

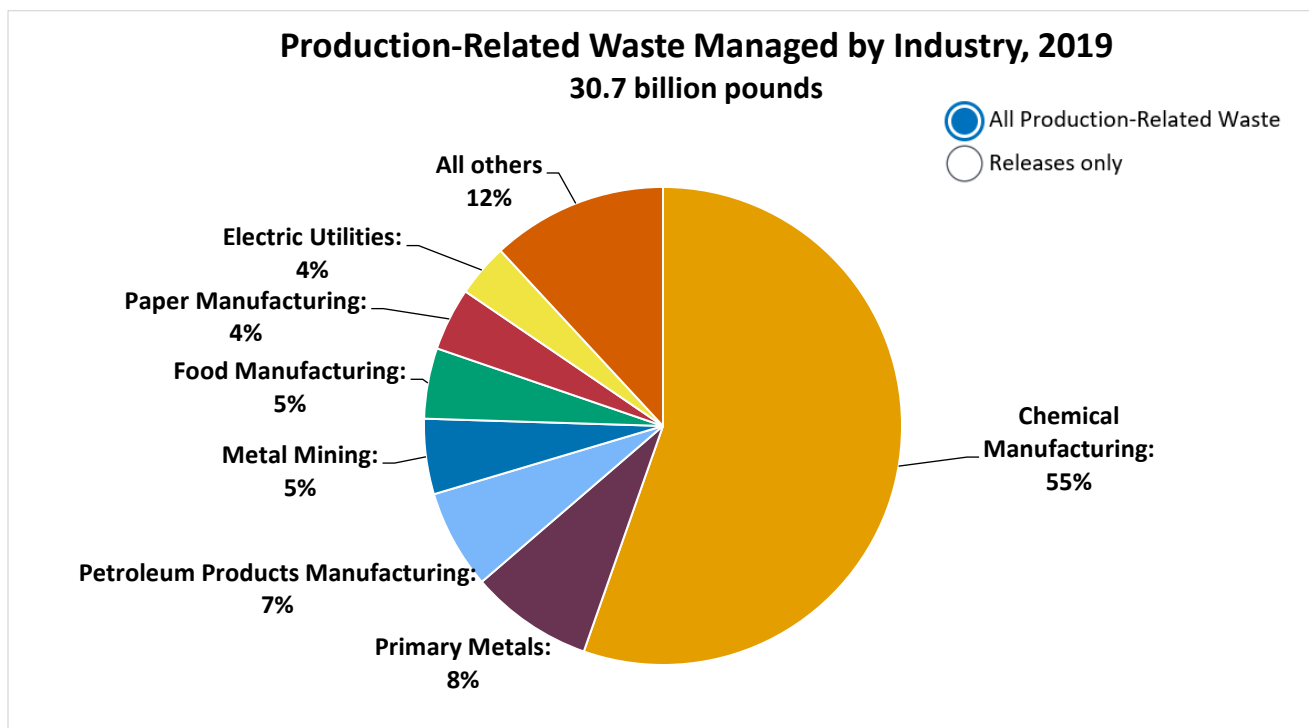
Comparing Industry Sectors

This section examines how different industrial sectors manage their TRI chemical waste. This sector-specific approach can highlight progress made in improving environmental performance, identify emerging issues, and reveal opportunities for better waste management practices.

Industries subject to TRI reporting requirements vary substantially in size, scope, and business type. As a result, the amounts and types of chemicals used, generated, and managed by facilities across industrial sectors often differ. For facilities in the same sector, however, the processes, products, and regulatory requirements are often similar, resulting in similar manufacture, processing, or other use of chemicals. This section presents trends in key sectors' [production-related waste managed](#) which includes TRI chemical [releases](#) to the environment.

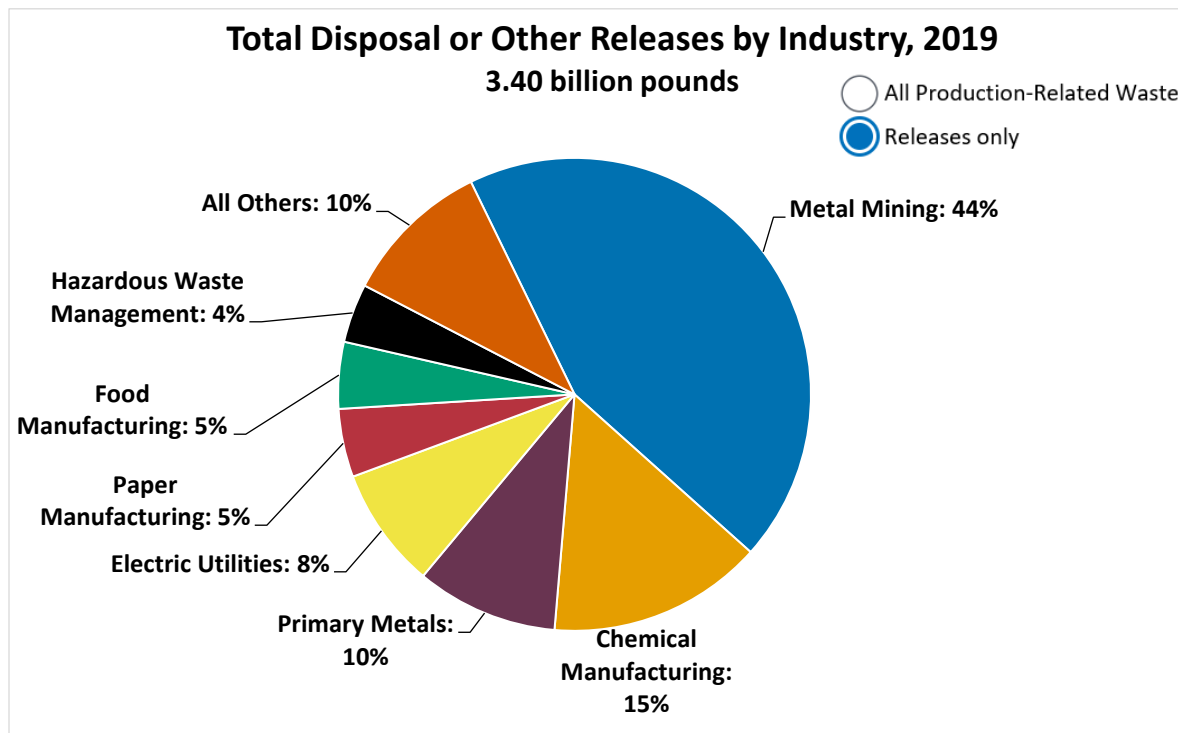
For analytical purposes, the TRI Program has aggregated the North American Industry Classification System (NAICS) codes at the 3- and 4-digit levels, creating 29 industry sector categories. To learn more about which business activities are subject to TRI reporting requirements, [see this list of covered NAICS codes](#).

The following pie chart shows the quantities of TRI chemical waste managed through recycling, energy recovery, treatment, and disposal or other releases. For more details on quantities released, toggle to the "Releases only" figure.



Seven industry sectors reported 88% of the TRI production-related waste managed in 2019. The majority of this waste originated from the chemical manufacturing sector (55%).

The following pie chart shows the industry sectors that reported the most releases for 2019.



This pie chart shows that 4 of the 29 TRI sectors accounted for 77% of the quantities of TRI chemicals disposed of or otherwise released: metal mining (44%), chemical manufacturing (15%), primary metals (10%), and electric utilities (8%).

For more details on how the amounts and proportions of TRI chemicals managed as waste have changed over time, see the [production-related waste managed by industry trend graph](#).

For more information on the breakdown of these releases by environmental medium, see [air releases by industry](#), [water releases by industry](#) and [land disposal by industry](#).

TRI Data Considerations

As with any dataset, there are several factors to consider when using the TRI data. Key factors associated with data used in the National Analysis are summarized in the [Introduction](#). For more information see [Factors to Consider When Using Toxics Release Inventory Data](#).

Manufacturing Sectors

This section examines how TRI chemical wastes are managed in the manufacturing sectors (defined as facilities reporting their primary NAICS codes as 31-33).

MANUFACTURING

What the Sector Does

The manufacturing sectors are goods-producing industries that transform materials into new products. These sectors include businesses involved in the production of food, textiles, paper, chemicals, plastics, petroleum products, metal products, electronics, furniture, vehicles, equipment, and other products.



THE SECTOR EMPLOYS 11.7 MILLION PEOPLE

U.S. Census Annual Survey of Manufactures 2018 data



THE SECTOR CONTRIBUTES 2.4 TRILLION TO U.S. GDP

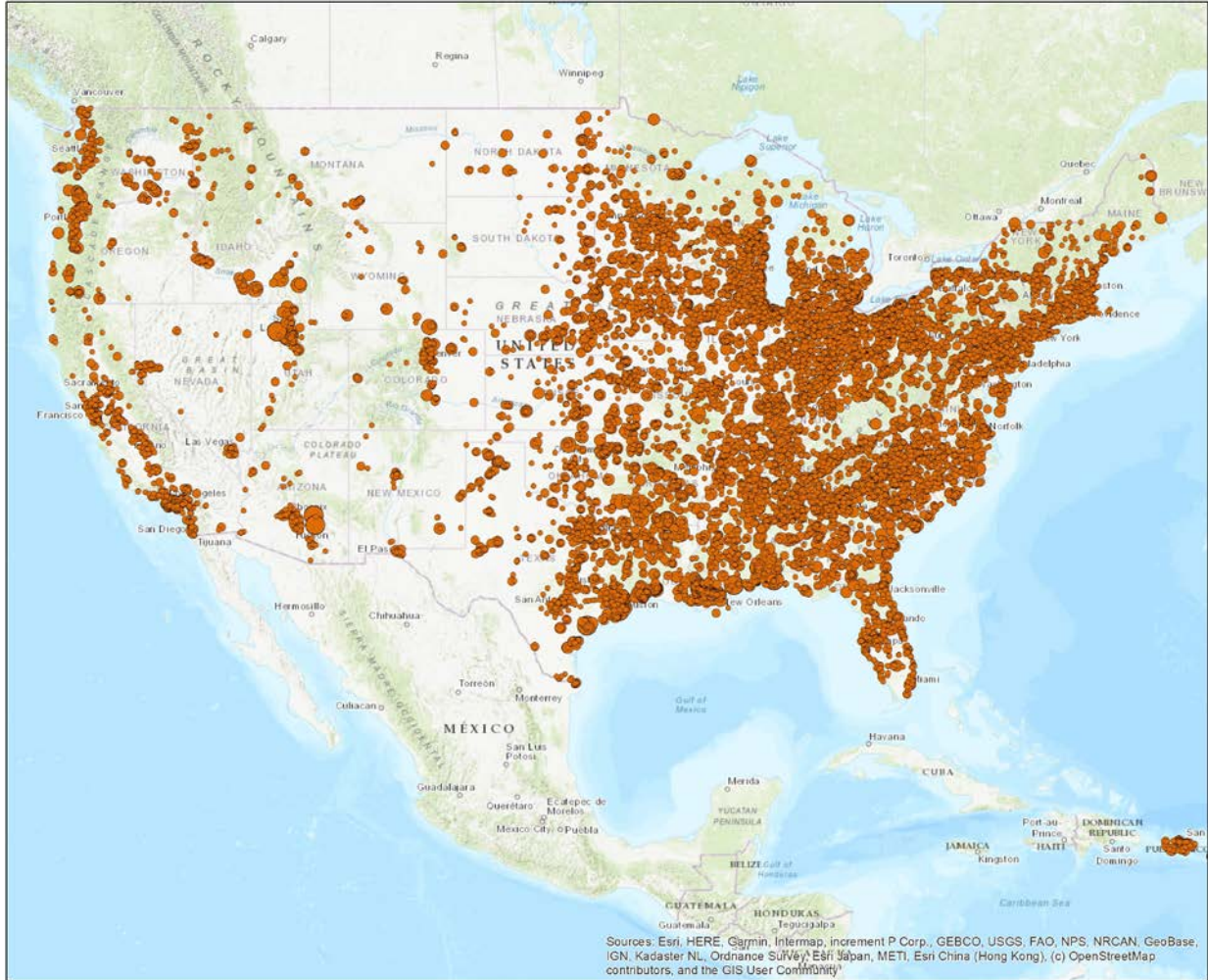
In value added. Bureau of Economic Analysis, Year 2019 data.



19,146 facilities in the sector report to TRI

U.S. EPA TRI, Reporting Year 2019

This map shows the locations of the manufacturing facilities that reported to TRI for 2019, sized by their relative releases. Click on a facility for details on its TRI reporting.



Manufacturing Facilities Reporting to TRI, 2019

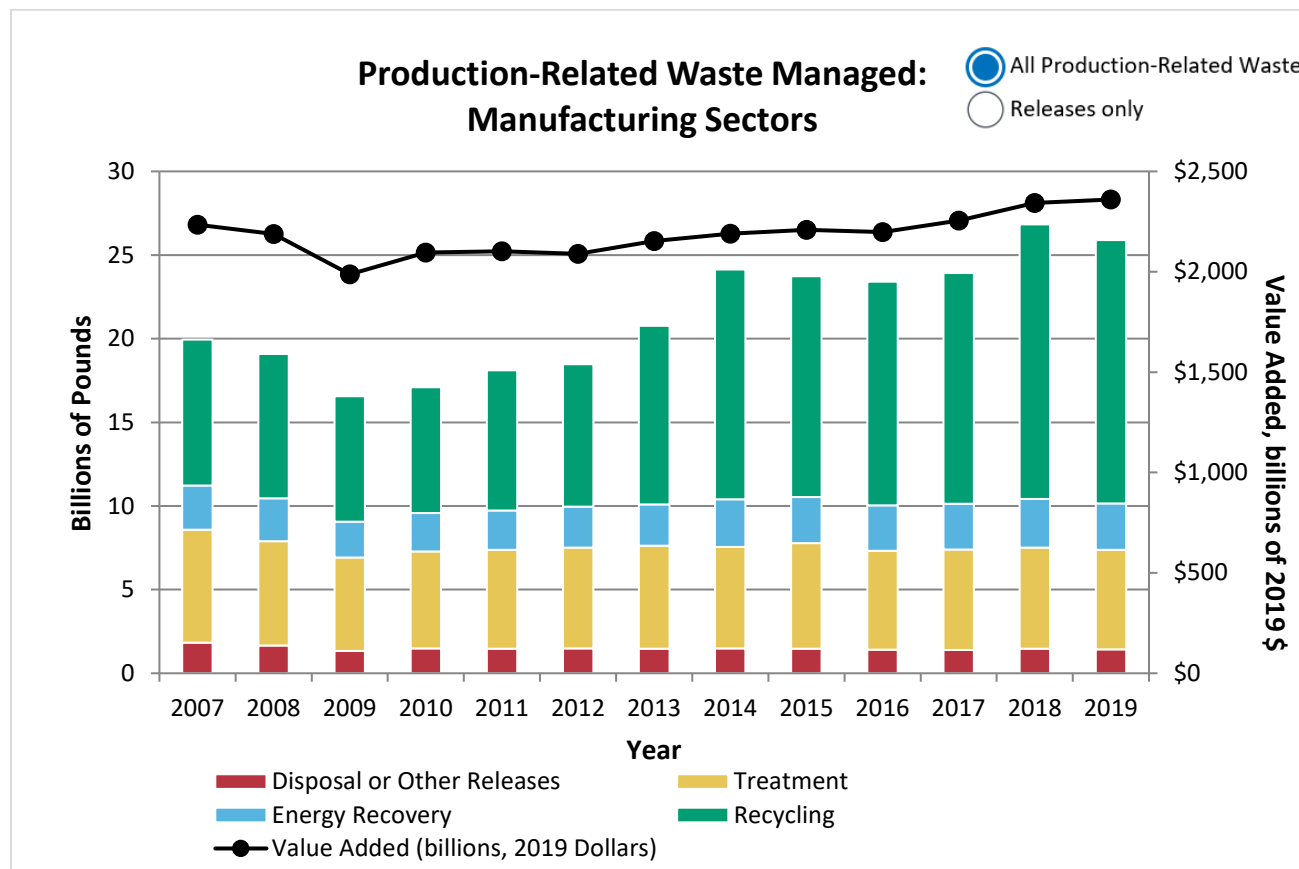
[View Larger Map](#)

For 2019, nearly 90% of the facilities that reported to TRI were in a manufacturing sector. The manufacturing sectors accounted for most (88%) of the 30.7 billion pounds of production-related waste managed reported to TRI for 2019. Two subsectors of manufacturing, [chemical manufacturing](#) and [fabricated metals](#), are highlighted in more detail later in this section.

The TRI-covered industry sectors not categorized under manufacturing include [metal mining](#), coal mining, [electric utilities](#), chemical wholesalers, petroleum terminals, hazardous waste management, and others.

Manufacturing Waste Management Trend

The following graph shows the annual quantities of TRI chemical waste managed through recycling, energy recovery, treatment, and disposal or other releases by the manufacturing sectors. For more details on quantities released, toggle to the “Releases only” graph.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- Quantities of production-related waste managed by the manufacturing sectors decreased through 2009, following the trend of reduced production resulting from the economic recession. Since 2009, quantities of waste managed have increased.
 - Quantities of waste released and treated decreased, while quantities combusted for energy recovery and recycled increased.
- It is important to consider the influence the economy has on production and production-related waste generation. This figure includes the trend in the manufacturing sectors'

value added (represented by the black line as reported by the [Bureau of Economic Analysis, Value Added by Industry](#)). Since 2007, value added by the manufacturing sectors increased by 27%.

- Production-related waste managed by the manufacturing sectors increased by 30% since 2007, driven by increased recycling. The large increase in recycled chemical waste starting in 2014 was primarily due to an increase in the quantity of cumene recycled by one facility and dichloromethane (methylene chloride) recycled by two other facilities.

What is Value Added?

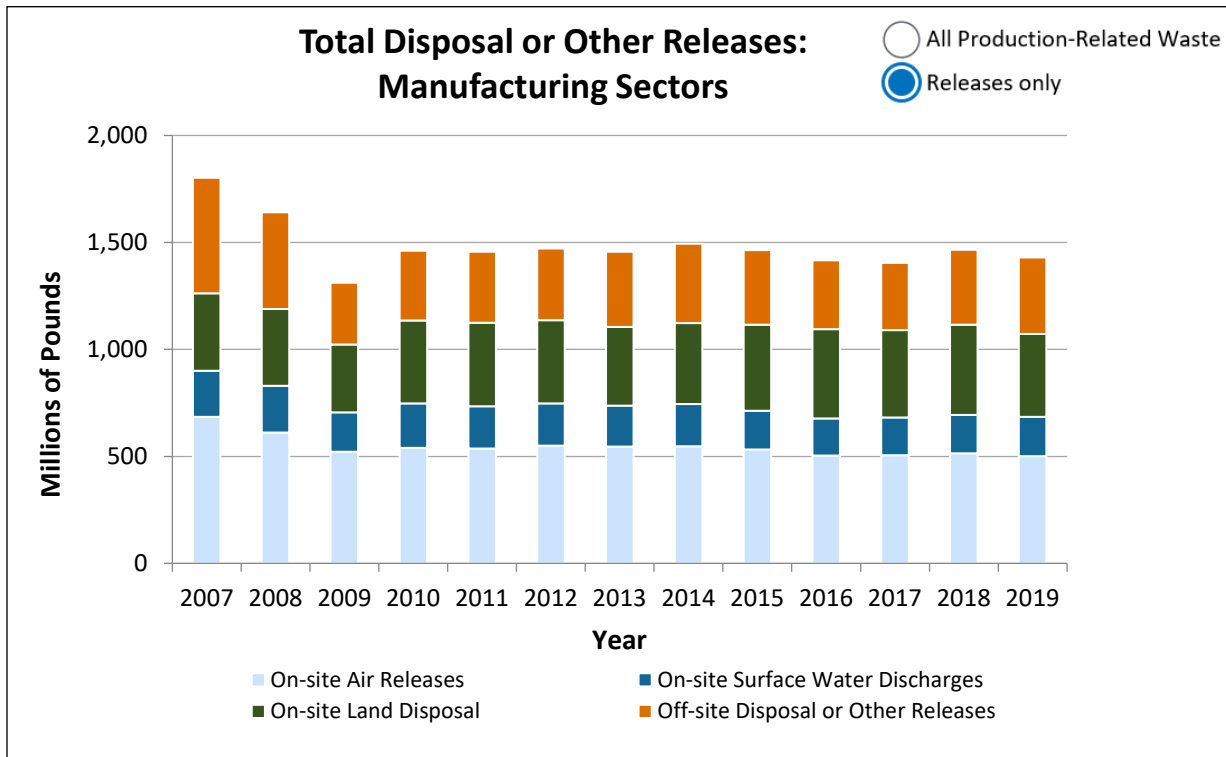
An industry's value added is the market value it adds in production; it is the difference between the price at which it sells its products and the cost of the inputs it purchases. Value added for all U.S. industries combined is equal to the nation's gross domestic product.

From 2018 to 2019:

- Production-related waste managed decreased by 996 million pounds (-4%), while value added increased slightly. Annual changes in production-related waste quantities are driven by a few facilities.
- In 2019, 5% of the manufacturing sectors' production-related waste generated was released into the environment, while the rest was managed through treatment, energy recovery, and recycling.

Manufacturing Releases Trend

The following graph shows the annual quantities of TRI chemicals released by the manufacturing sectors.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- TRI chemical releases by the manufacturing sectors decreased by 21%. This is primarily due to a reduction in air emissions and off-site disposal or other releases.
- Releases to water also declined, while on-site land disposal increased by 7%.

From 2018 to 2019:

- Releases decreased by 36 million pounds (-2%). This is largely due to a decrease in on-site land disposal reported by facilities in the chemical manufacturing sector.

Source Reduction in the Manufacturing Sectors:

In 2019, 7% of manufacturing facilities initiated nearly 3,000 source reduction activities to reduce TRI chemical use and waste generation. The most commonly reported types of source reduction activities were good operating practices and process modifications. For example:

- A circuit board manufacturing facility established new criteria for bath changes to extend bath life, reducing the amount of certain glycol ethers waste generated. [[Click to view facility details in the TRI P2 Search Tool](#)]
- A rubber products manufacturer modified loss-in-weight feeders with pipe-in-pipe and flexible rubber boot systems to keep transferred material contained, reducing their releases of zinc compounds. [[Click to view facility details in the TRI P2 Search Tool](#)].

You can [learn more about pollution prevention opportunities in this sector by using the TRI P2 Search Tool](#).


Chemical Manufacturing

This section examines how TRI chemical wastes are managed in the chemical manufacturing sector (defined as facilities reporting their primary NAICS code as 325).

CHEMICAL MANUFACTURING


What the Sector Does

Chemical manufacturers convert raw materials into thousands of different products, including basic chemicals, products used by other manufacturers (such as synthetic fibers, plastics, and pigments), pesticides, and cosmetics, to name a few.




THE SECTOR
EMPLOYS
757,000
PEOPLE

U.S. Census Annual Survey of Manufactures
2018 data



THE SECTOR
CONTRIBUTES
\$393 BILLION
TO U.S. GDP

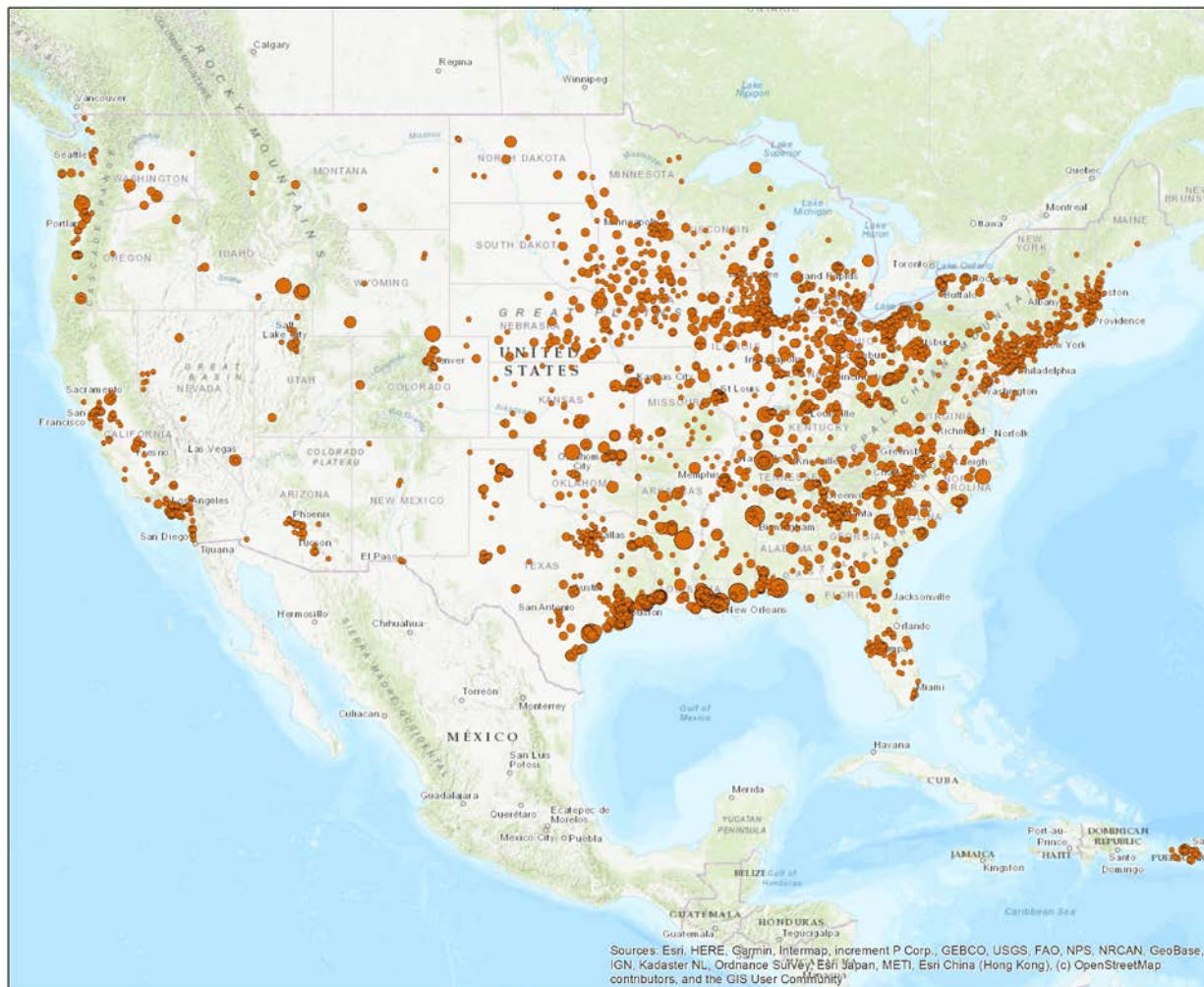
In value-added. Bureau of Economic Analysis, Year 2019 data



3,416 facilities in the sector report to TRI

U.S. EPA TRI, Reporting Year 2019

This map shows the locations of the chemical manufacturing facilities that reported to TRI for 2019, sized by their relative releases. Click on a facility for details on its TRI reporting.



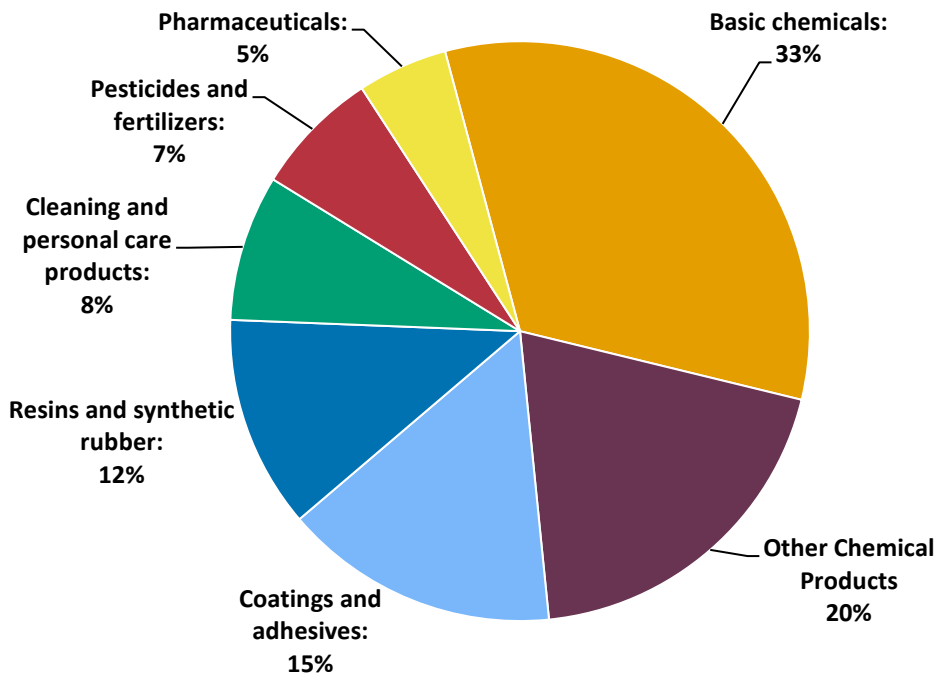
Chemical Manufacturing Facilities Reporting to TRI, 2019

[View Larger Map](#)

For 2019, more facilities reported to TRI from the chemical manufacturing sector than any other TRI-covered industry sector (3,416; 16% of facilities that reported for 2019). This sector reported 55% of all production-related waste managed, more than any other sector.

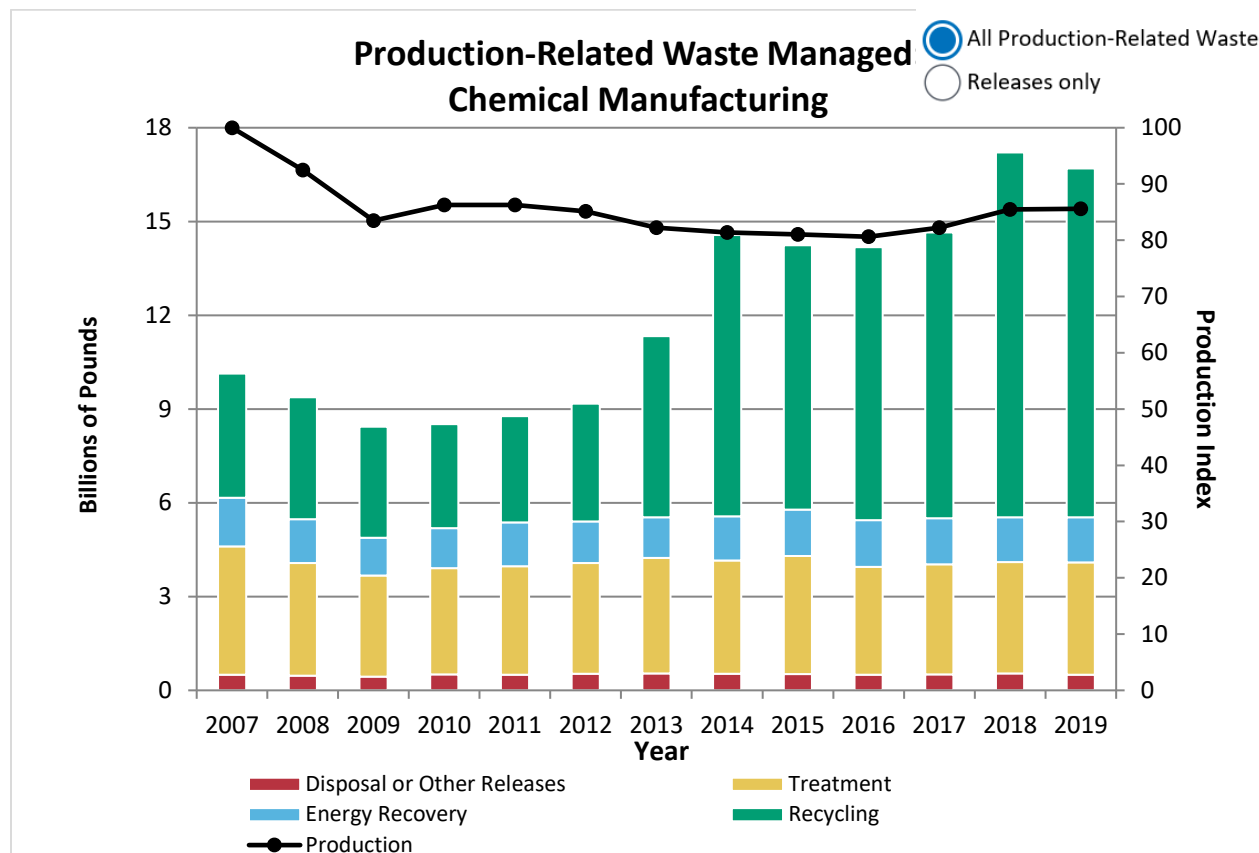
This large and diverse sector includes facilities producing basic chemicals and those that manufacture products through further processing of chemicals. The chart below shows the number of facilities by chemical manufacturing subsectors that reported to TRI for 2019.

Chemical Manufacturing Facilities by Subsector, 2019 3,416 total facilities



Chemical Manufacturing Waste Management Trend

The following graph shows the annual quantities of TRI chemical waste managed through recycling, energy recovery, treatment, and disposal or other releases by the chemical manufacturing sector. For more details on quantities released, toggle to the “Releases only” graph.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- Quantities of production-related waste managed by the chemical manufacturing sector increased by 65%, while production volume (represented by the black line as reported by the [Federal Reserve Board, Industrial Production Index](#)) decreased by 14%. In recent years, production has been fairly constant, with an increase from 2017 to 2018.
 - The large increase in chemical waste recycled starting in 2014 compared to previous years was primarily due to increased quantities of recycling reported by chemical manufacturers, with an increase in the quantity of cumene recycled by

one facility and dichloromethane (methylene chloride) recycled by two other facilities.

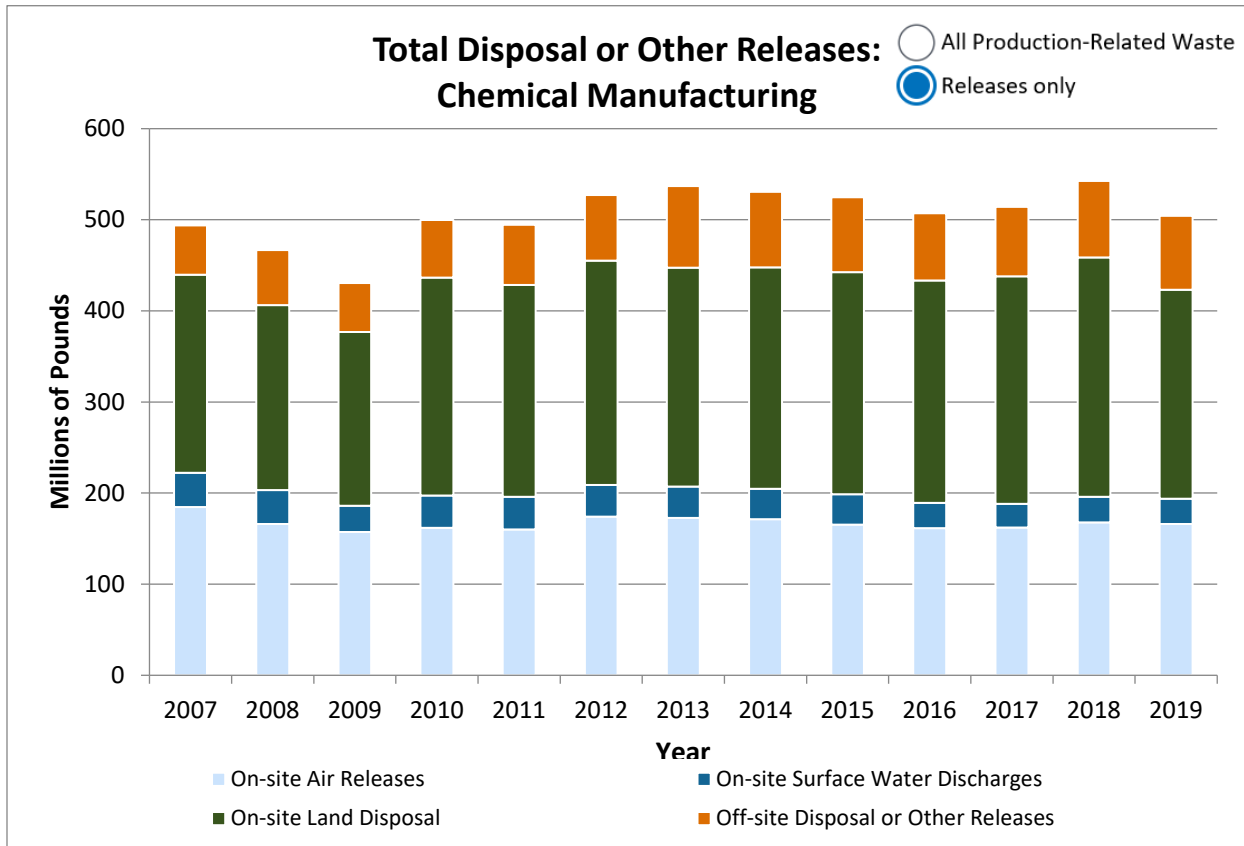
- Quantities of TRI chemicals treated or combusted for energy recovery decreased, while the quantities of TRI chemicals recycled increased. There was very little change in the quantities of TRI chemicals released.

From 2018 to 2019:

- Production-related waste managed at chemical manufacturing facilities decreased by 501 million pounds (-3%), driven by a reduction in quantities recycled by three facilities in the sector.
- In 2019, 3% of this sector's waste was released into the environment, while the rest was managed through treatment, energy recovery, and recycling.

Chemical Manufacturing Releases Trend

The following graph shows the annual quantities of TRI chemicals released by the chemical manufacturing industry.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

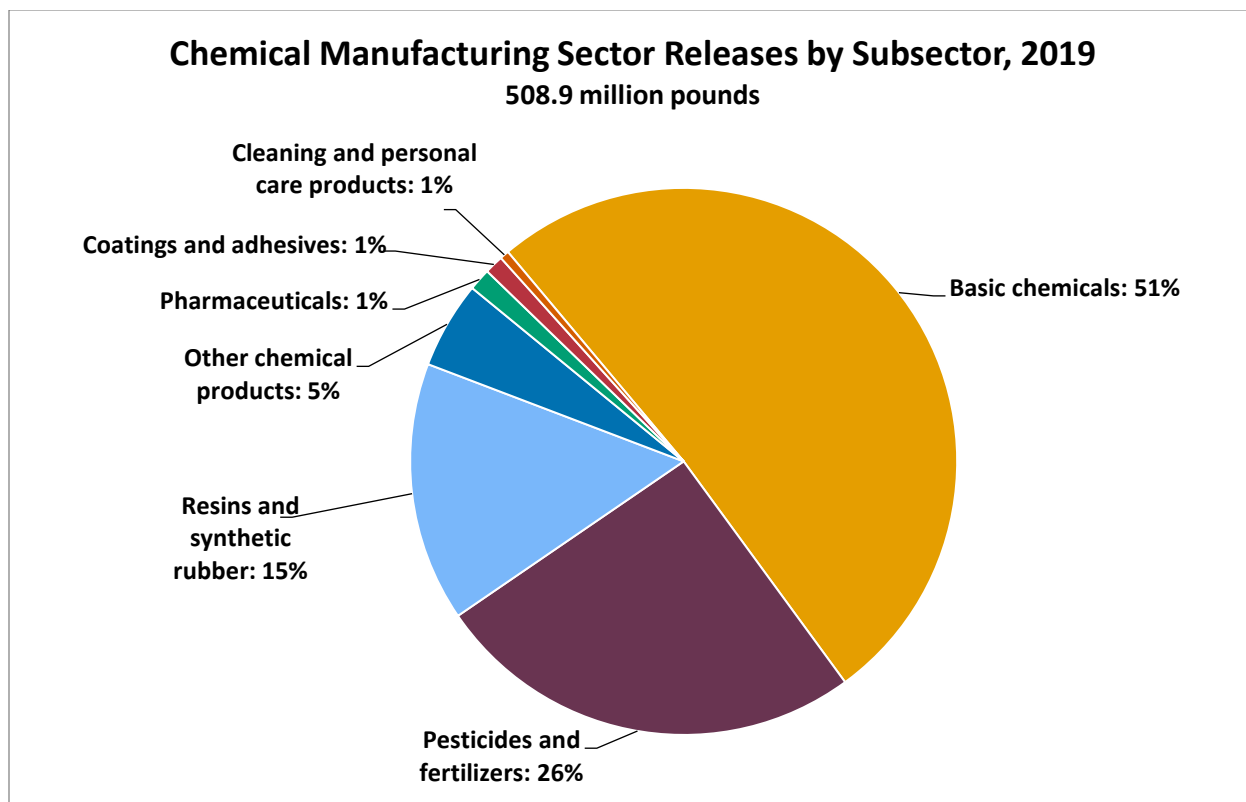
From 2007 to 2019:

- TRI chemical releases by the chemical manufacturing sector increased by 2%.
- The proportions of on-site land releases and off-site disposal increased during this time, while air releases now make up a smaller fraction of total releases.

From 2018 to 2019:

- Releases decreased by 39 million pounds (-7%). This trend is driven by large decreases in land disposal for numerous facilities.

- For 2019, the chemical manufacturing sector reported larger air release quantities than any other sector, accounting for 28% of all reported quantities of TRI chemicals emitted to air.
- For 2019, the basic chemicals manufacturing subsector accounted for 51% of chemical manufacturing releases. This subsector includes facilities manufacturing products such as organic and inorganic chemicals, industrial gases, and petrochemicals.



Source Reduction in the Chemical Manufacturing Sector:

Although the chemical manufacturing sector has consistently managed the most production-related waste of any TRI-covered sector, 284 facilities (8% of facilities) in this sector initiated source reduction activities in 2019 to reduce their TRI chemical use and waste generation. The most commonly reported types of source reduction activities were good operating practices and process modifications. For example:

- A paint and coatings manufacturing facility reduced xylene waste by scheduling batches to minimize waste produced during cleanouts between batches. [[Click to view facility details in the TRI P2 Search Tool](#)]
- An organic chemical manufacturing facility reduced its use of diphenylamine by changing the reaction formulation to increase batch yield and minimize the amount of unreacted material produced as waste. [[Click to view facility details in the TRI P2 Search Tool](#)]

Additional Resources



[EPA's Smart Sectors Program](#) is partnering with chemical manufacturing trade associations to develop sensible approaches to industrial operations that better protect the environment and public health.

[TRI's P2 Industry Profile Dashboard](#) can help you learn more about releases, other waste management trends, and pollution prevention opportunities in this sector.

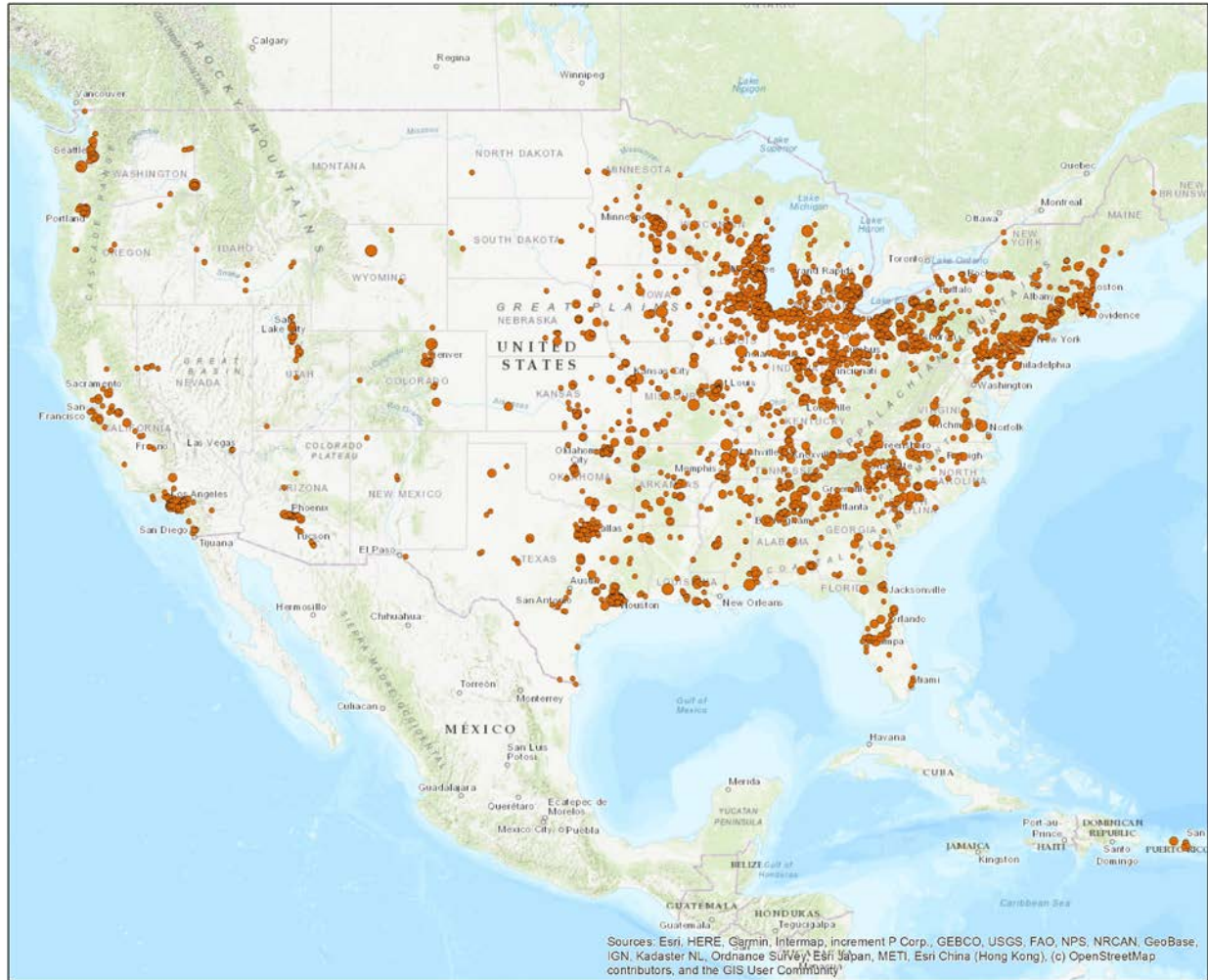
For more information on how this and other industry sectors can choose safer chemicals, visit EPA's [Safer Choice Program](#) pages for [Alternatives Assessments](#) and the [Safer Choice Ingredients List](#).

Fabricated Metals Manufacturing

This section examines how TRI chemical wastes are managed in the fabricated metal product manufacturing sector (defined as facilities reporting their primary NAICS code as 332).

FABRICATED METALS	What the Sector Does The fabricated metals sector manufactures metal products through processes such as forging, stamping, machining, welding, and assembling. The sector also conducts surface treatment activities such as coating and electroplating. 	THE SECTOR EMPLOYS 1.4 MILLION PEOPLE  <small>U.S. Census Annual Survey of Manufactures 2018 data</small>
		THE SECTOR CONTRIBUTES \$166 BILLION TO U.S. GDP  <small>In value-added. Bureau of Economic Analysis, Year 2019 data</small>
	2,914 facilities in the sector report to TRI <small>U.S. EPA TRI, Reporting Year 2019</small>	

This map shows the locations of the fabricated metal product manufacturing facilities that reported to TRI for 2019, sized by their relative releases. Click on a facility for details on its TRI reporting.



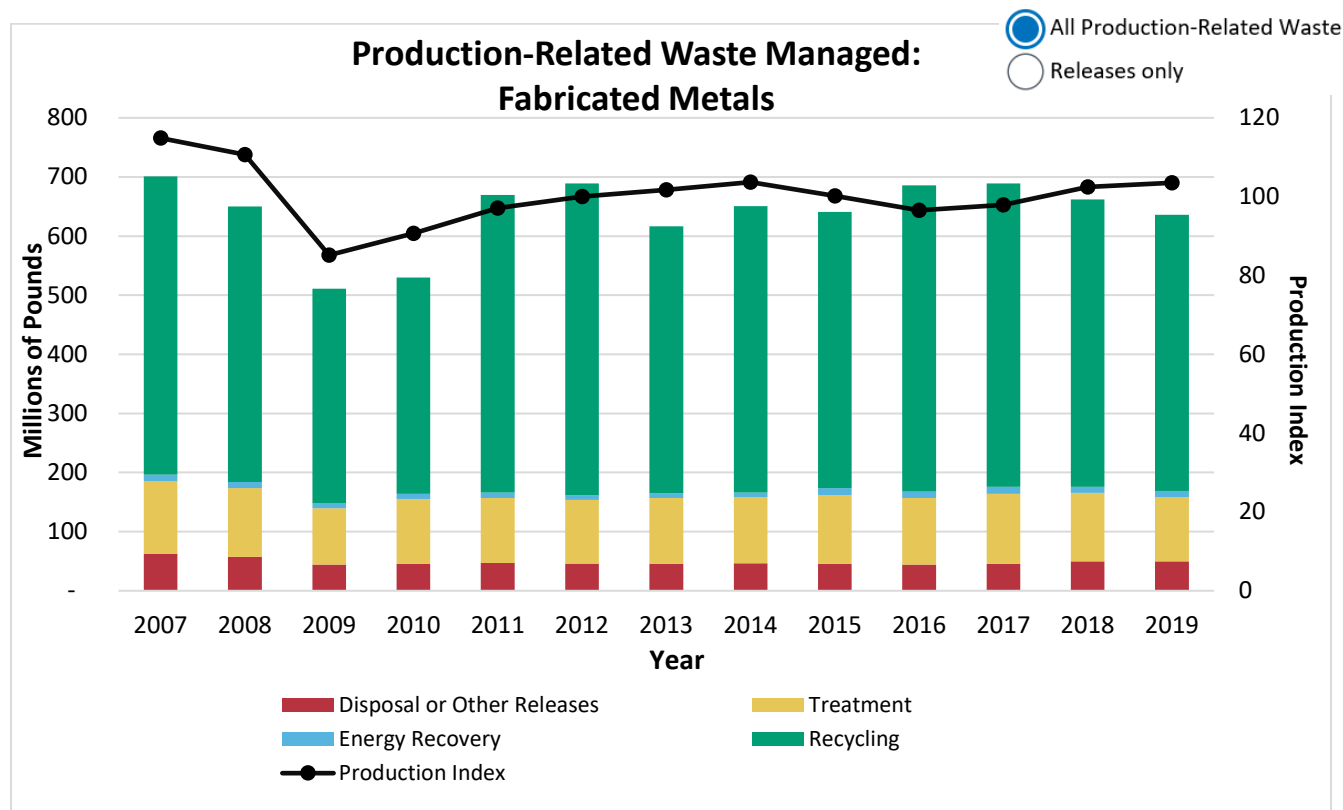
Fabricated Metals Manufacturing Facilities Reporting to TRI, 2019

[View Larger Map](#)

For 2019, 2,914 facilities in the fabricated metal product manufacturing sector reported to TRI, more than any other sector except chemical manufacturing.

Fabricated Metals Manufacturing Waste Management Trend

The following graph shows the annual quantities of TRI chemical waste managed through recycling, energy recovery, treatment, and disposal or other releases by facilities in the fabricated metal product manufacturing sector. For more details on quantities released, toggle to the “Releases only” graph.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- Quantities of production-related waste managed by the fabricated metal product manufacturing sector decreased by 65 million pounds (-9%), while production volume (represented by the black line as reported by the [Federal Reserve Board, Industrial Production Index](#)) decreased by 10%. In recent years, production has been increasing.
- Quantities of TRI chemical waste managed through recycling, combustion for energy recovery, treatment, and release all decreased.

From 2018 to 2019:

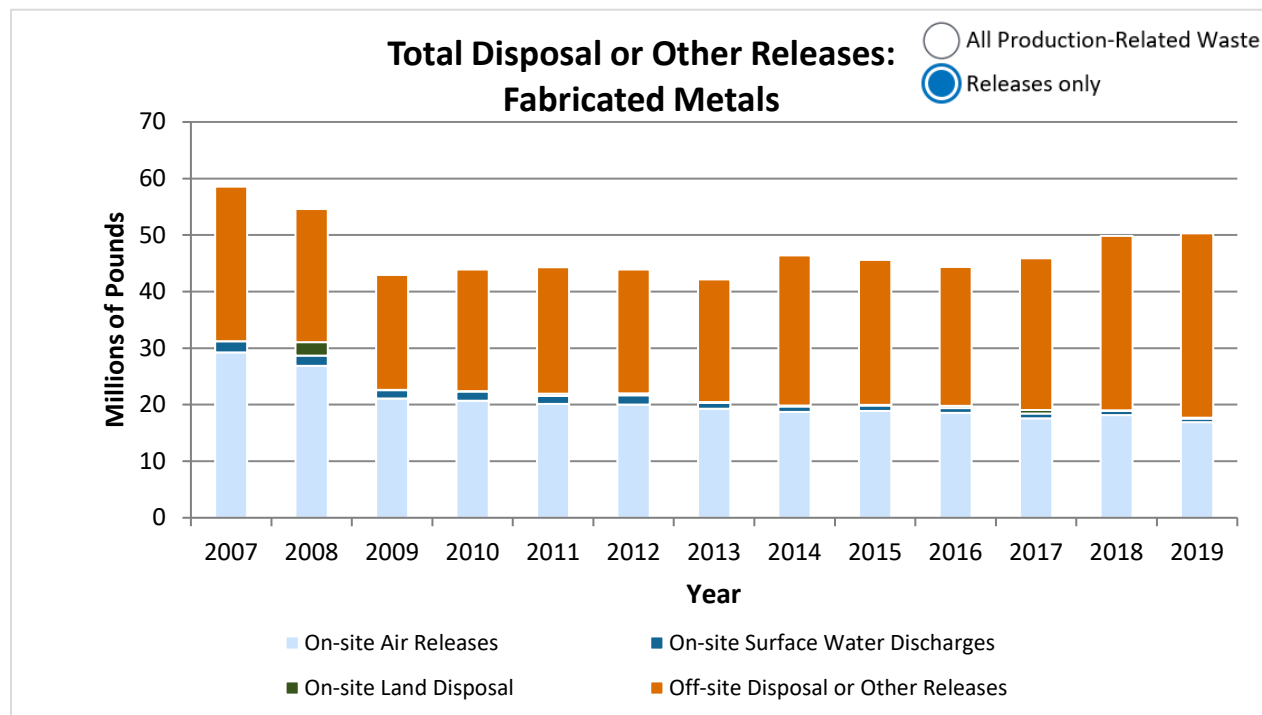
- Production-related waste managed at fabricated metal product manufacturing facilities decreased by 26 million pounds (-4%), while production volume increased by 1%. This

decrease in production-related waste managed was driven by decreased recycling and treatment.

- During 2019, 8% of this sector's waste was released into the environment, while the rest was managed through treatment, energy recovery, and recycling.

Fabricated Metals Manufacturing Releases Trend

The following graph shows the annual quantities of TRI chemicals released by the fabricated metal product manufacturing industry.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- TRI chemical releases by the fabricated metals manufacturing sector decreased by 8.3 million pounds (-14%).
 - The decrease was driven by releases to air, which decreased by 12 million pounds from 2007 to 2019.
 - Off-site disposal quantities increased, driven by off-site releases of nitrate compounds, which increased by 5 million pounds from 2007 to 2019.
 - On-site releases to water decreased by 1.3 million pounds (-68%) and on-site land releases increased by 87,000 pounds (160%). On-site releases to water and land combined make up 3% of all releases from the fabricated metal product sector.

From 2018 to 2019:

- Releases increased by 0.4 million pounds (1%).
- For 2019, 14% of all facilities reporting to TRI were in the fabricated metals sector, but facilities in this sector accounted for less than 2% of all releases reported to TRI. On average, facilities in this sector reported fewer releases per facility than facilities in most other TRI-covered sectors.

Source Reduction in the Fabricated Metal Product Manufacturing Sector:

For 2019, 188 facilities in this sector (6% of facilities) reported implementing 500 new source reduction activities. Several facilities in this sector reported initiating source reduction activities to reduce scrap generation. Note that minimizing the generation of scrap metal is a source reduction activity, while recycling scrap metal is a waste management practice. Examples of source reduction activities reported by the sector include:

- A machine shop reduced chromium compounds in waste by installing new racks which reduce damage to parts in production. [[Click to view facility details in the TRI P2 Search Tool](#)]
- A plumbing fixture manufacturer began using one copper part in two places instead of creating two separate parts, reducing copper residue and saving money. [[Click to view facility details in the TRI P2 Search Tool](#)]

Additional Resources

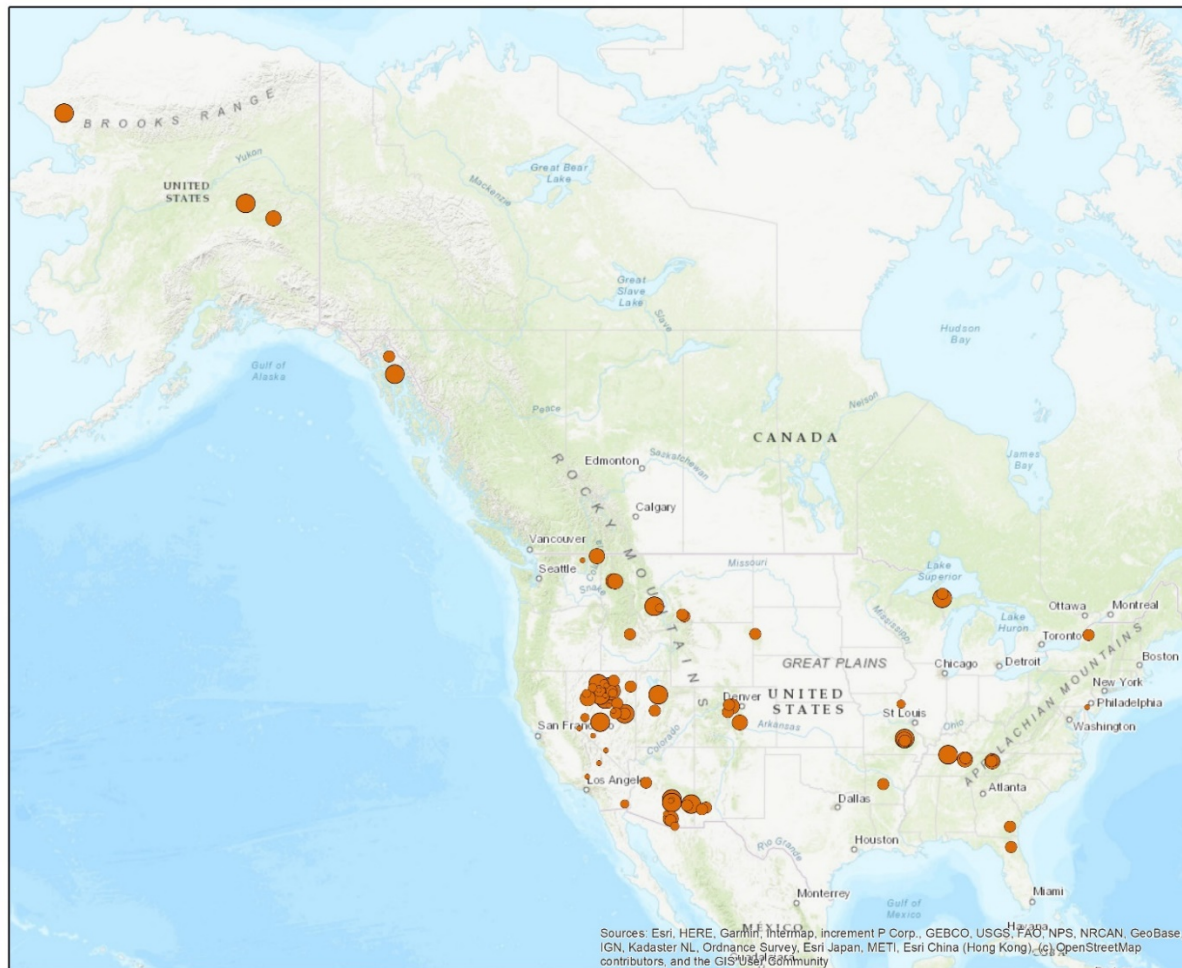
- TRI's P2 program "Spotlights" feature pollution prevention activities by the fabricated metals and other sectors in reducing [organic solvents](#) and [metal waste](#).
- [TRI's P2 Industry Profile Dashboard](#) can help you learn more about releases, other waste management trends, and pollution prevention opportunities in this sector.

Metal Mining

This section examines how TRI chemical wastes are managed in the metal mining sector (defined as facilities reporting their primary NAICS code as 2122).



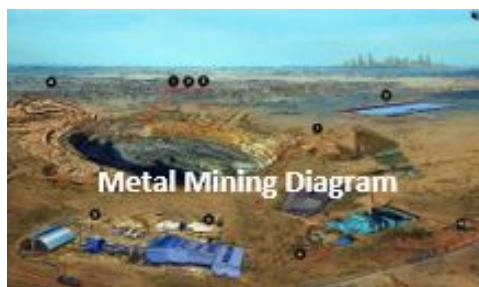
This map shows the locations of the metal mining facilities that reported to TRI for 2019, sized by their relative releases. Click on a facility for details on its TRI reporting. Mines are shown on this map based on their longitude/latitude, which may be miles from the city identified on the mine's TRI reporting forms. Mines can qualify their location relative to the city by noting the distance in the street address data field of their TRI reporting forms.



Metal Mines Reporting to TRI, 2019

[View Larger Map](#)

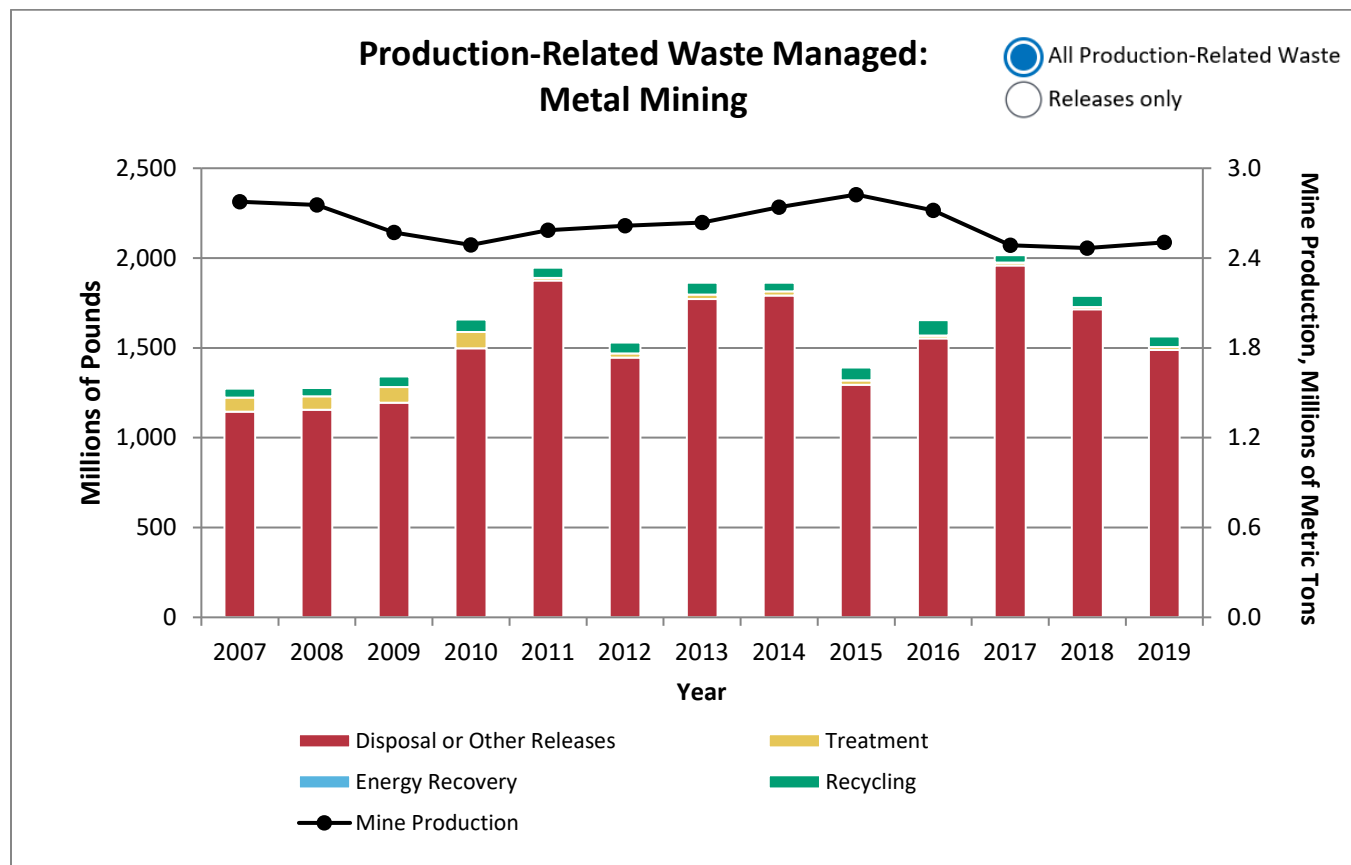
For 2019, 82 metal mining facilities reported to TRI. They tend to be in western states where most of the copper, silver, and gold mining occurs; however, zinc and lead mining tend to occur in Missouri and Tennessee. Metals generated from U.S. mining operations are used in a wide



range of products, including automobiles, electric and industrial equipment, jewelry, and decorative objects. The extraction and processing of these minerals generate large amounts of on-site land disposals, primarily of metal-bearing rock (called ore) and waste rock containing TRI-covered metals. To learn more about metal mining operations and their TRI reporting, [explore the interactive metal mining diagram](#). Metal mining operations are subject to federal and state regulations.

Metal Mining Waste Management Trend

The following graph shows the annual quantities of TRI chemical waste managed by the metal mining industry from 2007 to 2019, mainly in the form of on-site land disposal. The nature of metal mining operations limits the feasibility of other methods of waste management. For more details on quantities released, toggle to the “Releases only” graph.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- While metal mining production (as reported in the [United States Geological Survey](#)) remained relatively steady, the quantity of waste managed fluctuated.
- Besides production volume, one factor commonly cited by facilities as a contributor to the changes in quantities of waste managed is the chemical composition of the extracted ore, which can vary substantially from year to year. In some cases, small changes in the ore’s composition can impact whether TRI chemicals in ore qualify for a

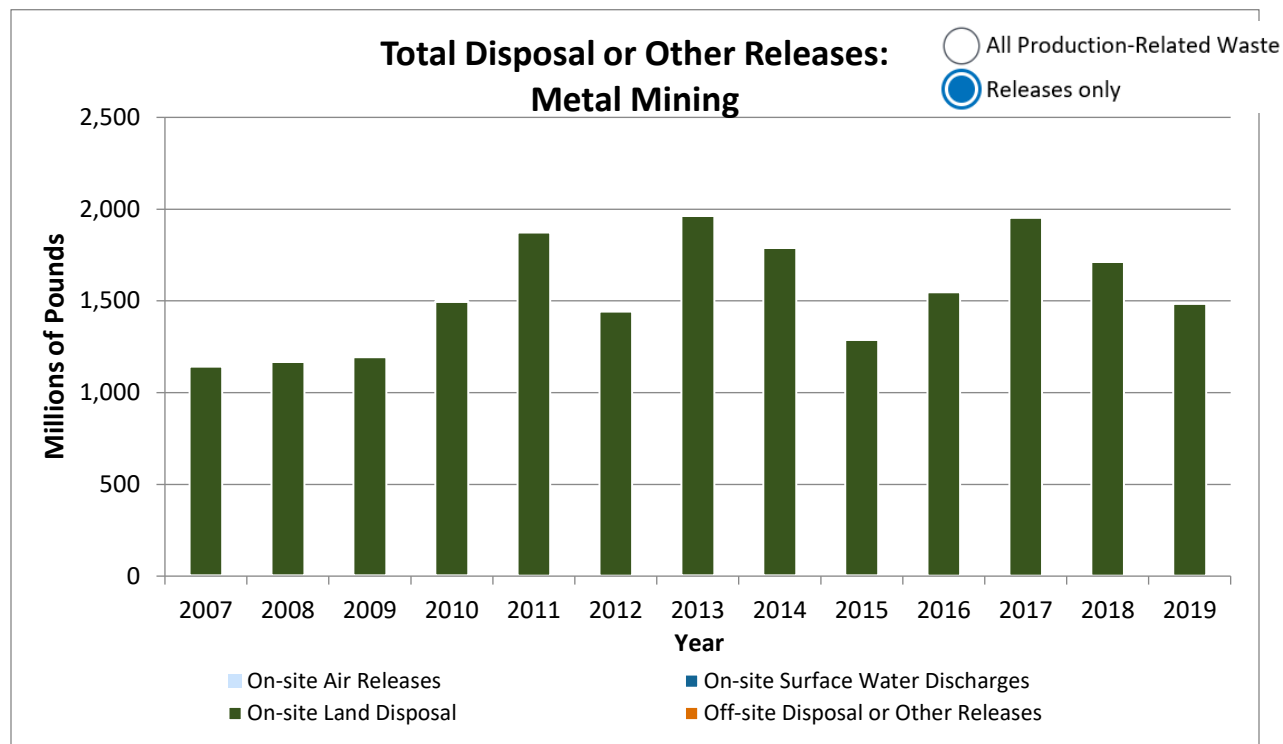
concentration-based TRI reporting exemption in one year but not in the next year or vice versa.

From 2018 to 2019:

- The quantity of TRI chemical waste managed by this sector decreased by 227 million pounds (-13%) between 2018 and 2019.
- During 2019, 95% of the metal mining sector's production-related waste generated was disposed of or otherwise released. Most of this waste consisted of metals, which were primarily disposed of to land on site at the mine.

Metal Mining Releases Trend

The following graph shows the annual quantities of TRI chemicals released by the metal mining industry, primarily through on-site land disposal.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- More than 99% of the metal mining sector's releases of TRI chemicals were on site and to land. The quantity of on-site land disposal by metal mines has fluctuated in recent years.
- Several mines have reported that changes in production volume and changes in the chemical composition of the deposit being mined are the primary causes of fluctuations in the amount of chemicals reported as disposed of on site at the mine.
- Metal mining facilities typically handle large volumes of material, and even a small change in the chemical composition of the deposit being mined can lead to big changes in the amount of TRI chemicals reported.

- The quantity of TRI chemicals released is not an indicator of health risks posed by the chemicals, as described in the [Introduction](#). For more information, see the TRI document, [Factors to Consider When Using Toxics Release Inventory Data](#).

In 2019:

- The metal mining sector reported the largest quantity of total disposal or other releases, accounting for 44% of total TRI releases and 63% of on-site land disposal for all industries.

Source Reduction in the Metal Mining Sector:

One metal mining facility reported initiating source reduction activities for TRI chemicals in 2019, replacing a component used in grinding with one containing less nickel and chromium. Unlike manufacturing, the nature of mining—the necessary movement and disposal of large volumes of rock containing TRI chemicals to access the target ore—does not lend itself to source reduction. [TRI's P2 Industry Profile Dashboard](#) can help you learn more about releases, other waste management trends, and pollution prevention opportunities in this sector.

[EPA's Smart Sectors Program](#) is partnering with the mining sector to develop sensible approaches to better protect the environment and public health.

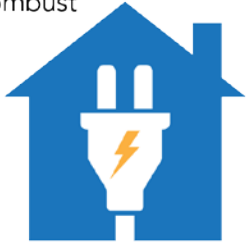
Electric Utilities

This section examines how TRI chemical wastes are managed in the electric utilities sector (defined as facilities reporting their primary NAICS code as 2211).


ELECTRIC UTILITIES

What the Sector Does

Electric utilities generate, transmit, and distribute electric power. Electric-generating facilities use a variety of fuels to generate electricity; however, only those electricity generating facilities that combust coal or oil to generate power for distribution in commerce are subject to TRI reporting requirements.




THE SECTOR EMPLOYS 510,000 PEOPLE



U.S. Census County Business Patterns 2018 data. Includes all fuel types for electricity generation; not limited to those fuels covered by TRI

THE SECTOR GENERATES 736 MILLION MWH

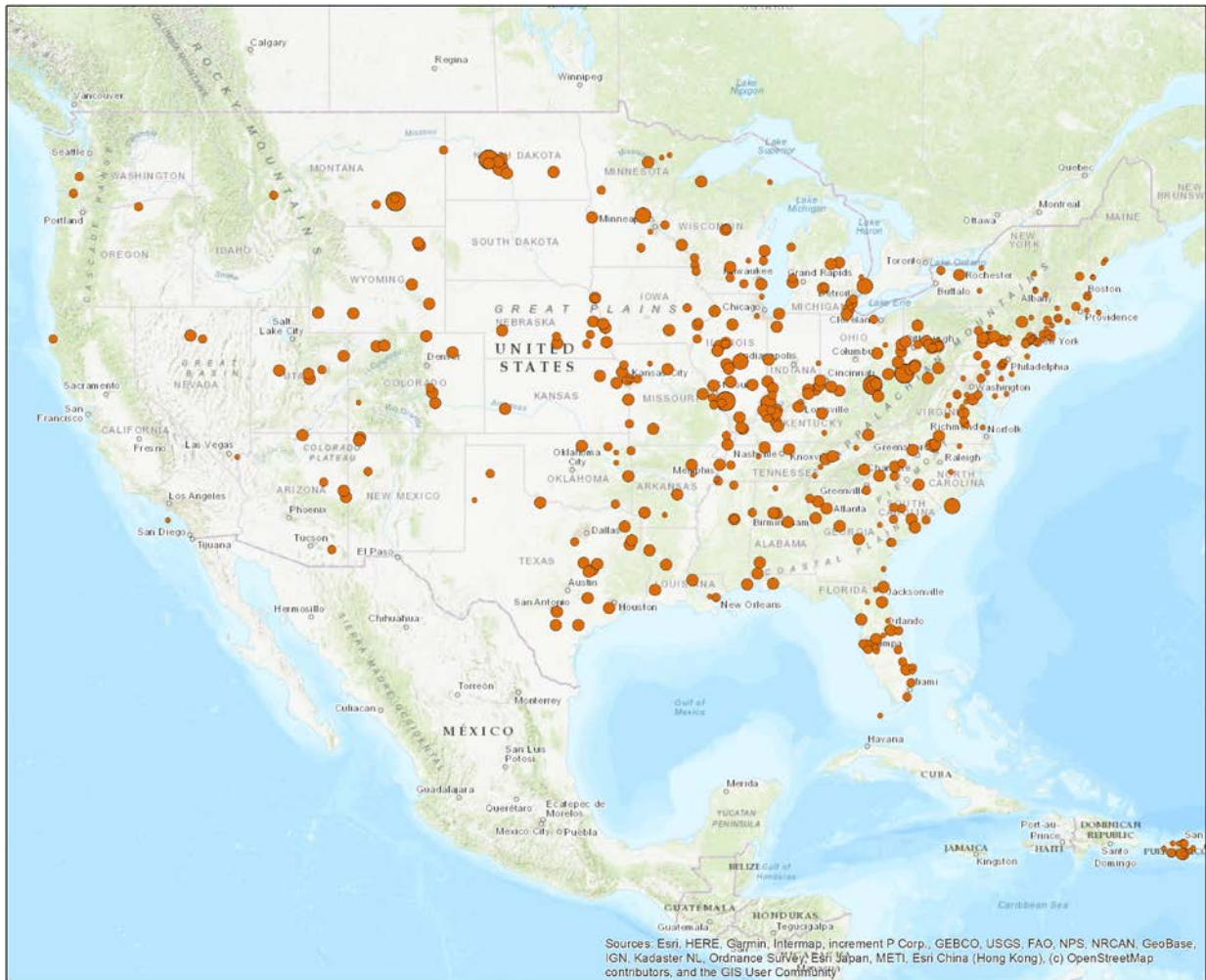


U.S. Department of Energy 2019 data by electric utilities that combust coal or oil for electricity generation

437 facilities in the sector report to TRI

U.S. EPA TRI, Reporting Year 2019

This map shows the locations of the electric utilities that reported to TRI for 2019, sized by their relative releases. Click on a facility for details on its TRI reporting.



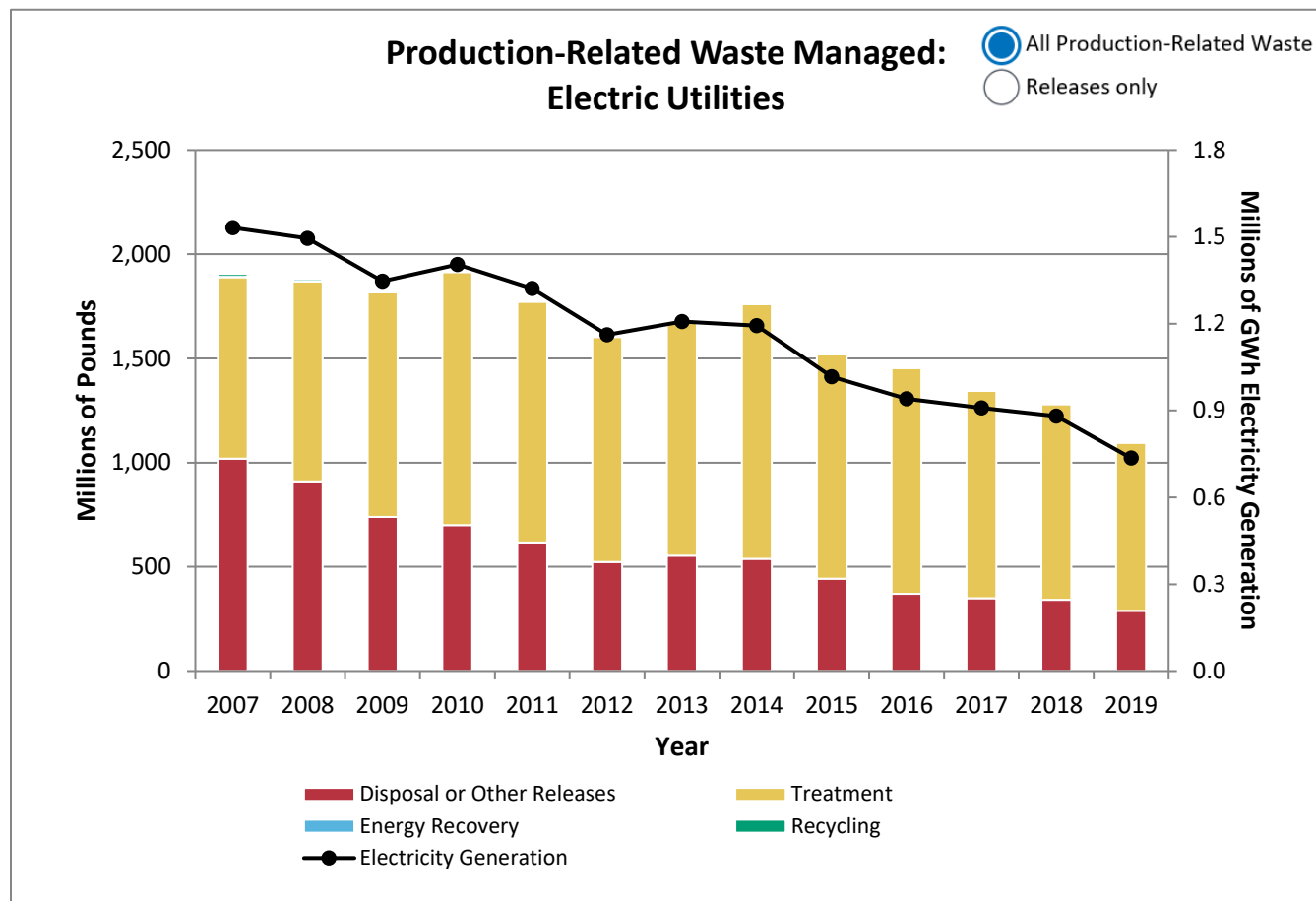
Electric Utilities Reporting to TRI, 2019

[View Larger Map](#)

For 2019, 437 electricity generating facilities reported to TRI. Facilities in the sector use different fuels to generate electricity. Only those facilities that combust coal or oil to generate electricity for distribution in commerce are subject to the TRI reporting requirements.

Electric Utilities Waste Management Trend

The following graph shows the annual quantities of TRI chemical waste that electric utility facilities managed, primarily through treatment or release. For more details on quantities released, toggle to the “Releases only” graph.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- Quantities of production-related waste managed decreased by 804 million pounds (-42%) since 2007, driven by reduced releases.
- Net electricity generation by electric utilities from coal and oil fuels decreased by 52% (as reported by the [U.S. Department of Energy's Energy Information Administration](https://www.eia.gov/)). The recent production decrease (beginning in 2014) was driven by the industry's

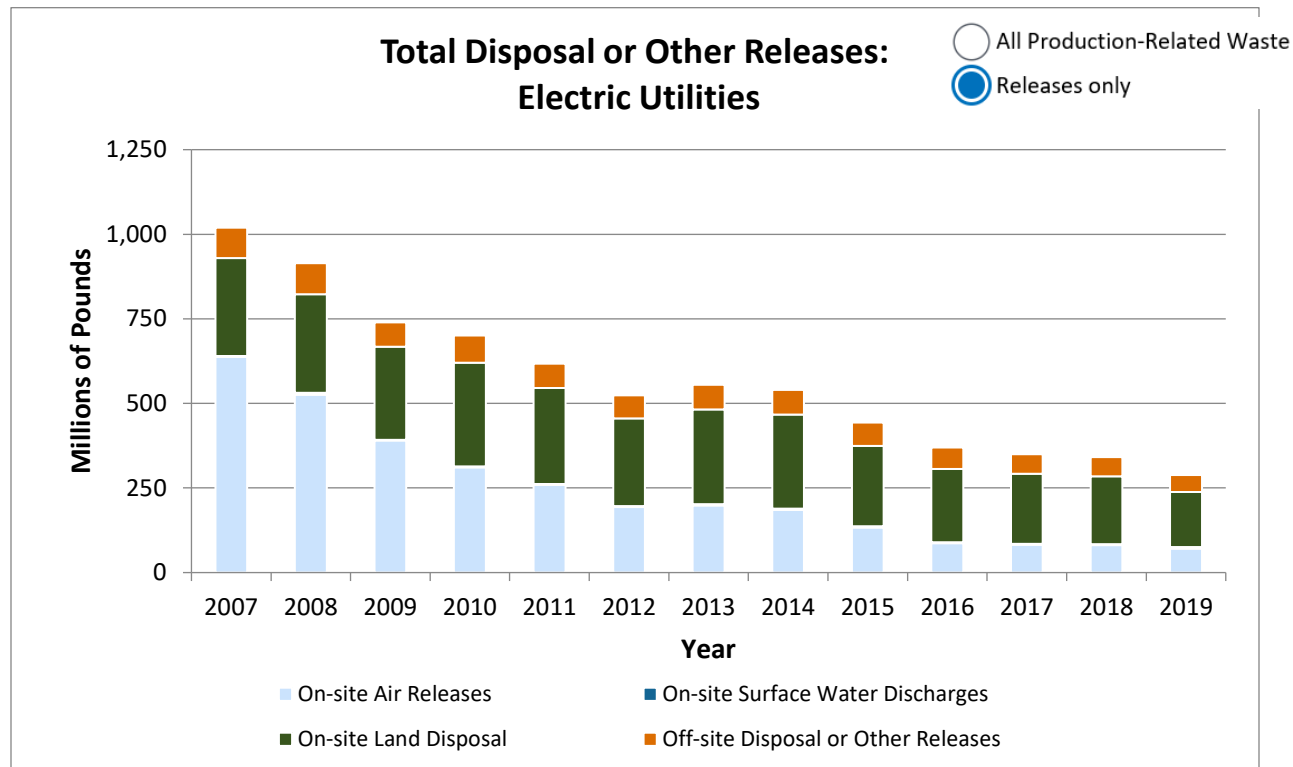
transition to natural gas. Note that only facilities that combust coal or oil to generate electricity are covered under TRI reporting requirements.

In 2019:

- Nearly three-quarters of the sector's production-related waste generated was treated, while approximately one-quarter was released to the environment.
 - This contrasts with 2007, when over half of the waste from this sector was released. This trend is due in part to increased installation of air pollution control devices that destroy TRI-reportable chemicals, reducing the quantities of chemicals that would otherwise be released into the air.
- 52 fewer facilities in the sector reported to TRI in 2019 than had reported in 2018, an 11% drop. Based on data from the U.S. Department of Energy's Energy Information Administration, most of these facilities were either no longer operating in 2019 or were no longer combusting coal or oil to generate electricity.
- Data from the Energy Information Administration indicate that the mix of energy sources for U.S. electricity generation has changed over time, especially in recent years. Natural gas and renewable energy sources account for an increasing share of U.S. electricity generation, while coal-fired electricity generation has declined. Use of oil for electric power generation continues to contribute a small percentage of total U.S. electricity generation.

Electric Utilities Releases Trend

The following graph shows the annual quantities of TRI chemicals released by electric utilities.



Note: For comparability, trend graphs include only those chemicals that were reportable to TRI for all years presented.

From 2007 to 2019:

- Releases from the electric utilities sector decreased by 731 million pounds (-72%). This decrease was driven by a 567 million pound (-89%) decrease in on-site air releases. On-site land disposal and off-site disposal also decreased, but to a lesser extent.

From 2018 to 2019:

- Releases by electric utilities decreased by 53 million pounds (-16%). This decrease was driven by reductions in on-site land disposal of barium compounds and reduced air releases of sulfuric and hydrochloric acid.



Source Reduction in the Electric Utilities Sector:

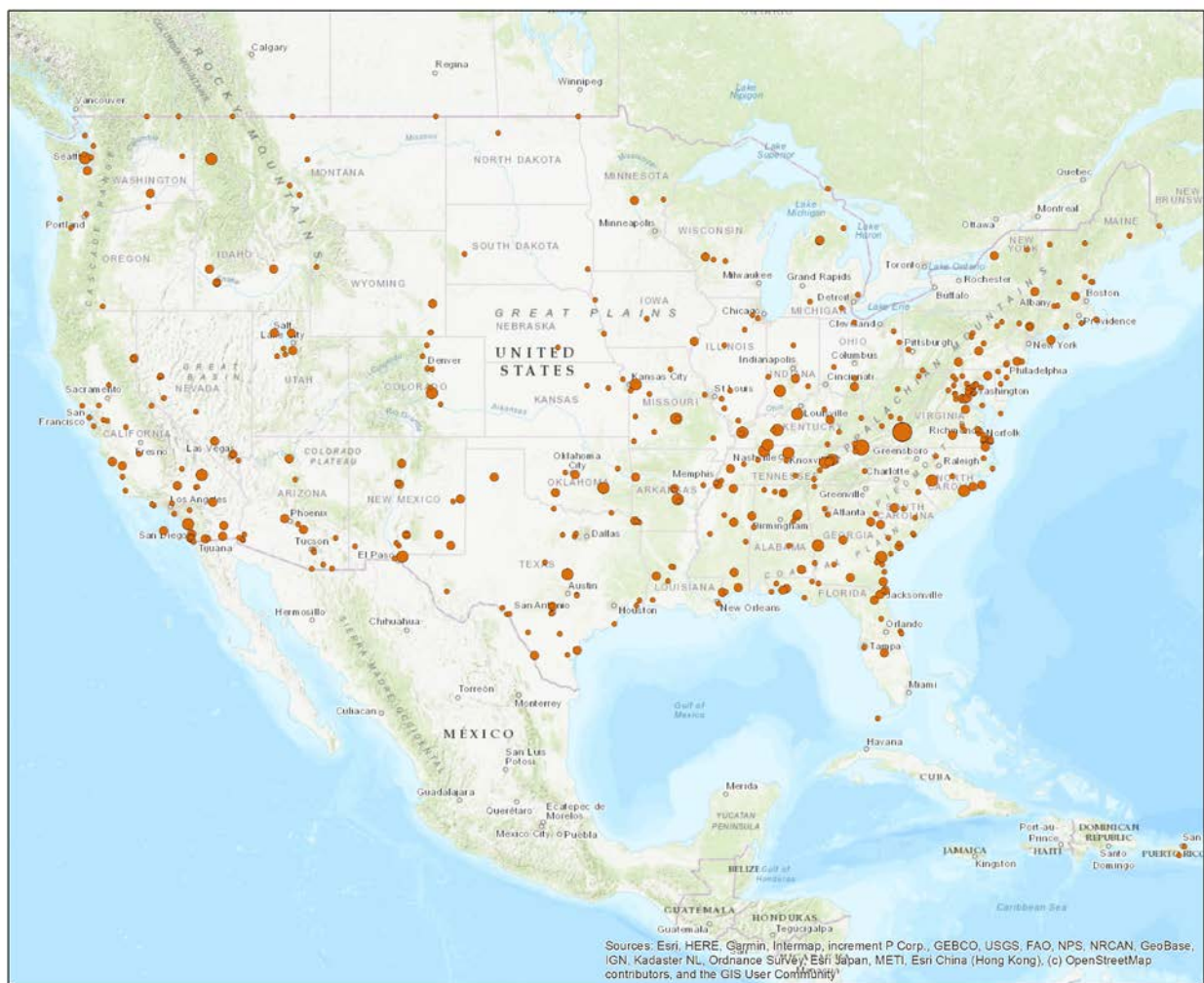
In the electric utilities sector, 6 facilities (1% of the electric utility facilities reporting to TRI) initiated source reduction activities in 2019 to reduce their use of TRI chemicals and generation of wastes that contain TRI chemicals. Examples include reducing fuel use by increasing the heat rate capacity, and experimenting with renewable biomass fuels. [TRI's P2 Industry Profile Dashboard](#) can help you learn more about releases, other waste management trends, and pollution prevention opportunities in this sector.

[EPA's Smart Sectors Program](#) is partnering with this sector to develop sensible approaches to industrial operations that better protect the environment and public health.

Federal Facilities

The 1993 Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements," established the requirement that all federal facilities, including facilities operated by the EPA, the Department of Defense, and the Department of the Treasury, are subject to the TRI reporting requirements, regardless of the type of operations at the facility (as described by their NAICS code). This executive order has been reaffirmed by subsequent administrations.

This map shows the locations of 441 federal facilities that reported to TRI in 2019, sized by their relative releases. Click on a facility for details on its TRI reporting.

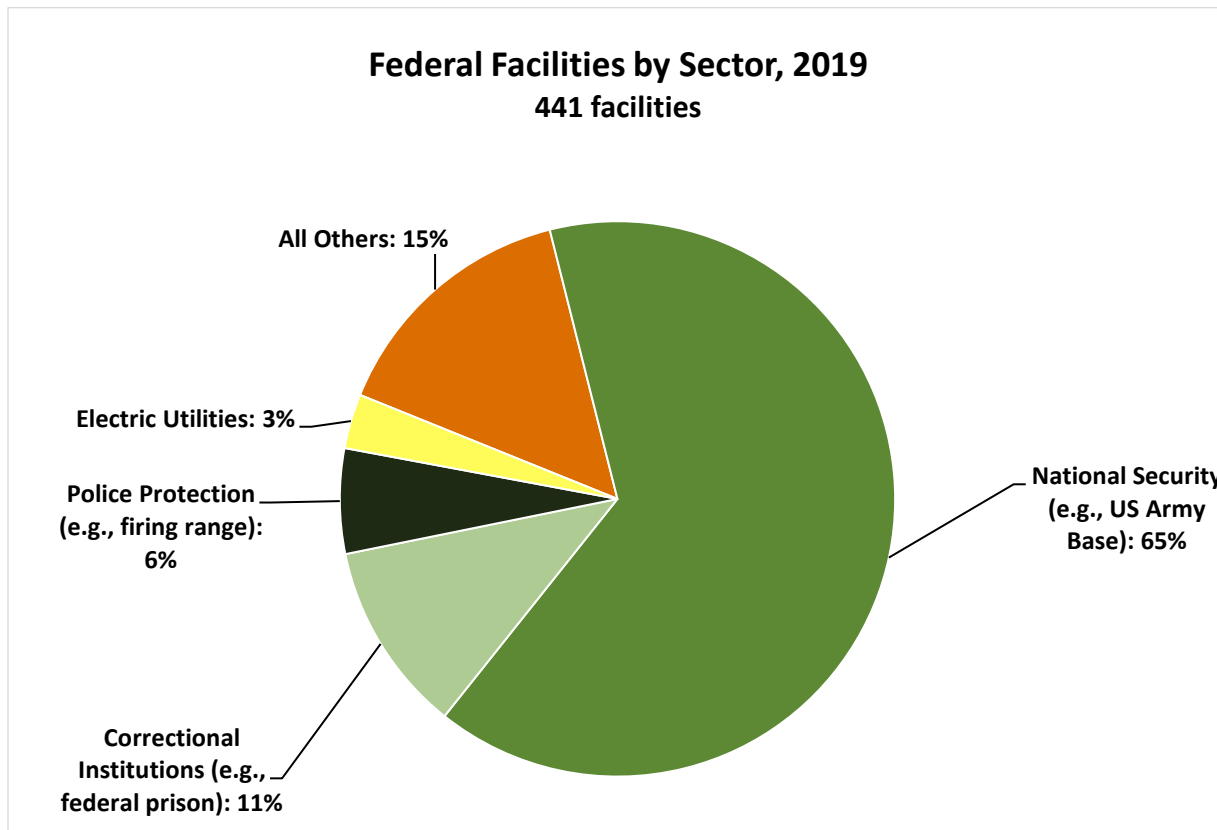


Federal Facilities Reporting to TRI, 2019

[View Larger Map](#)

Federal Facilities by Industry

The following chart shows the number of federal facilities reporting to TRI by sector for 2019.

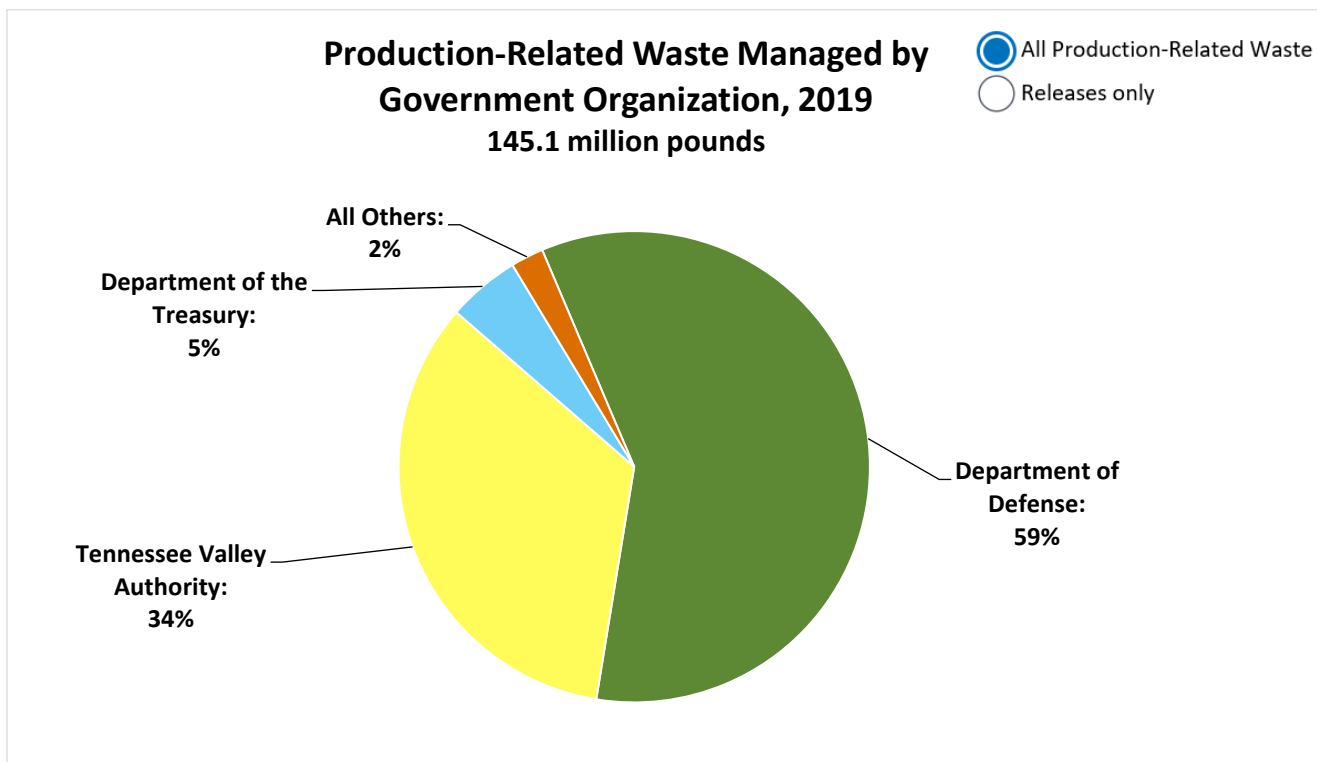


For 2019, 441 federal facilities in 38 different types of operations (based on their 6-digit NAICS codes) reported to TRI. Almost two-thirds of these facilities were in the National Security sector, which includes Department of Defense facilities such as Army and Air Force bases. Since all federal facilities are subject to TRI reporting requirements regardless of industry sector, for some sectors, the TRI database only includes data from federal facilities. Most federal facilities are in such sectors, including Military Bases; Correctional Institutions; and Police Protection, such as training sites for Border Patrol stations.

As with non-federal facilities, the type of activities at federal facilities determine the types and quantities of chemical waste managed and reported to TRI. Some of the activities occurring at federal facilities that are captured by TRI reporting are similar to those at non-federal facilities, such as electric utilities. In other cases, federal facilities may report waste managed from specialized activities that do not usually happen at non-federal facilities. For example, all of the federal facilities included under Police Protection and Correctional Institutions only reported lead and lead compounds, likely due to the use of lead ammunition on their firing ranges.

Waste Management by Federal Facilities

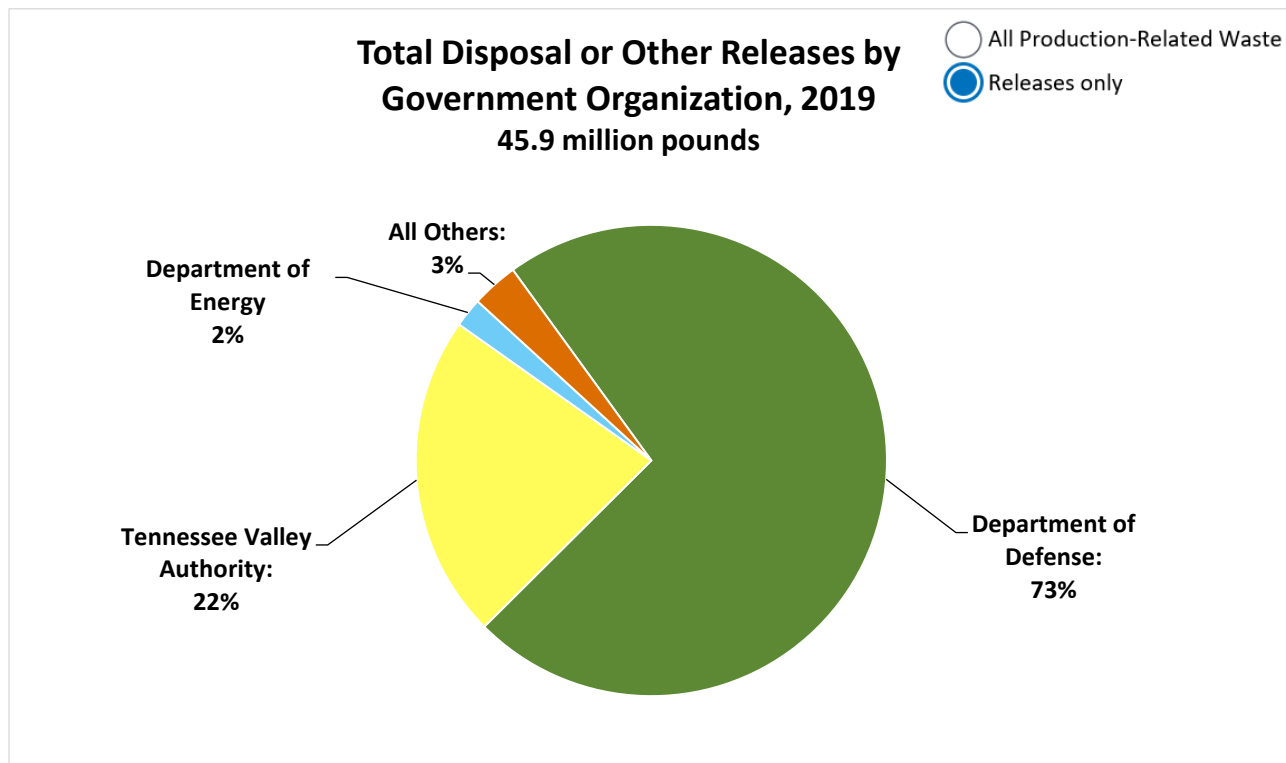
The following pie chart shows the percentages of TRI chemical waste managed through recycling, energy recovery, treatment, and disposal or other releases by federal government organizations in 2019. For more details on quantities released, toggle to the “Releases only” graph.



- The types of waste reported by federal facilities vary by the type of operation.
 - The Tennessee Valley Authority is a government-owned electric utility that provides power to southeastern states. Over 80% of its reported waste was hydrochloric and sulfuric acid aerosols, which were mostly treated on site.
 - The Department of the Treasury facilities reporting to TRI are mints for manufacturing currency and, accordingly, they report metals (e.g., copper and nickel) to TRI. Almost all of their metal waste was recycled off site.

Federal Facilities Releases Trend

The following graph shows the percentages of TRI chemicals released by federal government organizations in 2019.



- Most of the Department of Defense’s releases were on-site releases of nitrate compounds to water and on-site land disposal of metals and metal compounds.
- The chemicals released by the Tennessee Valley Authority are similar to the chemicals released by [other electric utilities](#) that report to TRI. On-site land disposal of barium compounds and air releases of sulfuric acid make up a large portion of releases from the Tennessee Valley Authority and other electric utilities.

Source Reduction at Federal Facilities:

Federal facilities’ operations are diverse and few focus on manufacturing processes. Due to this variety of functions, operations at some federal facilities are better suited to source reduction strategies than others. For the 2019 reporting year, 21 federal facilities (5%) reported implementing source reduction activities.

Federal facilities have often reported difficulties when trying to reduce their use of lead because it is contained in ammunition used at National Security and Park Service facilities. For 2019,



several federal facilities reported using “green” ammunition in accordance with National Park Service policy to use non-lead ammunition where feasible. To find more examples of federal facilities’ source reduction activities and the source reduction barriers they face, visit [TRI’s P2 Search Tool](#) and select industry sectors such as National Security, Correctional Institutions or Police Protection from the dropdown menu under “search criteria.”