2016 TRI National Analysis Questions and Answers

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Overview of the 2016 Data

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

Production-related waste generated in 2016 was 27.8 billion pounds, a 2% increase from 2015. Approximately 24 billion pounds (87%) of production-related waste were not released because they were managed through preferred waste management practices such as recycling, while 13% were disposed of or otherwise released. The 3.4 billion pounds of total disposal or other releases in 2016 constitute a 1% increase from 2015.

Air releases decreased by 11% from 2015 to 2016, which was primarily caused by air release decreases from electric utilities. Releases into surface water decreased 4% and on-site releases to land increased 11% since 2015, with the latter due primarily to increased land disposal from the metal mining sector.

Q: Why have air releases decreased by so much since 2006?

Air releases have decreased considerably (58%) since 2006, with coal- and oil-fired electric utilities accounting for more than 85% of nationwide air release reductions. The primary metals and paper manufacturing sectors also reported large reductions in air releases of TRI-listed chemicals. Reasons for these reductions in nationwide air releases include a shift from coal to other fuel sources (e.g. natural gas) at electric utilities, the installation of control technologies (e.g. scrubbers), and the implementation of national and state-level environmental regulations.

Q: How many facilities reported for 2016? Why is it different from the number last year?

A total of 21,629 facilities reported to TRI for 2016, which was similar to the number of facilities than had reported in 2015. After many years of a downward trend in the number of facilities reporting to TRI, the trend levelled off in recent years with little change in the number of facilities reporting since 2010. 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.

Background:

There are many reasons that a facility may report to TRI one year and not report the next year. Each of the following reasons may account for some portion of the annual changes in facilities reporting to TRI:

- Each year a facility must evaluate whether it meets 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 found ways to reduce releases or have changed their processes so that they no longer use any 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?

This year's National Analysis includes:

- An updated, embedded data analysis "dashboard" that allows users to view the TRI releases reported for any chemical or sector.
- New presentation of hazard and risk-related information with the EasyRSEI interactive dashboard.
- A section focused on the synergy between the data reported to TRI and the data reported for the Chemical Data Reporting rule under the Toxic Substances Control Act (TSCA).
- Expanded information on releases on tribal lands.

Q: Is the change in disposal or other releases from 2015 to 2016 comparable to that of prior years?

Total disposal or other releases increased by 1% (a 50-million-pound increase) from 2015 to 2016. Much of the change from year to year is due to reporting by metal mines, which accounted for 44% of all disposal or other releases for 2016.

Q: How does EPA regulate 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.

Q: What about PBT chemical releases?

There was a 16% increase in disposal or other releases of PBT (persistent, bioaccumulative and toxic) chemicals overall from 2015 to 2016. Lead and lead compounds accounted 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 by 16% in 2016 and 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.
    - Without the metal mining sector, total disposal or other releases of lead and lead compounds decreased by 23% (19.5 million pounds) from 2015 to 2016.
- Air releases of lead and lead compounds decreased by 6% from 2015 to 2016.

Mercury and Mercury Compounds

- From 2015 to 2016, total disposal or other releases for mercury and mercury compounds increased by 2%. Air emissions of mercury and mercury compounds decreased by 27%.
- Electric utilities accounted for 31% of all mercury and mercury compound releases to air in 2016, and reported a 54% decrease in mercury air releases from 2015 to 2016.The primary metals sector, which includes iron and steel manufacturers and smelting operations, similarly accounted for 31% of the mercury and mercury compounds air emissions reported to TRI. This sector reported a 5% decrease in air emissions.

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 25% from 2015 to 2016. This increase is largely driven by increased on-site disposal at a hazardous waste treatment facility (reporting dioxin releases for the first time in 2016) and at a non-ferrous metal smelting and refining facility.

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.

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." Some of the congeners 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.

Various industry sectors may dispose of or otherwise release very different mixes of dioxin congeners. Two industry sectors accounted for more than 90% of both the grams and grams-TEQ of dioxin disposed of or otherwise released in 2016; however, their ranking in terms of percentage of the total is quite different for grams and grams-TEQ. The primary metal sector accounted for 43% of the total grams of dioxins released, and the chemical manufacturing sector accounted for 49% of the total grams. However, when TEFs are applied, the primary metals sector accounted for 80% of the total grams-TEQ, and the chemical manufacturing industry accounted for just 12%.

Q: What about known or suspected carcinogens?

Among the chemicals that are reportable to the TRI Program, there are 191 that are also included on OSHA's list of carcinogens.

- Total disposal or other releases of carcinogens decreased by 8% from 2015 to 2016.
- Air releases of carcinogens decreased by 1% from 2015 to 2016, and decreased by 45% from 2006 to 2016.
- In 2016, lead and lead compounds accounted for 63% of the disposal or other releases of carcinogens.

Background:
The list of known or suspected carcinogens is actually a list of chemicals derived from the 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.

Q: Which industry sectors reported decreases in total disposal or other releases from 2015 to 2016?

Industry sectors with the largest decreases include:

- Electric utilities with a 72-million-pound decrease (-17%)
- Hazardous waste sector with a 69-million-pound decrease (-32%)
- Chemicals manufacturing sector with a 12-million-pound decrease (-2%)

Q: Which industry sectors reported increases in total disposal or other releases from 2015 to 2016?

Industry sectors with the largest increases include:

- Metal mining with a 242-million-pound increase (19%)
- Textiles manufacturing sector with a 717-thousand-pound increase (28%)
- Leather manufacturing sector with a 660-thousand-pound increase (37%)

Q: What is EPA doing to help these sectors 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 the Safer Choice program helps consumers identify safer chemical-containing products. In addition, the TRI program is making its pollution prevention information more accessible to promote the implementation of effective P2 practices through the TRI P2 webpage.

Q: Which industry sectors reported decreases in air releases from 2015 to 2016?

Industry sectors with the largest decreases include:

- Electric utilities with a 47-million-pound decrease (-35%)
- Paper sector with an 8.8-million-pound decrease (-7%)
- Primary metals with an 8.5-million-pound decrease (-24%)

Q: Which industry sectors reported increases in air releases from 2015 to 2016?

Industry sectors with the largest increases include:

- Transportation equipment sector with a 536-thousand-pound increase (2%)
- Wood products sector with a 472-thousand-pound increase (5%)
- Computers and electronic products sector with a 106-thousand-pound increase (10%)

Q: Which industry sectors reported decreases in surface water discharges from 2015 to 2016?

Industry sectors with the largest decreases include:

- Chemical manufacturing with a 6.0-million-pound decrease (-18%)
- Paper sector with a 1.2-million-pound decrease (-7%)
- Food processing with a 1.1-million-pound decrease (-2%)

Q: Which industry sectors reported increases in surface water discharges from 2015 to 2016?

Industry sectors with the largest increases include:

- Textiles sector with a 663-thousand-pound increase (55%)
- Electronic equipment sector with a 660-thousand-pound increase (>100%)

Q: What accounts for the 21% decline in disposal or other releases from 2006 to 2016?

Most industry sectors covered by TRI had decreases in their total disposal or other releases from 2006 to 2016. This long-term decrease is driven mainly by declining air releases, down 58% (829 million pounds) since 2006. The decrease is driven by electric utilities due to a shift from coal to other fuel sources and the installation of control technologies at coal-fired power plants, which has led to decreases in emissions.

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 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 TRI-listed 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 chemical

TRI Chemical Hazard Information Profiles (TRI-CHIP) is a tool that EPA has developed to provide critical effects toxicity information to the public. More information related to understanding and using TRI data is available on the TRI webpage in the Factors to Consider document.

Q: Should I worry about releases in my community?

When using TRI data, one should be aware that a release of TRI-listed 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 TRI-listed 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 production-related waste and why does EPA include information about this number as well as total disposal or other releases?

Production-related waste is the sum of on-site environmental disposal or other releases, on-site waste management (recycling, treatment, and combustion for energy recovery), and off-site transfers for disposal, treatment, recycling, and energy recovery. Production-related waste does not include chemical waste quantities resulting from remedial actions, catastrophic events, or other one-time events not associated with normal or routine production processes. Production-related waste managed represents a focus on management of TRI-listed chemicals rather than only on their final disposition.

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 production-related waste allocated to each of these management practices has changed over time, with a larger proportion recycled and a smaller proportion disposed of or otherwise released. Table 1 shows the percent of the production-related waste dedicated to each waste management practice in 2006, 2015 and 2016.

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

	2006	2015	2016
Quantity Recycled	37%	44%	44%
Quantity Used for Energy Recovery	12%	12%	11%
Quantity Treated	32%	32%	32%
Quantity Disposed of or Otherwise Released	19%	13%	13%

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

Reporting 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). Reporting Form A provides the name of the chemical and certain facility identification information. Reporting 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.

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

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 as described on the TRI webpage.

Q: Can I find information about chemical accidents in TRI?

While the TRI database provides extensive information on the TRI-listed chemicals managed as waste as part of facility operations, other parts of the Emergency Planning and Community Right-to-Know Act (EPCRA) provide additional information about chemical releases including accidents. Also, the Clean Air Act (CAA) section 112(r) Risk Management Program complements TRI with additional information to help prevent and minimize the impact of chemical releases. TRI data provide details on the management of production-related chemical waste, as well as information on non-production-related and/or accidental chemical releases of TRI-listed chemicals.

Q: Does TRI include information on releases related to natural disasters, such as hurricanes?

Releases of TRI-listed chemicals due to natural disasters are reported to TRI as "non-production-related waste," meaning waste that is not associated with normal production processes. These are wastes resulting from one-time events (e.g., remedial actions), or from catastrophic events (e.g., natural disasters). Note that this information is only reported to TRI if the facility meets all three of the TRI reporting criteria of 1) exceeding the chemical activity threshold; 2) exceeding the employment threshold; and 3) operating in a TRI-covered sector. Releases resulting from the flooding and destruction caused by the hurricanes in 2017 (e.g., Harvey, Irma, Maria) will not be reflected in the TRI reporting until later in 2018 when calendar year 2017 reports, due July 1, 2018, are submitted.

Q: Does TRI cover greenhouse gases?

TRI reporting focuses on listed chemicals and as a result covers different chemicals from EPA's Greenhouse Gas Reporting Program. Some TRI chemicals are a result of combustion of fuels for energy (as most GHG emissions are), but others are used in and released from additional processes ranging from metal mining to surface cleaning.

Q: What is the usual schedule for the TRI National Analysis?

TRI data for the most recent reporting year are reported to EPA by industrial facilities by July 1 of the following year, and the preliminary dataset is posted online by the end of July. The data are then subject to an extensive data quality analysis by the TRI Program, and the dataset is refreshed throughout the fall to incorporate any revisions or late submissions received by EPA. The dataset used to create the TRI National Analysis is frozen in mid-October, and the report is developed from October to January. The National Analysis report is then published in January.