# 2011 TRI National Analysis Questions and Answers

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**Overview of the 2011 Data**

**Q: What are the highlights of this year's data analysis?**

Total toxic air releases in 2011 declined 8 % from 2010, while total releases of toxic chemicals increased for the second year in a row. Most of the decline in air releases was due to decreases in hazardous air pollutant (HAP) emissions, such as hydrochloric acid, at electric utilities. Air releases of mercury, another key HAP, were also lower. Likely reasons for the decreases seen over the past several years include installation of control technologies at coal fired power plants and a shift to from coal other fuel sources.

From 2010 to 2011, total disposal or other releases increased by 8%, mainly due to an increase in land disposal at metal mines, which typically involve large facilities handling large volumes of material. In this sector, even a small change in the chemical composition of the ore being mined - which EPA understands is one of the asserted reasons for the increase in total reported releases - can lead to big changes in the amounts of toxic chemicals reported nationally.

Releases into surface water decreased 3% and releases to land increased 19% since 2010, with the latter again due primarily to the metal mining sector, as explained above.

The 2011 reporting year was the first year that facilities were required to report on a group of 16 chemicals collectively called the National Toxicology Program Carcinogens. These chemicals have been classified as "reasonably anticipated to be a human carcinogen" by the National Toxicology Program (NTP). Twelve of the chemicals are reported to TRI individually and 4 are reported under the polycyclic aromatic hydrocarbon (PAC) category. Reports were received for 9 of the 12 individually listed chemicals, and total disposal or other releases for these amounted to 927,000 pounds.

There was a 1% decrease in the number of facilities reporting to TRI. The decrease is smaller than last year (which was 2%). Some facilities that have previously reported to TRI may have closed or may have reduced their use of toxic chemicals so that they are no longer required to report to TRI. However, some facilities that meet the criteria to report to TRI may have missed the reporting deadline or failed to report at all. Because of these late reporters, the 1% decrease in reporting facilities may decline slightly after the National Analysis has been released.

**Q: How many facilities reported for 2011? Why is it different from the number last year?**

A total of 20,927 facilities reported to TRI for 2011, a 1% decrease from 2010. This continues the downward trend from previous years in the number of facilities reporting. Some facilities reported after the deadline and EPA was not able to include them in this analysis. EPA will evaluate those facilities for appropriate follow up action. While there was a decrease of 1% in the total number of facilities reporting, there were 1,109 facilities that reported for 2011 that did not report for 2010.

Background:

There are many reasons that a facility may report to TRI one year and not report the next year; each of these reasons likely accounts for some portion of the reduction in facilities.

- Each year a facility must evaluate whether it fits the criteria to report to TRI. If the facility has at least 10 employees and manufactures, processes or otherwise uses the threshold amount of the chemical, it must report.
- Some facilities have a reduction in employees or in production that causes them to drop below the reporting threshold.
- Some facilities have stopped production, either temporarily or because the facility has closed.
- Some facilities have changed their processes so that they no longer use any toxic chemicals on the TRI list.
- Some facilities may have failed to report to TRI even though they fit the criteria. EPA will review these facilities for appropriate follow-up action.

**Q: What is new in the presentation of the data this year?**

EPA has improved this year's TRI National Analysis report by adding new information about facility efforts to reduce pollution, insights into why air releases are declining, and an enhanced analysis of releases on tribal lands.

As mentioned in the previous Q and A, the 2011 reporting year was the first year that facilities were required to report on a group of 16 chemicals collectively called the National Toxicology Program Carcinogens. These chemicals have been classified as "reasonably anticipated to be a human carcinogen" by the NTP. Twelve of the chemicals are reported to TRI individually and 4 are reported under the polycyclic aromatic hydrocarbon (PAC) category. Reports were received for 9 of the 12 individually listed chemicals, and total disposal or other releases for these amounted to 927,000 pounds.

In addition, the National Analysis website continues to feature a presentation of reported disposal or other releases in some of the most populous urban communities (Metropolitan Statistical Areas) in the United States; in the largest aquatic ecosystems, like the Chesapeake Bay and the Great Lakes; and a tribal lands analysis which includes the total disposal or other releases on Indian country and Alaska Native Villages.

**Q: Is the change in disposal or other releases from 2010 to 2011 comparable to that of prior years? Why did the change occur?**

Total disposal or other releases increased 8% from 2010 to 2011, continuing an upward trend from 2009-2010. Before that there had been downward trend since 2006.

This year's increase is in large part due to this year's 28% increase from metal mines. More specifically in 2011, four metal mining facilities, one in Alaska and three in Nevada, accounted for the majority of the overall increase in disposal or other releases for 2011. These facilities cited the following as the main reasons for their increases: changes in ore body composition, increased in waste rock disposal, increased production and no longer being eligible for the *de minimis* exemption for reporting certain chemicals.

**Q: How does EPA regulate metal mining waste and what health impacts/risks are associated metal mining waste?**

Mining wastes include waste generated during the extraction, beneficiation, and processing of minerals. At some facilities disposal of these wastes has caused significant environmental harm. Most extraction and beneficiation wastes from hardrock mining (the mining of metallic ores) and 20 specific mineral processing wastes are exempt from hazardous waste regulations under Subtitle C of the Resource Conservation and Recovery Act (RCRA). Mining and mineral processing plants remain subject to applicable federal environmental regulations (such as the Clean Air Act, the Clean Water Act, CERCLA, and EPCRA) and applicable state regulations. For more information, visit EPA's mining waste webpage. http://www.epa.gov/osw/nonhaz/industrial/special/mining/

**Q: What about PBT chemical releases?**

There was a 36% increase in disposal or other releases of PBT (persistent, bioaccumulative and toxic) chemicals overall from 2010 to 2011. Lead and lead compounds account for 98% of the total disposal or other releases of PBTs; therefore, the data are more meaningful in the context of specific PBT chemicals.

***Lead and Lead Compounds***

Total disposal or other releases of lead and lead compounds increased 36% in 2011. Lead accounts for 98% of the total disposal or other releases of PBTs.

Total disposal or other releases of lead and lead compounds are affected greatly by the mining sector:

- Lead is sometimes mined for its own value and sometimes is a byproduct resulting from mining other metals.
- Metal mines accounted for 93% of total disposal or other releases of lead and lead compounds in 2011.

The metal mining sector had an increase in total disposal or other releases of 43% from 2010 to 2011 for lead and lead compounds.

- Without the metal mining sector, total disposal or other releases of lead and lead compounds decreased by 12% from 2010 to 2011.
- Air releases of lead and its compounds decreased 4% from 2010 to 2011.

***Mercury and Mercury Compounds***

- From 2010 to 2011, total disposal or other releases for mercury and mercury compounds increased 10%. Air emissions of mercury and mercury compounds decreased by 10%.
- The metal mining sector accounted for 93% of the total disposal or other releases of mercury and mercury compounds in 2011. This sector reported an overall increase of 11% from 2010 to 2011.
- Electric utilities accounted for 65% of all mercury and mercury compound releases to air. Electric utilities reported a 13% decrease in mercury air releases.
- The primary metals and cement sectors were the next biggest contributors to air releases of mercury in 2011. From 2010 to 2011, the primary metals sector decreased air releases of mercury by 2% and the cement sector's air releases of mercury decreased by 6%.

Background:
There is no mercury mining per se in the United States. Mercury releases are a byproduct associated with mining other metals, especially gold and silver.

***Dioxin and Dioxin-like Compounds***

Total disposal or other releases of dioxins increased 35% from 2010 to 2011. Air releases of dioxins decreased by 1%. Total disposal or other releases of dioxins for 2011 were 54,579 grams, including almost 1,301 grams of air releases.

- The chemical manufacturing sector accounted for 77% of total disposal or other releases of dioxins in 2011. They reported over a 100% increase from 2010 to 2011, primarily due to off-site disposals from one facility in Texas which accounted for 18,065 grams of the 21,500-gram increase. Air releases from this sector decreased by 31% from 2010 to 2011.
- The primary metals sector reported the second largest total in 2011 and had a 7% decrease in total disposal or other releases of dioxins from 2010 to 2011, primarily as on-site land disposal. However, air releases from this sector increased by 16% from 2010 to 2011.
- Electric utilities accounted for 32% of all releases to air of dioxins in 2011 and reported a decrease of 2% from 2010 to 2011.

Background:
Dioxins are not created intentionally, but are formed during some high-temperature processes such as smelting and recycling metals. Different materials and temperature levels can change the amount of dioxin that is formed in the process.

***Polychlorinated Biphenyls (PCBs)***

PCBs total disposal or other releases increased 36% from 2010 to 2011.

Background:
Because PCBs are no longer manufactured or used in new products, the disposal or other releases of PCBs represent amounts that are being cleaned up or capacitors and transformers being taken out of service and properly disposed of in facilities that minimize risk to human health and the environment. PCB total disposal or other releases typically fluctuate from year to year based on how many significant cleanup activities are underway or how many PCB transformers are removed from service.

**Q: What are dioxin TEQs and why is EPA including them in the analysis?**

There are 17 different chemicals in the category of dioxins and dioxin-like compounds in TRI. These different chemicals are call dioxin "congeners," and they are all very toxic. However, some of them are much more toxic than others. TEQ (Toxic Equivalency) values provide a weighted sum of dioxin congeners for each facility so that there is one number that takes into account both quantity and toxicity. This number helps in understanding the relative hazard from dioxins; however, it does not compare the risk from different facilities, because it does not take into account human exposure to the chemical. TEQs will allow the public to make more informed environmental decisions within their communities. Expressing dioxin releases and waste management information in grams TEQ also permits easier comparisons between TRI data and other EPA and international data. For more information, see TRI's webpage on the dioxin TEQ rule: http://www.epa.gov/TRI/lawsandregs/teq/teqpfinalrule.html

Various industry sectors may dispose of or otherwise release very different mixes of dioxin congeners. Three industry sectors accounted for over 86% of both the grams and grams-TEQ of dioxin disposed of or otherwise released in 2011; however, their ranking in terms of percentage of the total is quite different for grams and grams-TEQ. The chemicals sector reported 77% of total grams of dioxins in 2011 but ranked behind the primary metals sector and hazardous waste management facilities in terms of grams-TEQ. The primary metals sector ranked second in terms of grams and first in terms of grams-TEQ.

**Q: What about known or suspected carcinogens?**

A carcinogens category of analysis was added to the EPA's analysis of TRI data in 2005 at the request of stakeholders.

- In 2011 about 65% of TRI facilities reported disposal or other releases of carcinogens.
- Total disposal or other releases of carcinogens increased 33% from 2010 to 2011 compared to an increase of 8% for all TRI chemicals.
- Air releases of carcinogens decreased by 3% from 2010-2011 and by 50% from 2003-2011.
- In 2011 lead and lead compounds accounted for 54% of the disposal or other releases of carcinogens.
- Over 88% of carcinogens were released to various forms of land disposal in 2011. Almost 83% of the total was to on-site surface impoundments and land disposal that were not RCRA Subtitle C facilities.
- Metal mines accounted for 81% of the disposal or other releases of carcinogens in 2011; lead accounts for most of these disposal or releases and lead from metal mines accounted for 66% of the surface impoundments and land disposal that were not RCRA Subtitle C sites for all carcinogens.

Background:

The list of known or suspected carcinogens is actually a list of chemicals derived from 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). If the chemical is listed according to the criteria on any of the three lists, it is included as a carcinogen under TRI. Sixteen carcinogens were added to the TRI list for 2011.

**Q: Which industry sectors reported increases in total disposal or other releases from 2010 to 2011?**

Industry sectors with the largest increases included:

- The metal mining industry reported a 28% increase (409 million pounds)
- Hazardous waste management facilities with a 7% increase (8.3 million pounds)
- The electrical equipment sector with a 20% increase (1.2 million pounds)
- The cement manufacturing sector with a 14% increase (704 thousand pounds)

**Q: What is EPA doing to help these sector decrease releases?**

EPA's Pollution Prevention Program helps identify pollution prevention (P2) options in all industry sectors through a variety of assistance and information-sharing programs. For instance, the Economy, Energy and Environment (E3) initiative helps manufacturers become more sustainable, and Design for the Environment (DfE) helps companies use safer chemicals and technologies. In addition, the TRI program is making its pollution prevention information more accessible to promote the implementation of effective P2 practices. To learn more go to http://www.epa.gov/tri/P2/index.html.

**Q: Which industry sectors reported decreases from 2010 to 2011?**

Industry sectors with the largest decreases included:

- Electric utilities with a 12% decrease (87 million pounds)
- The chemical manufacturing industry reported a 3% decrease (13 million pounds)
- The primary metals industry reported a 2% decrease (6.0 million pounds)
- The paper and paper products sector with a 2% decrease (3.7 million pounds)
- The food/beverage/tobacco sector with a 2% decrease (2.9 million pounds)

**Q: Which industry sectors reported increases in air releases from 2010 to 2011?**

Industry sectors with the largest increases included:

- The primary metals sector with a 12% increase (4.1 million pounds)
- The petroleum refining and petroleum products sector with a 4% increase (1.3 million pounds)
- The cement manufacturing sector with a 19% increase (764 thousand pounds)

**Q: Which industry sectors reported decreases in air releases from 2010 to 2011?**

Industry sectors with the largest decreases included:

- Electric utilities with a 18% decrease (55.4 million pounds)
- The chemical manufacturing sector with a 2% decrease (3.4 million pounds)
- The paper and paper products sector with a 2% decrease (3.1 million pounds)
- The transportation equipment sector with an 11% decrease (2.8 million pounds)

**Q: Which industry sectors reported increases in surface water discharges from 2010 to 2011?**

Industry sectors with the largest increases included:

- Facilities with no TRI NAICS code (mainly Federal Facilities) with a 6% increase (905 million pounds)
- The chemical manufacturing sector with a 1% increase (438 thousand pounds)

**Q: Which industry sectors reported decreases in surface water discharges from 2010 to 2011?**

Industry sectors with the largest decreases included:

- The primary metals industry with a 6% decrease (2.5 million pounds)
- The stone/clay/glass sector with a 45% decrease (1.7 million pounds)
- The food/beverage/tobacco sector with a 2% decrease (1.6 million pounds)

**Q: What accounts for the 8% decline in disposal or other releases from 2003 to 2011?**

Most industry sectors covered by TRI had decreases in their total disposal or other releases from 2003-2011. The largest decreases occurred in the electric utility, primary metals, and hazardous waste sectors. Within the electric utility sector, which had the largest decrease (43% from 2003 to 2011), likely reasons for the decrease include a shift from coal to other fuel sources, and installation of control technologies at coal fired power plants.

## Federal Facilities

**Q: How did federal facilities fare this year?**

Total disposal or other releases from federal facilities decreased 4% from 2010 to 2011. The Tennessee Valley Authority (TVA) electric utilities reported 50% of the total disposal or other releases from federal facilities for 2011 and a 9% (3.9 million pounds) increase from 2010 to 2011.

Many federal facilities that report to TRI are national defense sites. Department of Defense (DOD) facilities accounted for 24% of total disposal or other releases from federal facilities for 2011. They reported a 26%
(3.9 million pounds) increase from 2010, primarily as land disposal of copper on-site from one Marine Corps site. These sites are required to report to TRI even though they do not fit into the industry categories that normally report to TRI because they are federal facilities.

For 2011, 421 federal facilities reported almost 78 million pounds of total on- and off-site disposal or other releases and 226 million pounds of total production-related waste.

We received 1,239 forms from federal facilities, almost all of which were Form Rs (1,222).

- 67% of the forms came from DOD facilities.
- 25% of the forms came from TVA facilities.
- EPA submitted 8 TRI forms for 1.7 million pounds of waste, all of which were from site cleanup.

### General

**Q: What factors should I consider when using TRI data?**

Users of TRI information should be aware that TRI release estimates alone are not sufficient to determine human exposure to toxic chemicals or to calculate potential risks to human health and the environment. Different chemicals can pose different health hazards including cancer, neurological hazards, respiratory hazards, developmental hazards, etc. In addition, chemicals can have these different effects at different concentrations of exposure.

TRI data, in conjunction with other information, such as the toxicity of the chemical, the release medium, and site-specific conditions, can be used as a starting point in evaluating exposures that may result from releases of toxic chemicals.
Factors that users of TRI data might consider include:

- Toxicity of the chemical
- Exposure
- Bioconcentration of the chemical in the food chain
- Type of disposal or release (environmental medium)
- Fate and transport of the chemical in the environment
- Type of off-site facility receiving the chemical and the efficiency of its waste management practices
- On-site waste management of the toxic chemical

TRI Chemical Hazard Information Profiles (TRI-CHIP) is a tool that EPA has developed to provide critical effects toxicity information to the public and is available at http://epa.gov/tri/tridata/. More information relating to the factors to consider when using TRI data is available at http://epa.gov/tri/tridata/.

**Q: Should I worry about releases in my community?**

When using TRI data one should be aware that a release of toxic chemicals does not automatically mean that local communities are at risk. Large release numbers do not necessarily mean there is a large risk,

nor do small releases necessarily mean there is a low risk. “Disposal or other releases” represent a wide variety of management methods. These range from highly controlled disposal, such as in hazardous waste landfills, to uncontrolled releases due to accidental leaks or spills. Many releases reported to TRI are subject to permits and/or environmental standards that establish emissions limits under Federal or State laws such as, for example, air permits issued under the Clean Air Act. Other factors, such as exposure to the release, route of exposure (e.g., breathing, via skin), bioavailability from the exposure route, and sensitivity of exposed individuals to effects caused by a toxic chemical must be considered before any judgments regarding risk can be made.

However, TRI data can provide lists of the top facilities with the largest disposal or other releases, which can be used as screening tools to identify facilities that may warrant a closer examination. This closer examination should include considering factors mentioned above like toxicity of chemicals and potential exposure. In these cases TRI data should be supplemented with data from other sources.

**Q: What is total production-related waste managed and why does EPA include information about this number as well as total disposal or other releases?**

Total production-related waste managed represents a focus on management of toxic chemicals rather than only on their final disposition. It includes reporting for on- and off-site recycling, energy recovery, and treatment as well as on- and off-site disposal or other releases. Total production-related waste managed represents how facilities are managing their toxic chemicals and includes counting these chemicals each time they are managed whether that is by recycling, energy recovery, treatment or disposal or other releases.

From 2003 to 2011, total production-related waste managed by TRI facilities declined by 9% (more than 2.36 billion pounds). However, from 2010 to 2011, the total production-related waste managed increased by 4% (931 million pounds). From 2010 to 2011, facilities increased the quantity of TRI chemicals recycled by 8%, recovered for energy by 2%, and disposed of or otherwise released by 8%, but the amount treated decreased by 1%.

EPA encourages facilities to first eliminate waste at its source. However, for waste that is generated, the preferred management methods are recycling, followed by burning for energy recovery, treating and, as a last resort, disposing of or otherwise releasing the waste. The percent of the total production-related waste allocated to each of these management practices has changed only slightly over time, with a larger amount recycled or treated and a smaller amount used for energy recovery. Table 1 shows the percent of the total production-related waste dedicated to each waste management practice in 2003, 2010 and 2011.

Table 1. Percent of total production-related waste recycled, used for energy recovery, treated or disposed of or otherwise released

| | 2003 | 2010 | 2011 |
|---|---|---|---|
| **Quantity Recycled** | 36.1% | 36.4% | 37.8% |
| **Quantity Used for Energy Recovery** | 13.1% | 11.0% | 10.8% |
| **Quantity Treated** | 32.5% | 34.9% | 33.2% |
| **Quantity Disposed of or Otherwise Released** | 18.3% | 17.6% | 18.2% |

**Q: What is the difference between Form R and Form A?**

Form R provides details about releases and other waste management (e.g., total quantity of releases to air, water, and land and underground injection; and on- and off-site recycling, treatment, and combustion for energy recovery). Form A provides the name of the chemical and certain facility identification information. Form A can be used by the public as a “range report,” i.e., an indication that the facility

manages between 0 and 500 pounds of a non-PBT chemical as waste. Several chemicals may be reported on one Form A; only one chemical may be reported on each Form R submission.

From 2010 to 2011, Form Rs decreased by less than 1% while the number of Form As decreased by just more than 1%.

**Q: Do the TRI data reflect releases from the British Petroleum offshore oil well in the Gulf of Mexico?**

No. Under section 313 of the Emergency Planning and Community Right-to-Know Act, the TRI reporting requirements apply only to facilities in industrial sectors designated by certain North American Industrial Classification System (NAICS) codes. Facilities that extract crude petroleum or natural gas from the earth, such as the British Petroleum offshore oil well facility in the Gulf of Mexico and companies that extract natural gas through hydraulic fracturing, are classified in NAICS 211111, which is not currently subject to TRI reporting requirements. For a list of all TRI-covered NAICS categories please see the North American Industry Classification System (NAICS) Codes in TRI Reporting Web site available at http://www.epa.gov/tri/lawsandregs/naic/ncodes.htm.

**Q: Do the TRI data reflect releases from hydraulic fracturing?**

No. Under section 313 of the Emergency Planning and Community Right-to-Know Act, the TRI reporting requirements apply only to facilities in industrial sectors designated by certain North American Industrial Classification System (NAICS) codes. Facilities that extract crude petroleum or natural gas from the earth, such as the British Petroleum offshore oil well facility in the Gulf of Mexico and companies that extract natural gas through hydraulic fracturing, are classified in NAICS 211111, which is not currently subject to TRI reporting requirements. For a list of all TRI-covered NAICS categories please see the North American Industry Classification System (NAICS) Codes in TRI Reporting Web site available at http://www.epa.gov/tri/lawsandregs/naic/ncodes.htm.