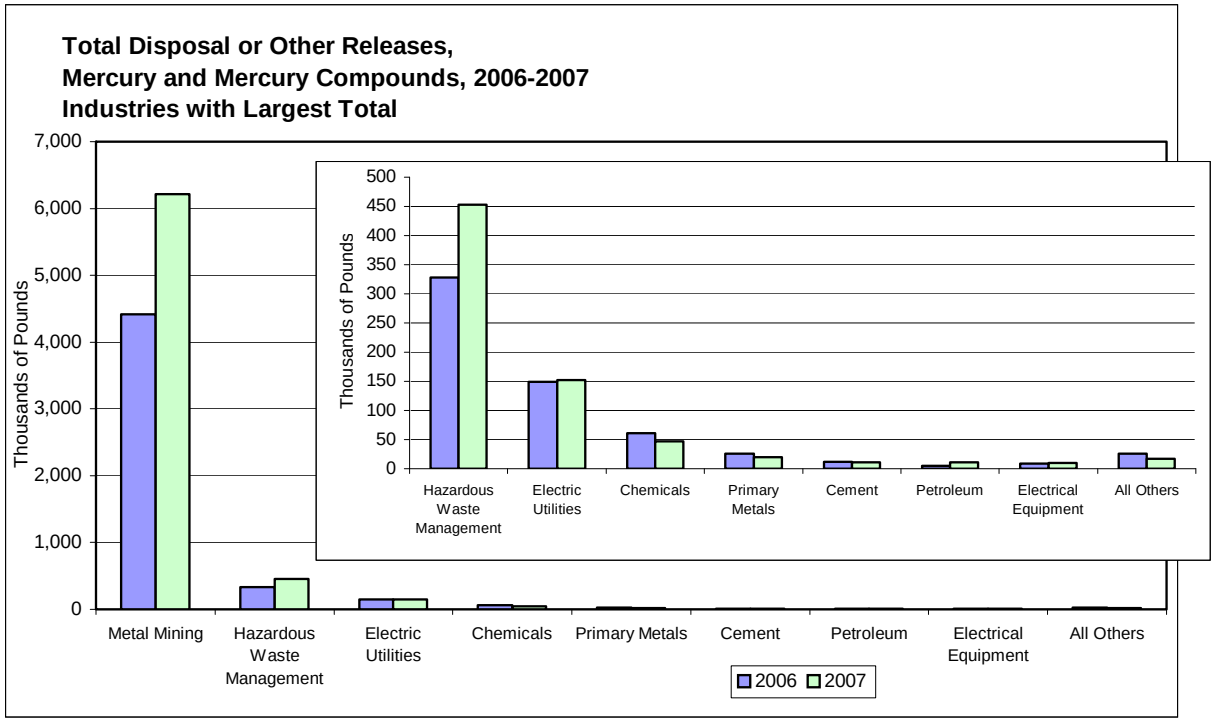
Which industry sectors reported the largest disposal or other releases of mercury and mercury compounds in 2007?

- The metal mining industry reported the largest disposal or other releases of mercury and mercury compounds (90% or 6.2 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 72% (93,814 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 60% (126,477 pounds) of all off-site disposal or other releases.

How do the 2007 data compare to data for 2006 for mercury and mercury compounds?

From **2006 to 2007**, total disposal or other releases for mercury and mercury compounds **increased** by 38% (1.9 million pounds).

- Total on- and off-site disposal for the metal mining sector **increased** 41% (1.8 million pounds) and for hazardous waste/solvent recovery facilities **increased** by 38% (almost 125,000 pounds).
- Total on-site disposal or other releases **increased** by 38% (1.8 million pounds), including
  - ► An **increase** of 2.0 million pounds (70%) in other land disposal, other than landfills and surface impoundments (waste piles, spills and leaks).
  - ► However, on-site air emissions **decreased** by 3,983 pounds (3%).
- Total off-site disposal or other releases **increased** by 39% (55,388 pounds).
  - ► Including an **increase** of 75,982 pounds (170%) in RCRA Subtitle C landfills.



Air emissions of mercury and mercury compounds.
Electric utilities reported 72% of all air emissions of mercury and mercury compounds in 2007. Air emissions from electric utilities increased by 368 pounds from 93,446 pounds in 2006 to 93,814 pounds in 2007.

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 over 497,000 pounds in 2007 (7% of total disposal or other releases of mercury and mercury compounds). They **increased** by almost 134,000 pounds (37%) from 2006 to 2007.

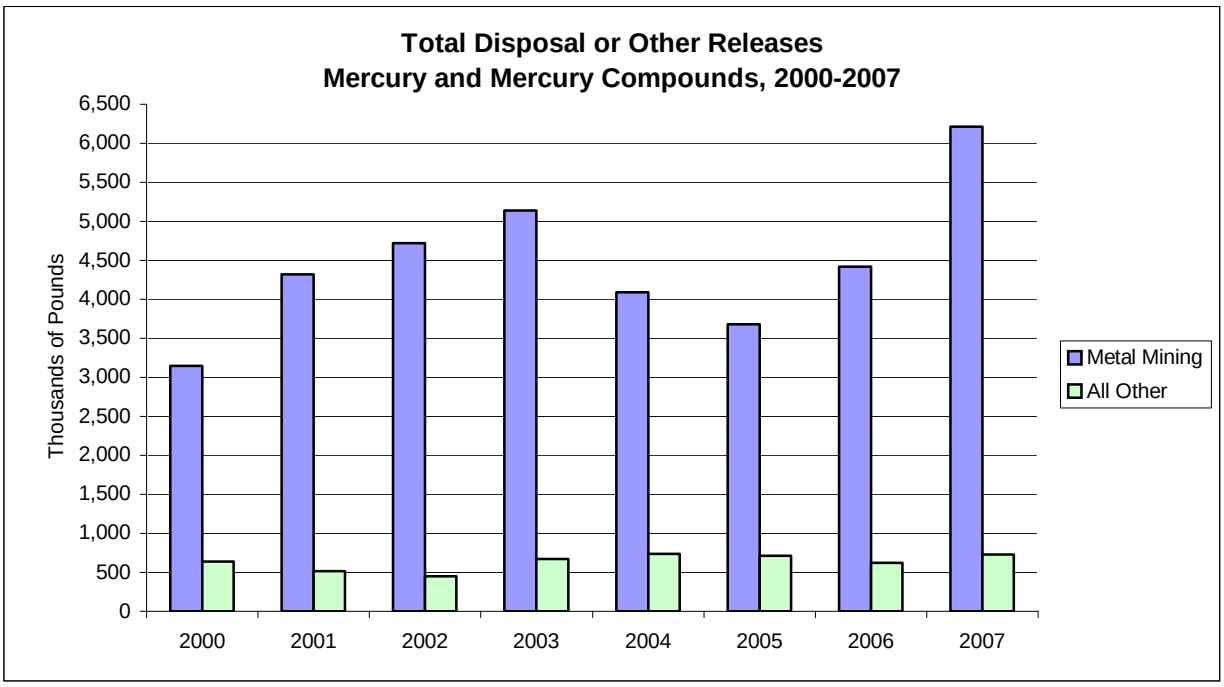
- On-site RCRA Subtitle C landfills **increased** by almost 57,000 pounds (22%).
- Off-site RCRA Subtitle C landfills **increased** by almost 76,000 pounds (170%)

How do the 2007 data compare with the 2000 (the first year of reporting under the lowered threshold) data for mercury and mercury compounds?

From **2000 to 2007**, disposal or other releases for mercury and mercury compounds **increased** by 83% (3.1 million pounds).

- Total on-site disposal or other releases **increased** by 95% (3.3 million pounds)
- Total off-site disposal or other releases **decreased** by 40% (over 130,000 pounds)
- Total on-site disposal by mining facilities increased by 98% (3.1 million pounds)
- Two metal mining facilities reported a combined **increase** of 2.1 million pounds from 2000 to 2007.

- On-site air emissions of mercury and mercury compounds **decreased** by almost 30,000 pounds (19%) from 2000 to 2007.



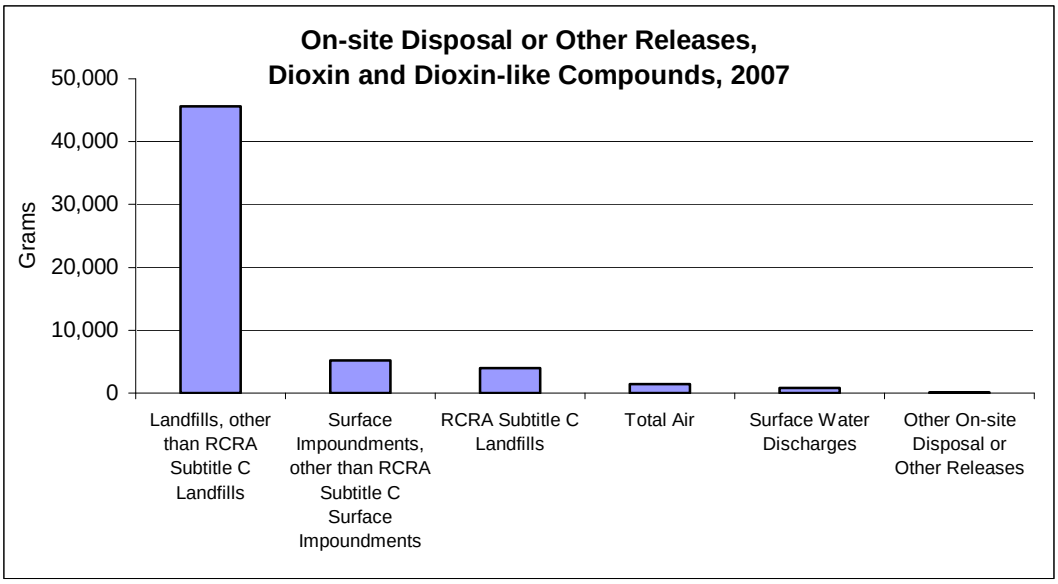
DIOXIN AND DIOXIN-LIKE COMPOUNDS

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

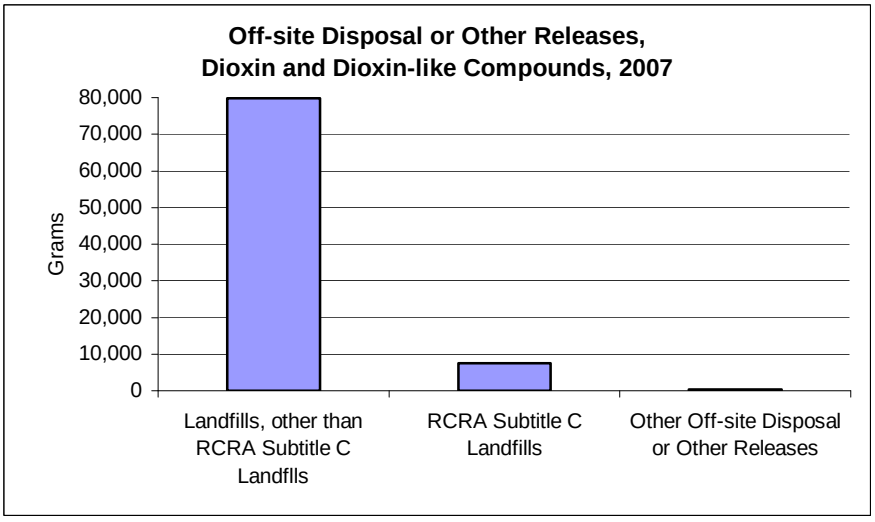
What was the total disposal or other releases for dioxin and dioxin-like compounds for 2007?

Total disposal or other releases for dioxin and dioxin-like compounds was 144,729 grams (approximately 319 pounds) in 2007.

- 39% (57,152 grams or 126 pounds) were **on-site** disposal or other releases, including:
  - 32% (45,634 grams or 101 pounds) in landfills, other than RCRA Subtitle C landfills
  - 4% (5,188 grams or 11 pounds) in surface impoundments, other than RCRA Subtitle C surface impoundments
  - 3% (4,007 grams or 9 pounds) in RCRA Subtitle C landfills
  - 1% (1,411 grams or 3.1 pounds) of air emissions
  - 0.5% (787 grams or 1.7 pounds) of surface water discharges



- 61% (87,576 grams or 193 pounds) were **off-site** disposal or other releases, including
  - ► 55% (79,823 grams or 176 pounds) of disposal in off-site landfills other than RCRA Subtitle C landfills
  - ► 5% (7,436 grams or 16 pounds) in off-site RCRA Subtitle C landfills



How do the 2007 data compare to data for 2006 data for dioxins and dioxin-like compounds?

From **2006 to 2007**, total disposal or other releases of dioxin and dioxin-like compounds **increased** by 14,455 grams or 32 pounds (11%).

> **What are some of the reasons for the increase in total disposal or other releases of dioxin and dioxin-like compounds from 2006 to 2007?**
> *One chemical manufacturer reported an increase of 53,619 grams from 2006-2007 in disposal off-site in landfills other than RCRA Subtitle C landfills.*

- On-site disposal or other releases **decreased** by 31% (25,366 grams or 56 pounds), including a decrease of 22,459 grams reported by one chemical manufacturer.
  - ► On-site air emissions **decreased** by 6% (88 grams or 0.2 pounds) from 2006 to 2007.

> **Air emissions of dioxin and dioxin-like compounds.**
> *Electric utilities reported half of all air releases of dioxins in 2007 and had an overall decrease of 9 grams from 2006. Hazardous waste/solvent recovery facilities had decreases of 31 grams, chemical manufacturers decreased by 29 grams and cement plants decreased by 24 grams from 2006 to 2007.*

- Off-site disposal or other releases **increased** by 83% (39,821 grams or 88 pounds), including an increase of 46,557 grams by one chemical manufacturer.

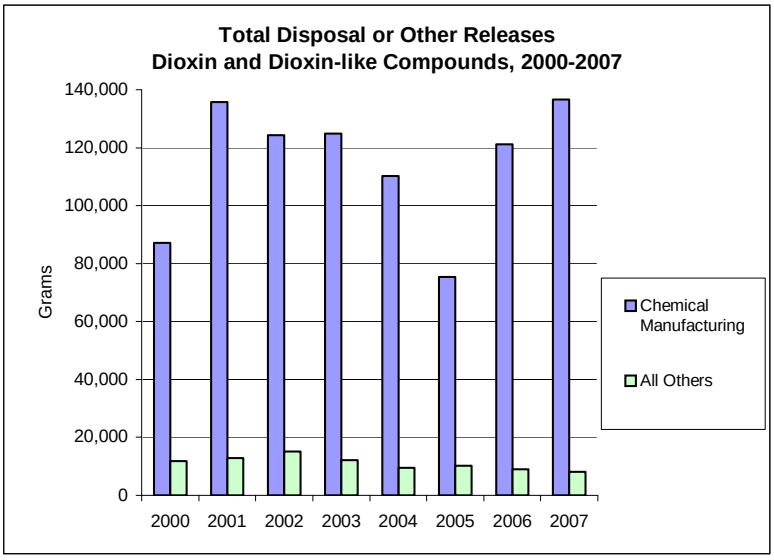
On- and off-site disposal or other releases of dioxins and dioxin-like compounds in RCRA Subtitle C landfills, other landfills and Class I underground injection wells totaled 136,904 grams or 302 pounds in 2007 (95% of total disposal or other releases). They **increased** by 12% (15,038 grams or 33 pounds) from 2006 to 2007.

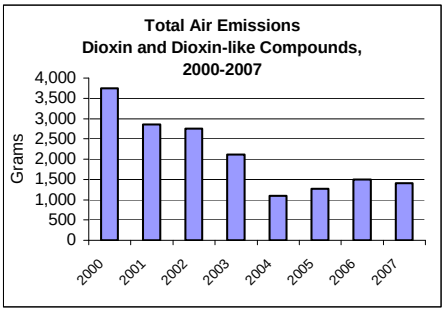
- Off-site landfills other than RCRA Subtitle C landfills **increased** by 146% (47,389 grams or 104 pounds).
- On-site landfills other than RCRA Subtitle C landfills **increased** by 9% (3,613 grams or 8 pounds).
- However, on-site RCRA Subtitle C landfills **decreased** by 88% (28,361 grams or 63 pounds) and
- Off-site RCRA Subtitle C landfills **decreased** by 51% (7,587 grams or 17 pounds).

How do the 2007 data compare to data for 2000 (the first year of reporting) for dioxins and dioxin-like compounds?

From 2000 to 2007, total disposal or other releases of dioxin and dioxin-like compounds **increased** by 46% (45,826 grams or 101 pounds).

- On-site air emissions **decreased** by 62% (2,340 grams or 5.2 pounds) from 2000 to 2007.





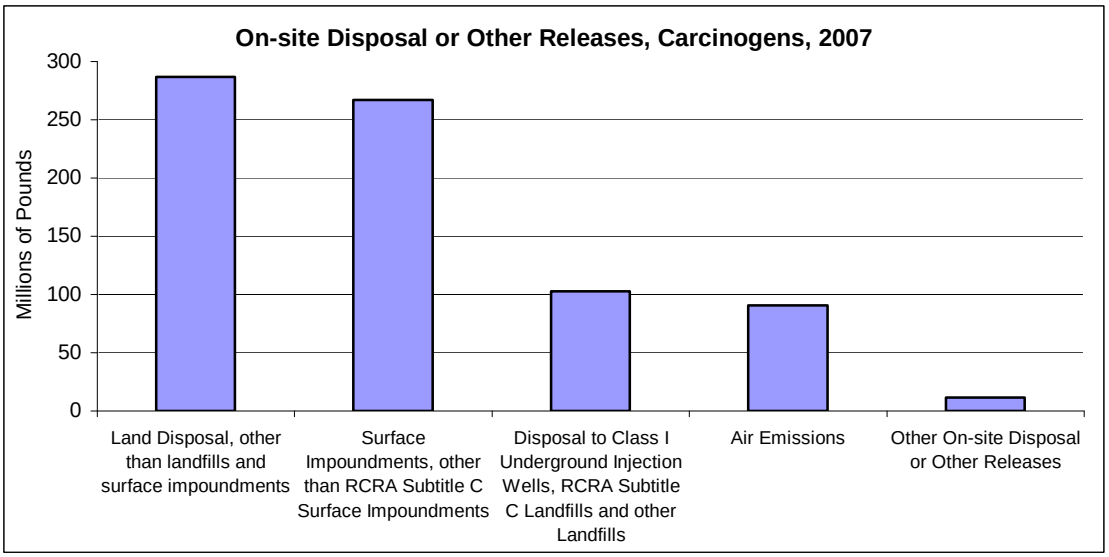
CARCINOGENS

EPA has separated carcinogens for additional analysis in 2007. 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 2007; 46 of the 179 carcinogens were not reported for 2007.

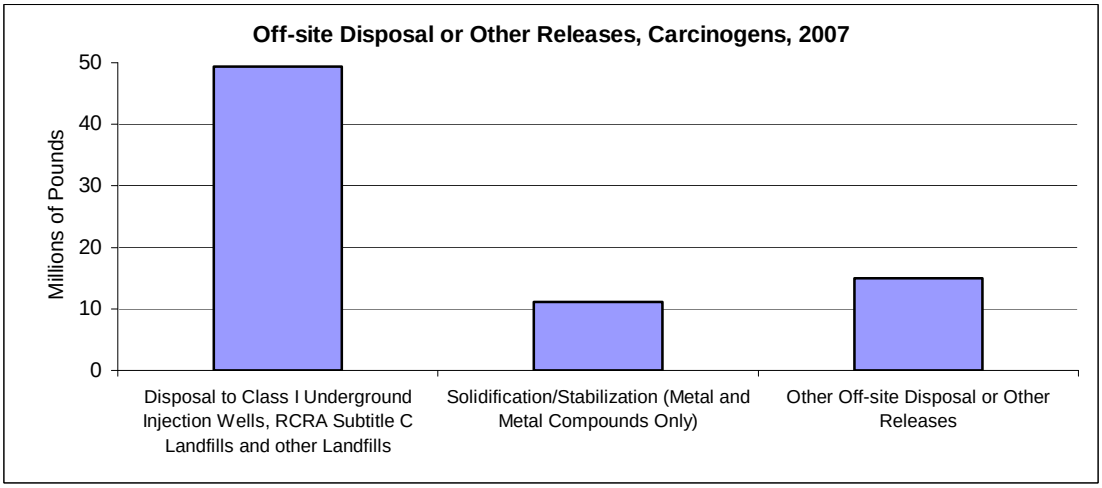
What was the total carcinogen disposal or other releases for 2007?

Total disposal or other releases of carcinogens reported was 835 million pounds in 2007. Most releases were to some form of land disposal.

- 91% (759 million pounds) were disposed of or otherwise released **on-site**, including
  - 34% (287 million pounds) in other land disposal, other than landfills and surface impoundments (such as waste piles, spills or leaks)
  - 32% (267 million pounds) in on-site surface impoundments other than RCRA Subtitle C surface impoundments
  - 12% (103 million pounds) to Class I wells, RCRA Subtitle C landfills and other landfills and
  - 11% (91 million pounds) in on-site air emissions.



- 9% (76 million pounds) were disposed of or otherwise released **off-site**.
  - ► 6% (49 million pounds) of off-site disposal or other releases were to Class I wells, RCRA Subtitle C landfills and other landfills
  - ► 1% (11 million pounds) was sent off-site for solidification/stabilization of metals and metal compounds.



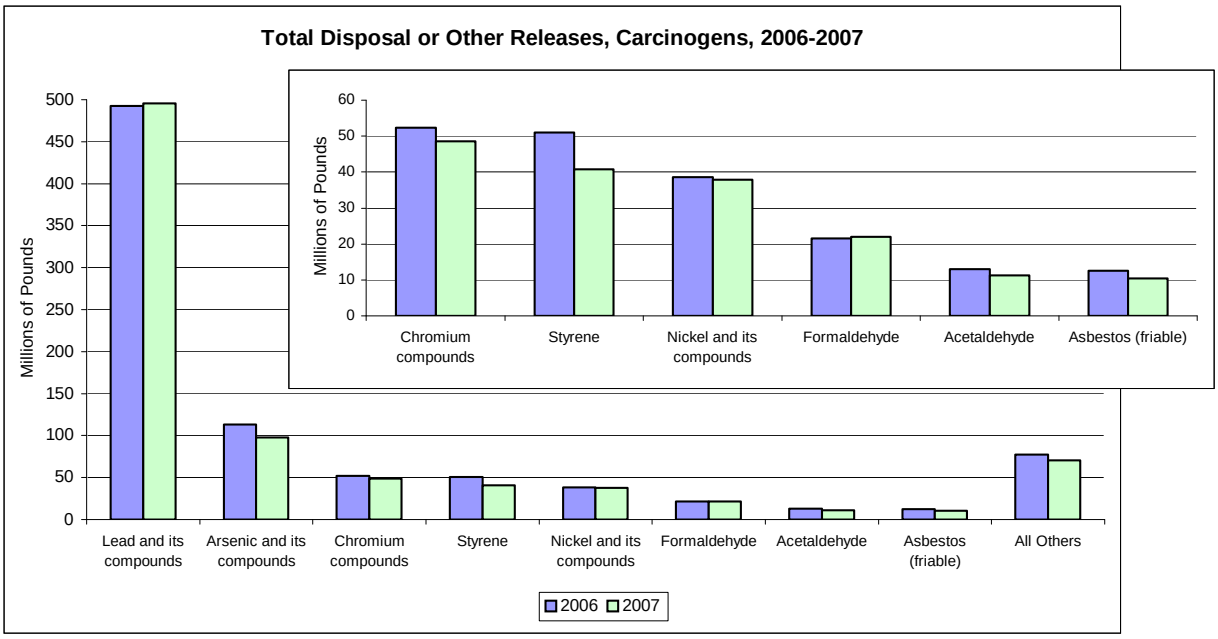
What were the top carcinogens disposed of or otherwise released in 2007?

- 59% (496 million pounds) of total disposal or other releases of carcinogens in 2007 was accounted for by lead and lead compounds.
- 12% (98 million pounds) was arsenic and arsenic compounds.
- Other disposal or other releases of carcinogens in 2007 included:
  - ► 49 million pounds of chromium compounds and
  - ► 41 million pounds of styrene (with 38 million pounds of that as air releases).

How do the 2007 carcinogen data compare to the 2006 carcinogen data?

Overall, when compared to quantities reported for the previous year (2006), total disposal or other releases of carcinogens **decreased** by 37 million pounds or 4% from 2006 to 2007. Air releases **decreased** by 15 million pounds or 14%.

- Lead and lead compounds **increased** by 3.5 million pounds (1%), including an **increase** in air releases of 3,735 pounds (0.4%),
- Arsenic and arsenic compounds **decreased** by 16 million pounds (14%),
- Chromium compounds **decreased** by 3.6 million pounds (7%),
- Styrene air releases **decreased** by 10 million pounds (21%), and
- Acetaldehyde air releases **decreased** by 1.6 million pounds (13%).



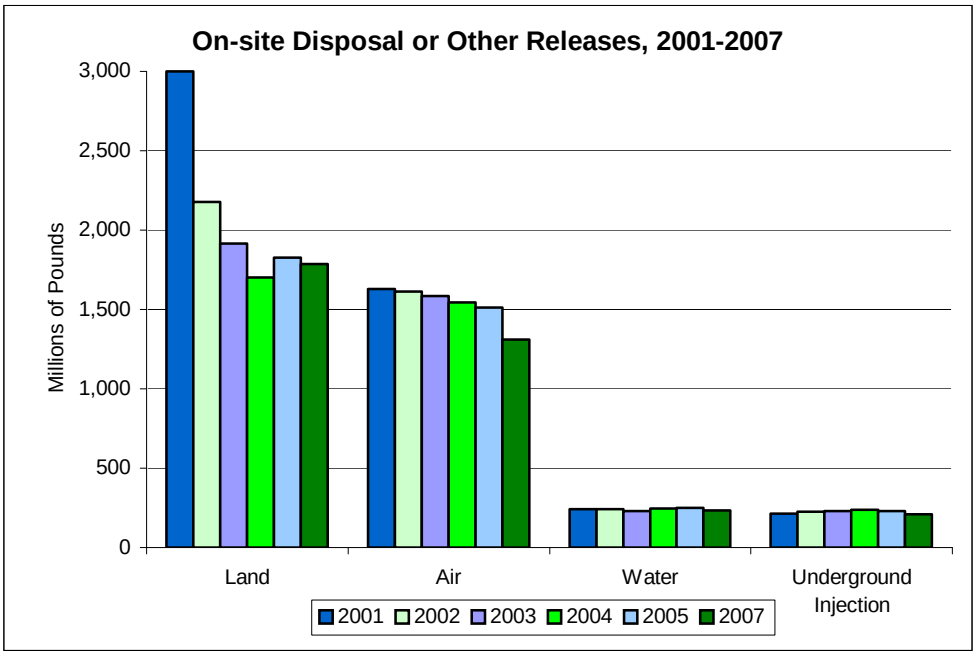
Looking at TRI data over the years

TRI DATA, 2001-2007

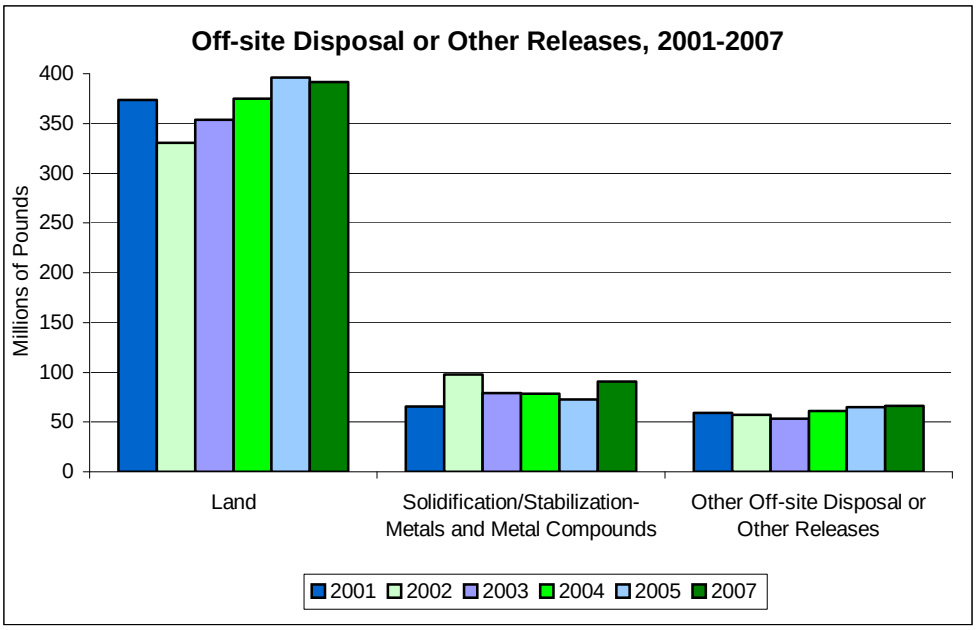
Over the five years from 2001 to 2007, total on- and off-site disposal or other releases of TRI chemicals **decreased** by 27% (by 1.50 billion pounds). The number of facilities reporting **decreased** by 15%.

- The metal mining sector reported an overall **decrease** of 1.12 billion pounds (49%).
- Without the metal mining sector, total disposal or other releases **decreased** by 12% (by 381 million pounds).
- On-site disposal or other releases **decreased** by 1.55 billion pounds (30%).
  - ► Land disposal **decreased** by 1.21 billion pounds (40%), with metal mining accounting for a **decrease** of 1.12 billion pounds.

- Total air emissions **decreased** by 319 million pounds (20%), with electric utilities accounting for a **decrease** of 76 million pounds, chemical manufacturing with a **decrease** of 61 million pounds and plastics products accounting for a **decrease** of 34 million pounds.
- Surface water releases **decreased** by 11 million pounds (5%), with chemical manufacturing accounting for a **decrease** of 32 million pounds and the food products industry accounting for an **increase** of 5.8 million pounds and petroleum products for an **increase** of 4.4 million pounds.
- Underground injection **decreased** by 6.6 million pounds (3%), with hazardous waste facilities accounting for a **decrease** of 4.4 million pounds and chemical manufacturing accounting for a **decrease** of 1.7 million pounds.



- Off-site disposal or other releases **increased** by 50 million pounds (10%).
  - Land disposal **increased** by 18 million pounds (5%), with primary metals accounting for an **increase** of 39 million pounds, hazardous waste management facilities a **decrease** of 17 million pounds and transportation equipment manufacturers a **decrease** of 5 million pounds.
  - Solidification/stabilization of metals and metal compounds **increased** by 25 million pounds (39%), with primary metals accounting for an **increase** of 38 million pounds and chemical manufacturers a **decrease** of 5.5 million pounds.

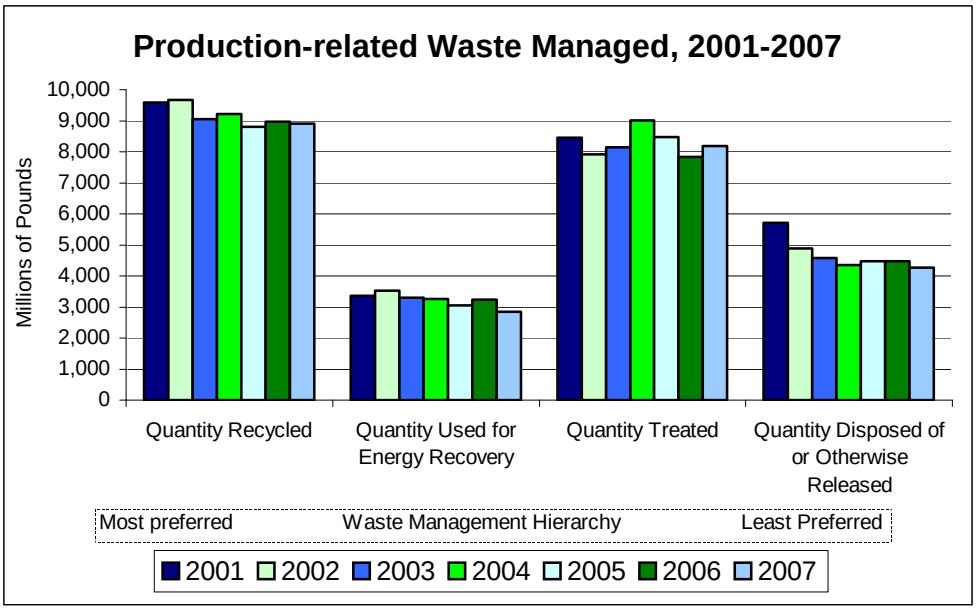


What are some of the reasons for the overall decrease in disposal or other releases from 2001 to 2007?
The metal mining sector had a decrease of 49% (1.12 billion pounds) from 2001 to 2007. This sector may have been adjusting their reporting to conform to a court case, Barrick v. EPA. The decrease could also be due other factors, such as changes in composition of the ore.

How did total production-related waste managed change from 2001 to 2007?

Total production-related waste managed **decreased** by 11% (2.90 billion pounds) from 2001 to 2007.

- Quantity disposed of or otherwise released **decreased** by 25% (1.45 billion pounds)
- Recycling on- and off-site **decreased** by 7% (675 million pounds)
- Energy recovery on- and off-site **decreased** by 15% (502 million pounds)
- Treatment on- and off-site **decreased** by 3% (276 million pounds)



Average per facility, 2001, 2006 and 2007

	2001	2006	2007	Change 2006-2007	Change 2001-2007
	Pounds/facility	Pounds/facility	Pounds/facility	Percent	Percent
Total Disposal or Other Releases					
All Industry Sectors	221,426	190,323	191,446	1%	-14%
Without metal mining	133,635	136,617	139,346	2%	4%
Total Production-Related Waste Managed					
All Industry Sectors	1,051,615	1,052,759	1,101,512	5%	5%
Without metal mining	963,207	997,080	1,046,924	5%	9%

TRI CHEMICAL HAZARD

In an attempt to look at chemical hazards, EPA has used the Risk Screening Environmental Indicators (RSEI) "toxicity-weighted-pounds" methodology to conduct additional analysis.[2] The idea is to provide additional insights that go beyond simple pounds analysis and reflect some basic measure of chemical toxicity. This analysis does not address fate and transport of chemicals or specific containment methods, populations, non-TRI chemical burdens or other factors that would be addressed in in-depth risk assessments.

Methodology Used:
Toxicity Weighted Pounds is total air releases times inhalation toxicity weight plus surface water discharges times oral toxicity weight plus maximum of inhalation/oral times all other disposal or other releases.

The RSEI toxicity weighting method uses a proportional system of numeric weights that reflect the relative toxicities of

[2] For additional information on RSEI, please see http://www.epa.gov/oppt/rsei/

chemicals. RSEI toxicity weights use calculated human health values from various EPA toxicity data sources that generally are considered protective of human health.

For this analysis, EPA included all TRI chemicals that have RSEI hazard weights and addresses total disposal or other releases to all media. The analysis does not address dioxin and some other chemicals where relative toxicity weightings were not available.

***Major Caveats to RSEI Toxicity Weights Analysis**:*

- *Approach does not address containment (such as landfill liners, etc.) or fate and transport of chemicals*
- *Does not address dioxin or certain other chemicals*
- *Must consider unique caveats for 23 chemicals, including chromium (e.g., only hexavalent fraction of chromium used).*
- *Assigned toxicity weights include uncertainty factors depending on the amount and quality of data that is available for a particular chemical (i.e., toxicity weights may be high due to lack of information on a chemical as well as due to proven high toxicity).*
- *Toxicity weighted pounds depends on relative assignment of hazard and can only be used for comparison purposes from year to year and chemical to chemical. Toxicity weighted pounds should not be viewed as any kind of a single stand-alone measure.*

Are there specific chemicals that appear to drive the nationally aggregated values?

Three chemicals accounted for almost three-quarters of the total when RSEI Toxicity weights are applied for 2007.

- Asbestos accounted for 31% of total disposal or other releases weighted by RSEI toxicity values
  - Asbestos has a high value due to an assigned toxicity weighting of 1,000,000, the largest of all TRI chemicals with RSEI toxicity weights.
  - In 2007, most asbestos was landfilled, with 49% going to on-site non-RCRA Subtitle C landfills, 45% to on-site RCRA Subtitle C landfills and 5% to off-site non-RCRA Subtitle C landfills in 2007.
- Manganese and its compounds accounted for 26% of total disposal or other releases weighted by RSEI toxicity values
  - Manganese and its compounds has a relatively high toxicity weight (36,000) but also had large amounts reported, ranking fifth for total disposal or other releases (not weighted), among TRI chemicals with RSEI toxicity weights.
  - In 2007, disposal or other releases consisted of 23% in on-site and 22% in off-site non-RCRA Subtitle C landfills on-site and 17% in non-RCRA Subtitle C surface impoundments.
- Arsenic and its compounds accounted for 17% of total disposal or other releases weighted by RSEI toxicity values
  - Arsenic and its compounds has a relatively high toxicity weight (60,000) but also had large amounts reported, ranking eleventh for total disposal or other releases (not weighted), among TRI chemicals with RSEI toxicity weights.

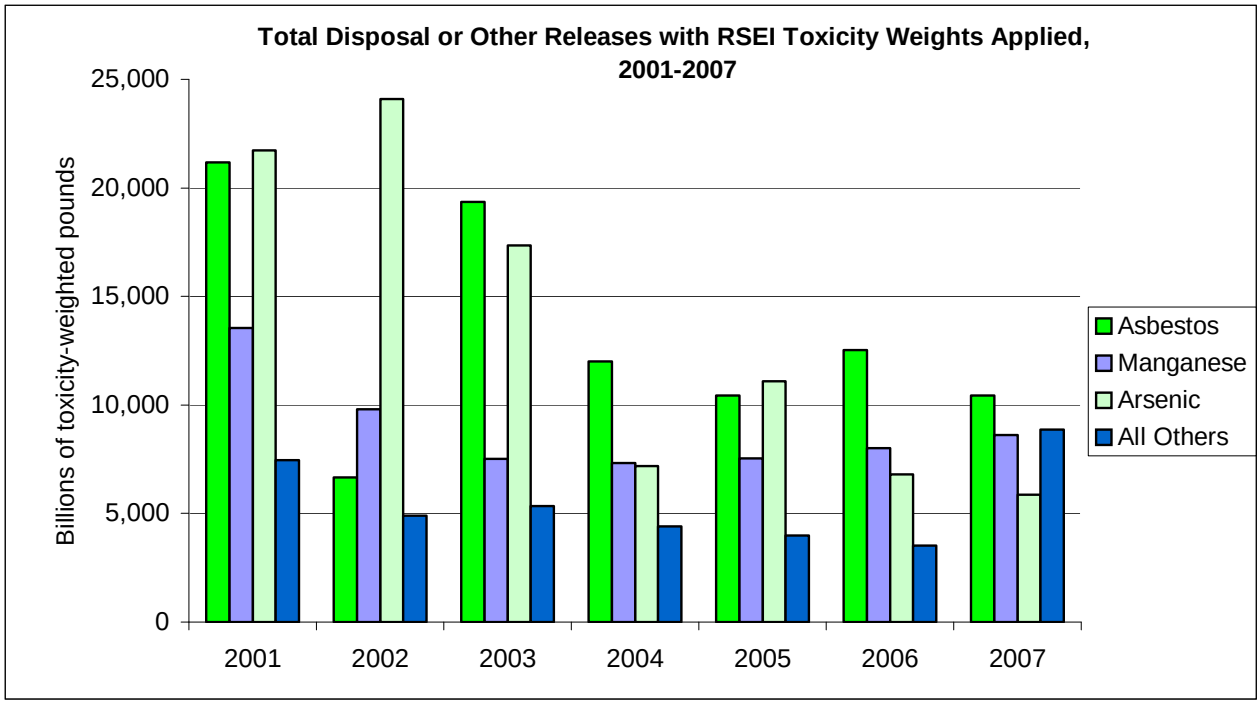
- In 2007, 87% of arsenic and its compounds were disposed of on-site in surface impoundments, other than RCRA Subtitle C surface impoundments.

What were the changes in toxicity weighted pounds from 2006 to 2007?

In comparing the nationally aggregated total toxicity weighted pounds of disposal or other releases for 2006 to 2007, there was a decrease by 7% using RSEI toxicity weighted pounds, for TRI chemicals with RSEI toxicity weights. The decrease in pounds for the same group of TRI chemicals (those with RSEI toxicity weights) was 5%.

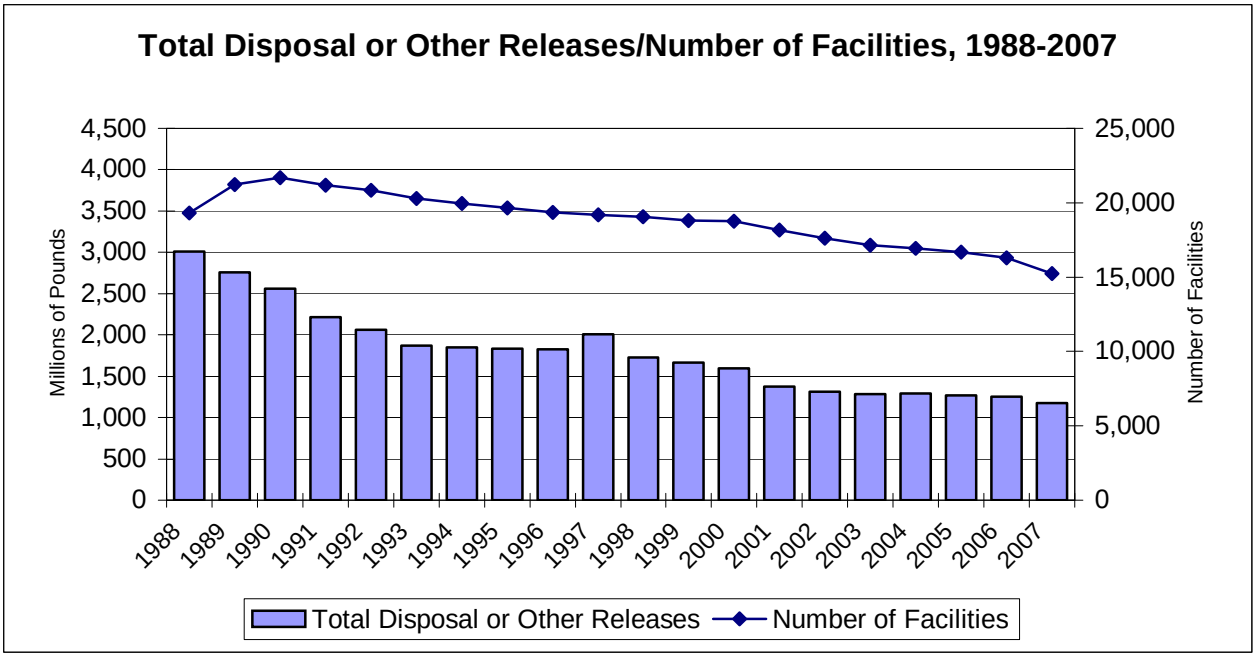
What were the changes in RSEI toxicity weighted pounds from 2001 to 2007?

From 2001 to 2007, RSEI toxicity weighted pounds decreased by 52% for those chemicals that have toxicity weightings. The decrease in pounds for the same group of chemicals was 27%. However, there were yearly fluctuations due in part to amounts reported for three chemicals: Arsenic and its compounds, asbestos, and manganese and its compounds. As with the large decrease in total pounds over this period, much of this decrease could be due to the change in reporting by mining facilities, particularly for arsenic and its compounds. The metal mining sector reported 95% of total disposal or other releases of arsenic and its compounds for 2001 and a decrease of 76% from 2001 to 2007. The primary metals sector reported the largest total disposal or other releases of manganese and its compounds during this period and the hazardous waste management facilities had the largest total disposal or other releases of asbestos.



TRI DATA, 1988-2007

Looking at trends in the industries and chemicals that have been reported consistently since 1988, total on- and off-site disposal or other releases of TRI chemicals **decreased** by 61% (1.83 billion pounds). The number of facilities reporting to TRI **decreased** by 21% over that same time period. This decrease only takes into consideration the 1988 core set of chemicals and industry sectors (i.e., those chemicals/industry sectors 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 2009.