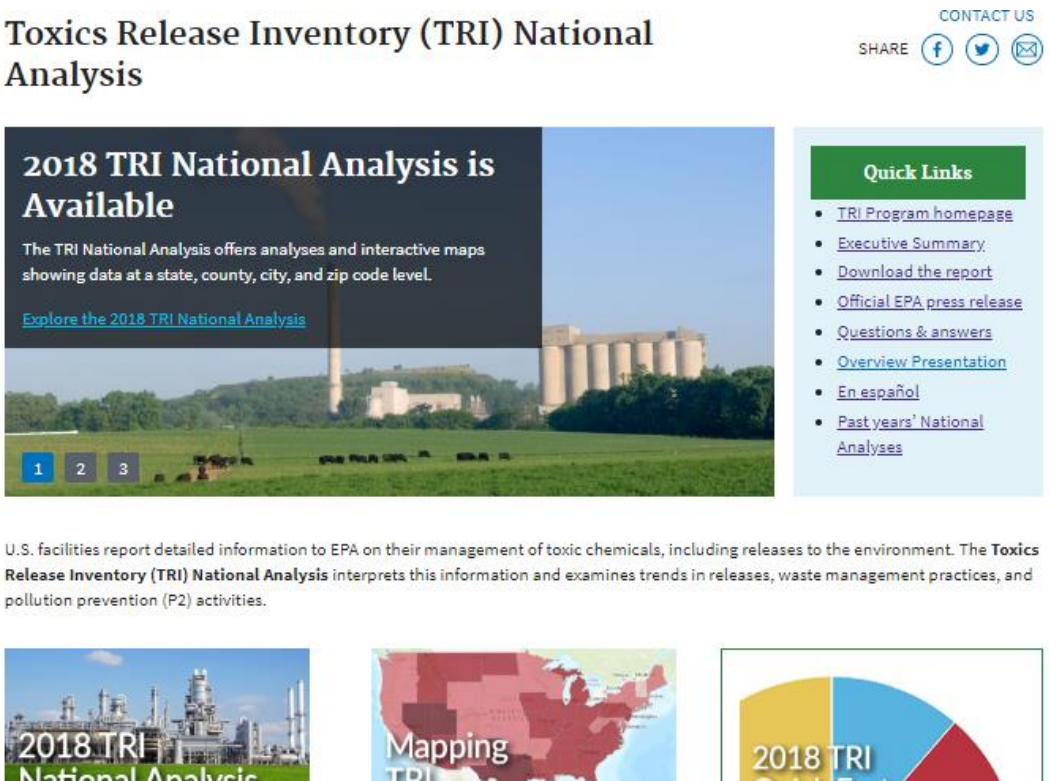
Introduction to the
Toxics Release Inventory and the 2018 TRI National Analysis Report



Overview

- Introduction to TRI
- Reporting Year 2018 TRI National Analysis
- Updated web-based report
- New features in the National Analysis

Why was the Toxics Release Inventory created?

Bhopal memorial for those killed and disabled by the 1984 toxic gas release

Bhopal, India **December 1984**

- Methyl isocyanate gas released at a Union Carbide chemical plant
- Thousands died the first night
- Thousands more have died due to long-term health effects
- Survivors continue to suffer with permanent disabilities

Institute, West Virginia **August 1985**

- Chemical release at a similar facility in the U.S.
- Over 100 people hospitalized

Increased concern in the U.S. about chemical accident preparedness and availability of information on toxic chemical releases from industrial facilities

What is the Toxics Release Inventory (TRI)?

- TRI tracks the waste management of certain chemicals that may pose a threat to human health and the environment.
- TRI includes information on:

Releases

Waste transfers

Recycling

Pollution prevention

And much more!

What is a “release”?

- A **"release"** refers to different ways that TRI chemicals from industrial facilities enter the:

Air

Water

Land

- The likelihood of residents coming into contact with TRI chemicals depends on the type of release and other factors

For more information, see “*Factors to Consider When Using TRI Data”* at: https://www.epa.gov/toxics-release-inventory-tri-program/factors-consider-when-using-toxics-release-inventory-data

What is a “release”?

- On-Site Release to **Air**
  - Includes both fugitive/non-point source emissions (e.g. leaks and evaporation) and stack/point-source emissions (e.g. releases from a duct or pipe)

- On-Site Release to **Water**
  - Discharges to surface water bodies such as streams, rivers, lakes, and oceans; also includes releases of TRI chemicals to surface water due to runoff, including stormwater runoff

- On-Site Release to **Land**
  - Eight categories of land releases or disposal reported to TRI. Examples include:
    - Placement of waste rock containing TRI chemicals into engineered piles or structures at metal mines
    - Disposal of chemical waste in landfills
    - Injection of liquid containing TRI chemicals into underground injection wells
    - Placement of waste materials into surface impoundments to volatize or settle
    - Application of certain waste products to farmlands as fertilizer

Which facilities must report to TRI?

1. Facility must be in a TRI-covered industry sector or category, including:

Manufacturing

Coal/Oil electricity generation

Certain Mining Facilities

Hazardous Waste Management

Federal Facilities

2. Facility must have the equivalent of at least 10 full-time employees
3. Facility must manufacture, process or use more than a certain amount of a TRI chemical per year

What information do facilities report to TRI?

- On-site releases of TRI chemicals to:
  - Air
  - Water
  - Land

- Transfers of chemical waste to off-site locations

- Other waste management:
  - Recycling
  - Treatment
  - Energy Recovery

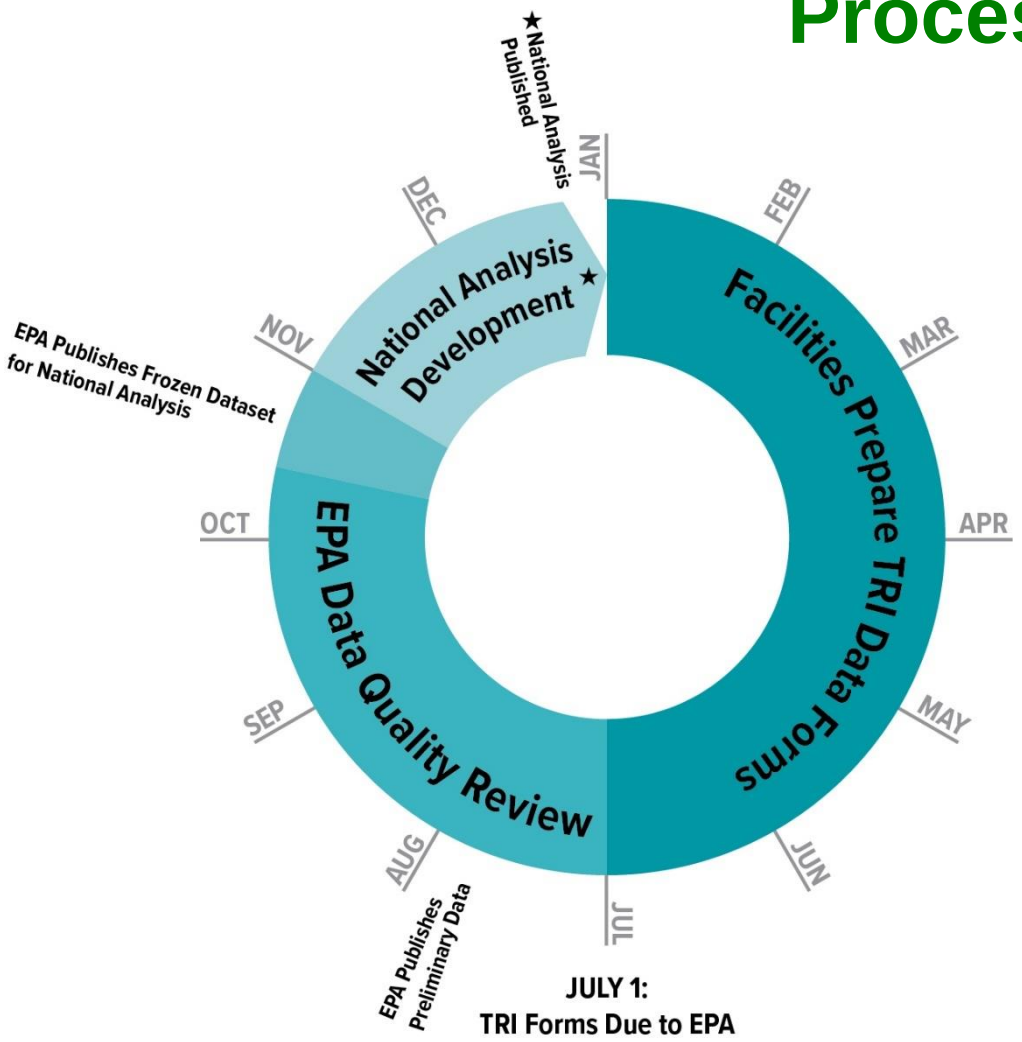
- Pollution prevention activities (www.epa.gov/tri/p2)

Considerations When Using TRI

- TRI doesn't include information about public exposure to chemicals
- TRI covers an important subset of chemicals managed at U.S. facilities, but doesn't cover all chemicals or facilities
- Data reflect annual totals and don't indicate the frequency or duration of a release
- Quantities reflect the TRI chemicals released to air, water and land, recycled, burned for energy recovery, and treated
- Toxicity varies among the chemicals on the TRI list
- Facility operations and releases are regulated under other EPA programs with requirements designed to limit human and environmental harm

For more information, see *"Factors to Consider When Using TRI Data"* at: https://www.epa.gov/toxics-release-inventory-tri-program/factors-consider-when-using-toxics-release-inventory-data

Annual TRI Cycle and Data Quality Process



- Facilities submit their TRI forms for each calendar year to EPA by July 1st of the following year
- The preliminary TRI dataset is released in July
- EPA conducts data quality checks and compliance assistance activities from July - October
- The TRI National Analysis (EPA's official annual TRI report) is published early the following year

2018 TRI National Analysis

Toxics Release Inventory (TRI) National Analysis

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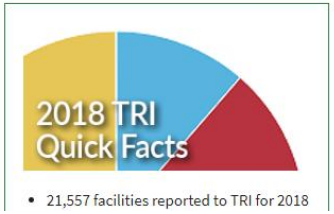
Quick Links

- TRI Program homepage
- Executive Summary
- Download the report
- Questions & answers
- Overview Presentation
- En español
- Past years' National Analyses

U.S. facilities report detailed information to EPA on their management of toxic chemicals, including releases to the environment. The **Toxics Release Inventory (TRI) National Analysis** interprets this information and examines trends in releases, waste management practices, and pollution prevention (P2) activities.

- Browse the TRI National Analysis

- View TRI data where you live



www.epa.gov/trinationalanalysis

Summary of the 2018 TRI National Analysis

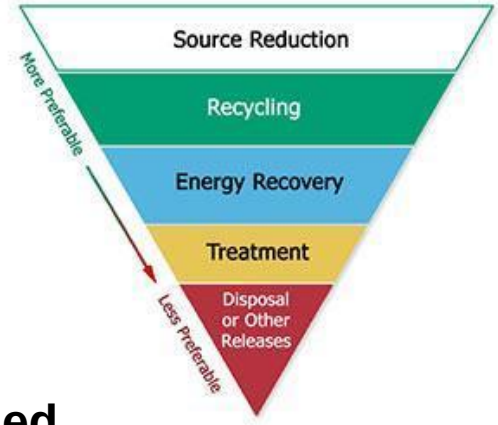
- TRI data demonstrate that economic growth and improved environmental performance can coexist
  - Facilities implemented over 3,000 new pollution reduction activities in 2018
  - Source reduction success stories in the National Analysis highlight recent and actionable opportunities for knowledge transfer
- Nationally, percent of production-related waste that is recycled continues to increase
  - Recycling is a more preferred method of managing chemical waste compared to releasing waste to the environment, as outlined in the waste management hierarchy in the Pollution Prevent Act
- Releases of TRI chemicals to air continue to decline
  - 2007-2018: Releases to air decreased by 755 million pounds (-56%)
    - 2017-2018: Releases to air decreased by 423 thousand pounds (<1%)
  - Almost every sector has reduced their releases to air since 2007
- Regional profiles in this year's National Analysis highlight the geographic diversity of industrial operations in the U.S.
- The National Analysis increases transparency and understanding of TRI information: www.epa.gov/trinationalanalysis
  - Explanation, illustration, and interpretation of TRI information improve understanding of environmental data
  - Interactive, embedded tools, such as data visualization, support access to and exploration of TRI data

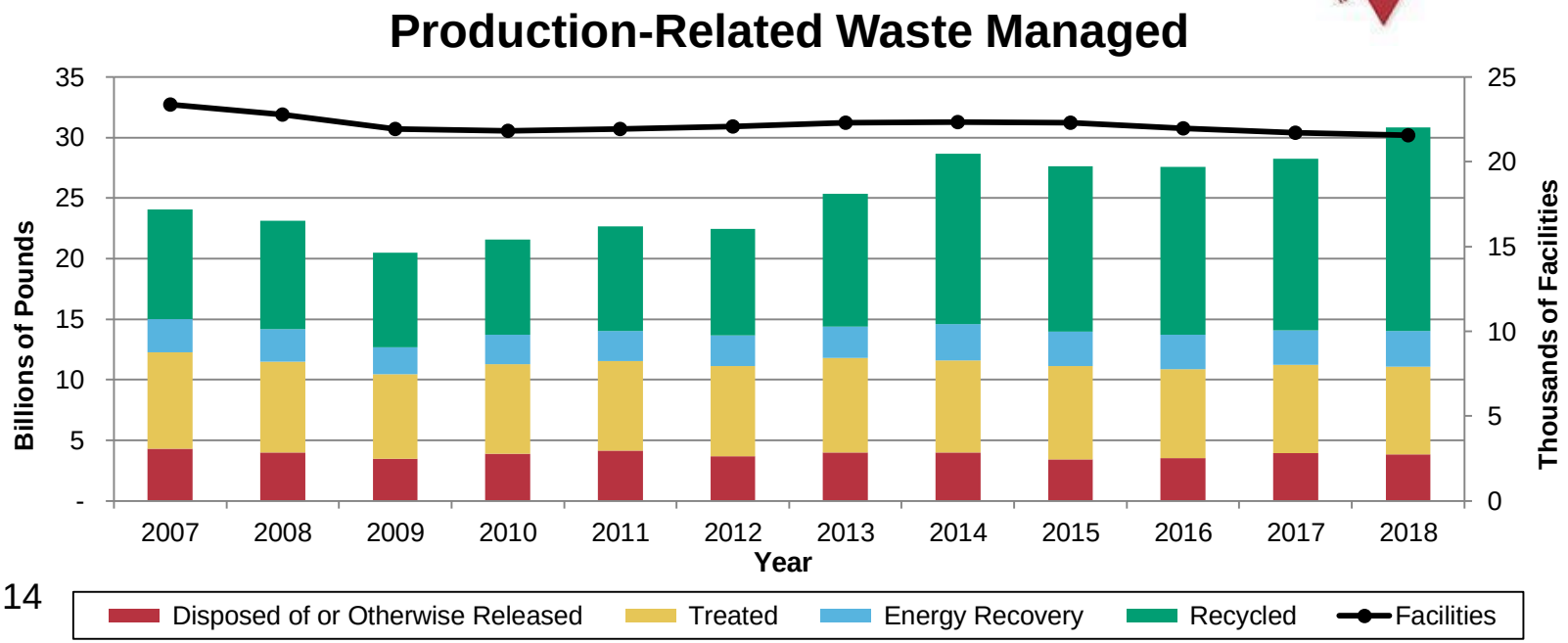
Summary of the 2018 TRI National Analysis

- Production-related waste increased 9% from 2017-2018 to 32.1 billion pounds
  - Of this total, 28.3 billion pounds (88%) were not released due to preferred waste management practices such as recycling
  - Recycling increased 19%, energy recovery increased 4%, releases decreased 3%, and there was little change in treatment
- Disposal or other releases decreased 3% from 2017-2018 to 3.8 billion pounds
  - Reductions driven by decreased land disposal by metal mines
  - Little change in releases to air and water
  - 2018: Of the 3.4 billion lb released on site, 2.6 billion lb (76%) were released to land, 602 million lb (18%) to air, and 195 million lb (6%) to water
- New this year:
  - Regional profiles of all ten EPA regions
  - Profiles of the hazardous waste management sector and the aerospace manufacturing sector
  - Expanded discussion of international pollutant release and transfer data analysis
  - New interactive diagram of a metal mining facility

Waste Management Trends in the 2018 National Analysis

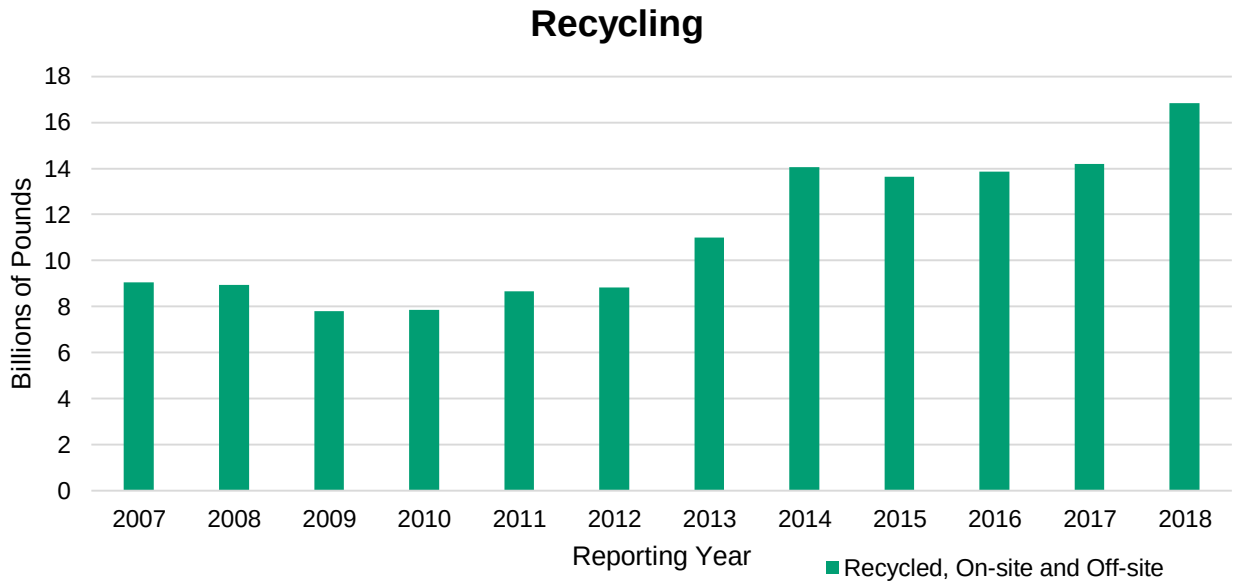
- 2017-2018: Recycling increased 19%; total production-related waste managed increased by 9% to 32.1 billion pounds
  - Energy recovery increased 4%, releases decreased 3%, and there was little change in treatment
- 2007-2018: Recycling increased 86% (7.8 billion pounds)
- For 2018, 6% of facilities reported initiating 3,120 **new** pollution reduction projects





Waste Management Trends in the 2018 National Analysis

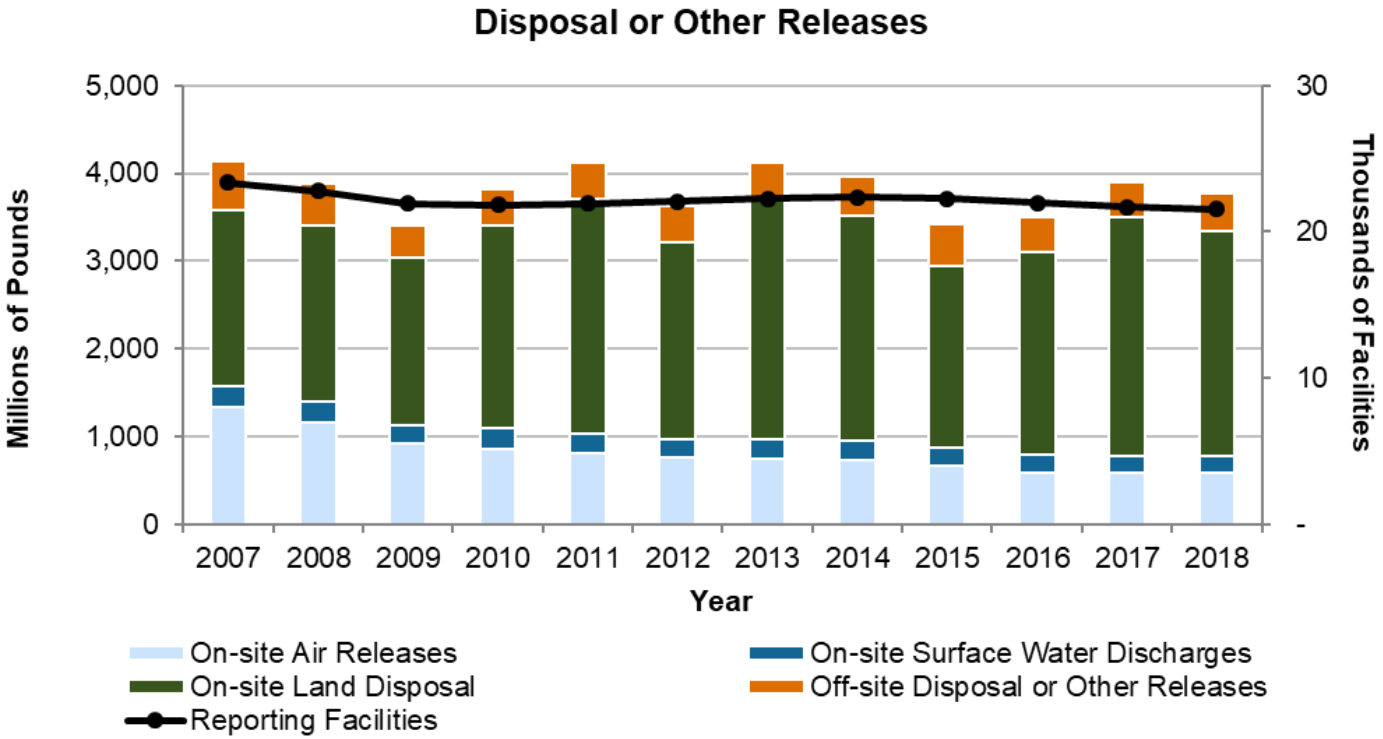
- 2007-2018: Recycling of TRI chemicals increased by 7.8 billion pounds (86%)
- 2017-2018: Recycling of TRI chemicals increased by 2.6 billion pounds (19%)
  - The increase in recycling since 2012 was driven by increased methylene chloride recycling by two plastics facilities, and increased cumene recycling by one petrochemical manufacturing facility



Note: For TRI reporting, facilities consider the quantity of the chemical recycled each time it is recycled and report the aggregate total. Quantities of toxic chemicals that are directly reused without undergoing any reclamation or recovery steps prior to that reuse are not considered recycled and need not be reported to TRI.

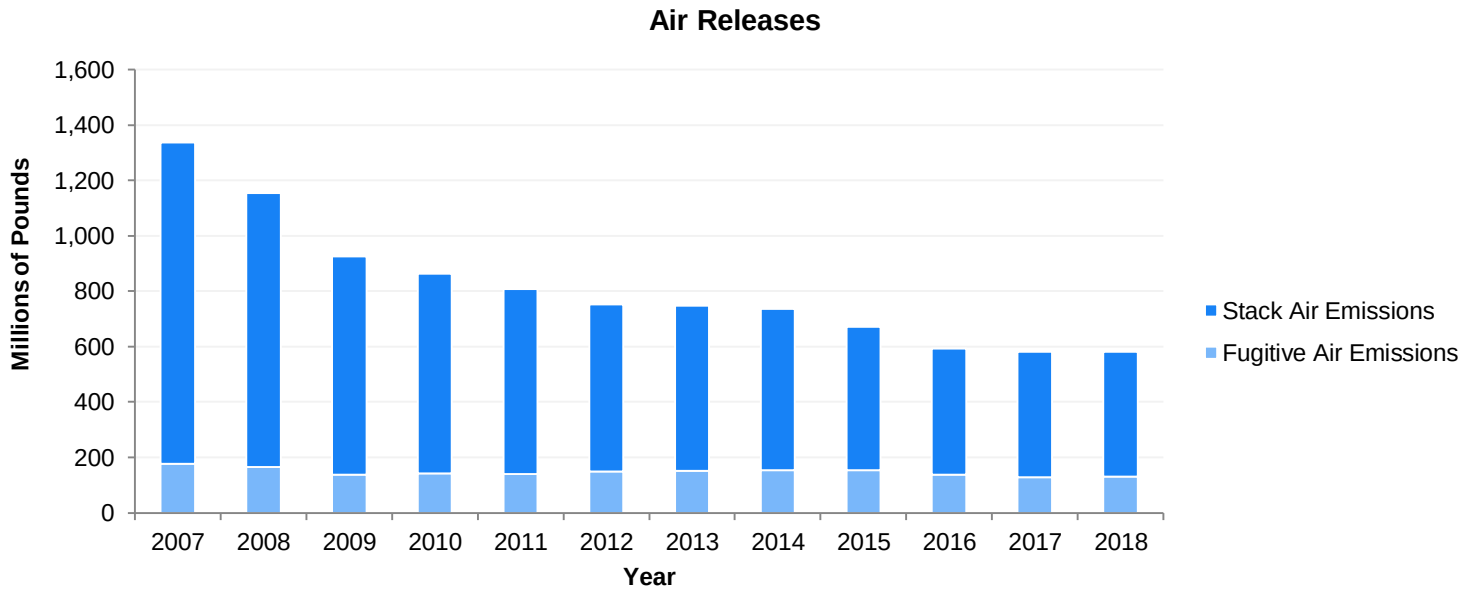
Chemical Release Trends in the 2018 National Analysis

- 2018: Total releases of 3.8 billion pounds
- 2017-2018: Total releases decreased by 3% (-125 million pounds)
  - Metal mining on-site land disposal decreased by 176 million pounds
    - Decreased land disposal quantities reported by metal mining facilities may reflect changes in the chemical composition of mineral deposits rather than improved environmental performance or changes in production.
- Excluding metal mining, releases increased by 3%



Trends – Releases to Air

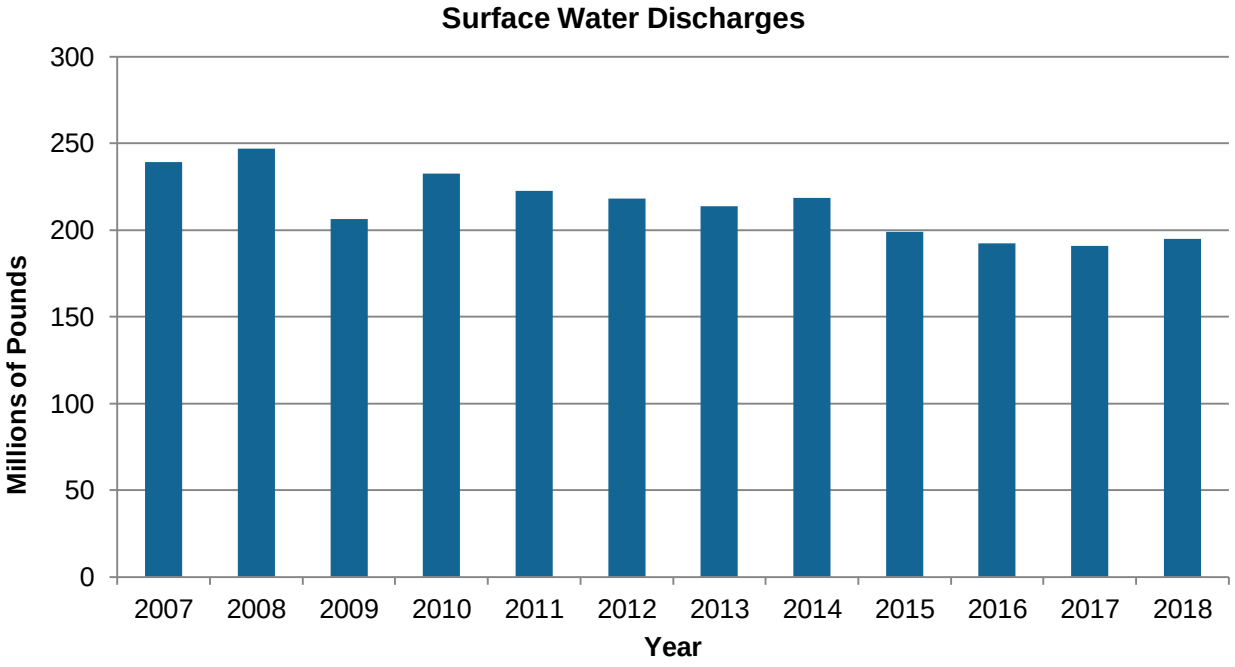
- 2017-2018: Releases to air decreased by <1% (-423,000 lb)
- 2007-2018: Releases to air decreased by 56% (-755 million lb)
  - Decreased from 2008-2009 largely due to economic recession
    - 2018 releases lower than 2009 despite economic recovery
      - 2009 GDP = $15.2 trillion; 2018 GDP = $18.6 trillion



GDP data from US Bureau of Economic Analysis, 2012 dollars

Trends – Releases to Water

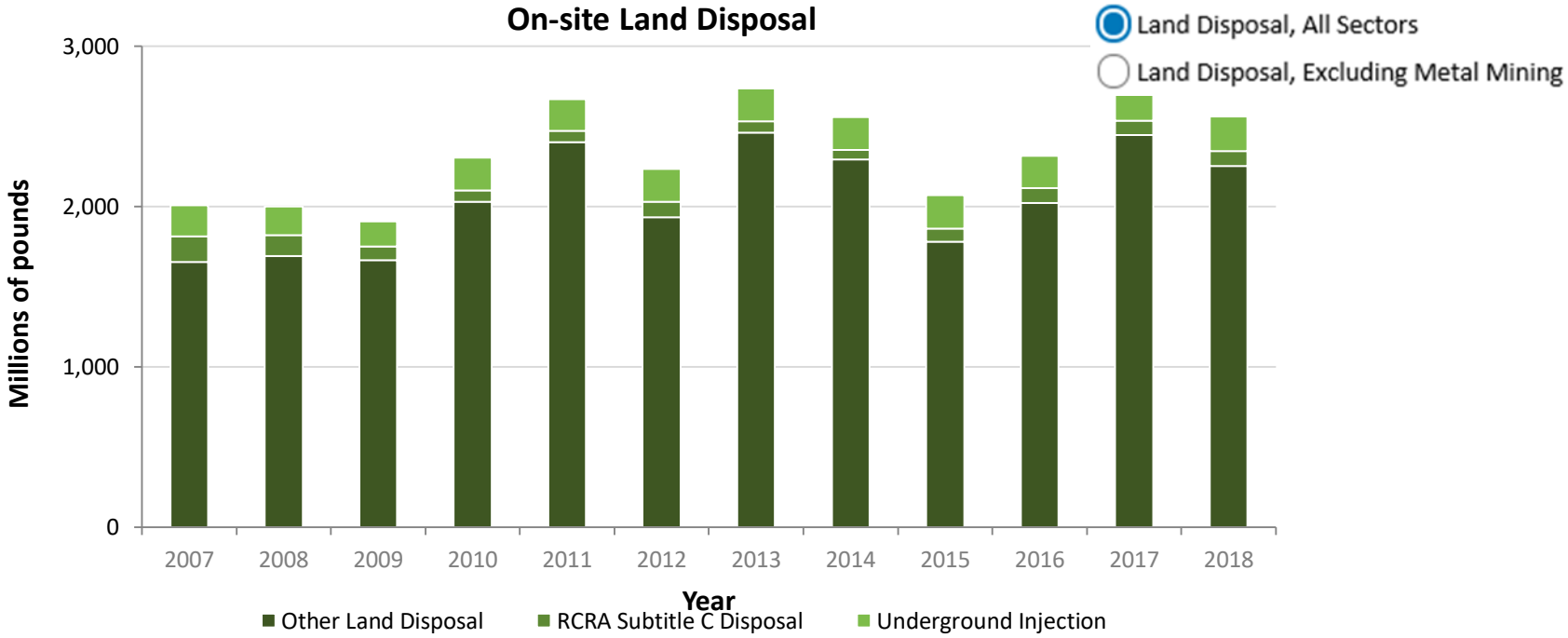
- 2007-2018: Surface water discharges of TRI chemicals decreased by 18% (44 million pounds)
  - 2017-2018: Surface water discharges increased by 2% (4 million pounds)
  - Decreased from 2008-2009 due to economic recession
    - 2018 releases are lower than 2009 releases despite economic recovery
      - 2009 GDP = $15.2 trillion; 2018 GDP = $18.6 trillion



GDP data from US Bureau of Economic Analysis, 2012 dollars

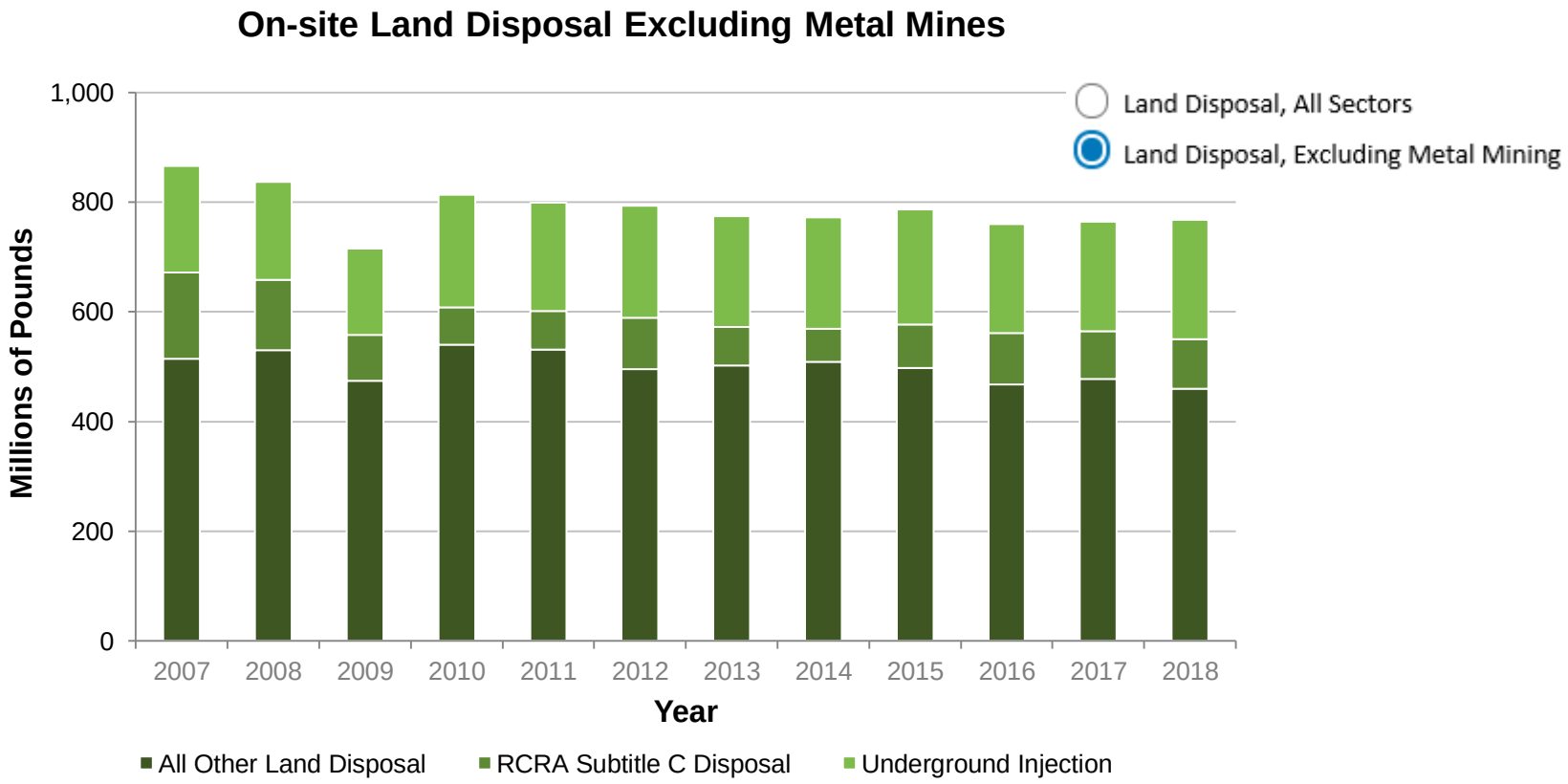
Trends – Releases to Land (all sectors)

- 2017-2018: On-site land disposal decreased by 6% (-170 million lb)
  - Decrease is driven by the metal mining sector for which land disposal decreased by 176 million pounds
- 2007-2018: On-site land disposal increased by 28% (556 million lb)
  - Annual fluctuations are primarily due to changes in waste quantities reported as "other land disposal," which includes chemicals disposed of in waste piles



Trends – Releases to Land (excluding metal mining)

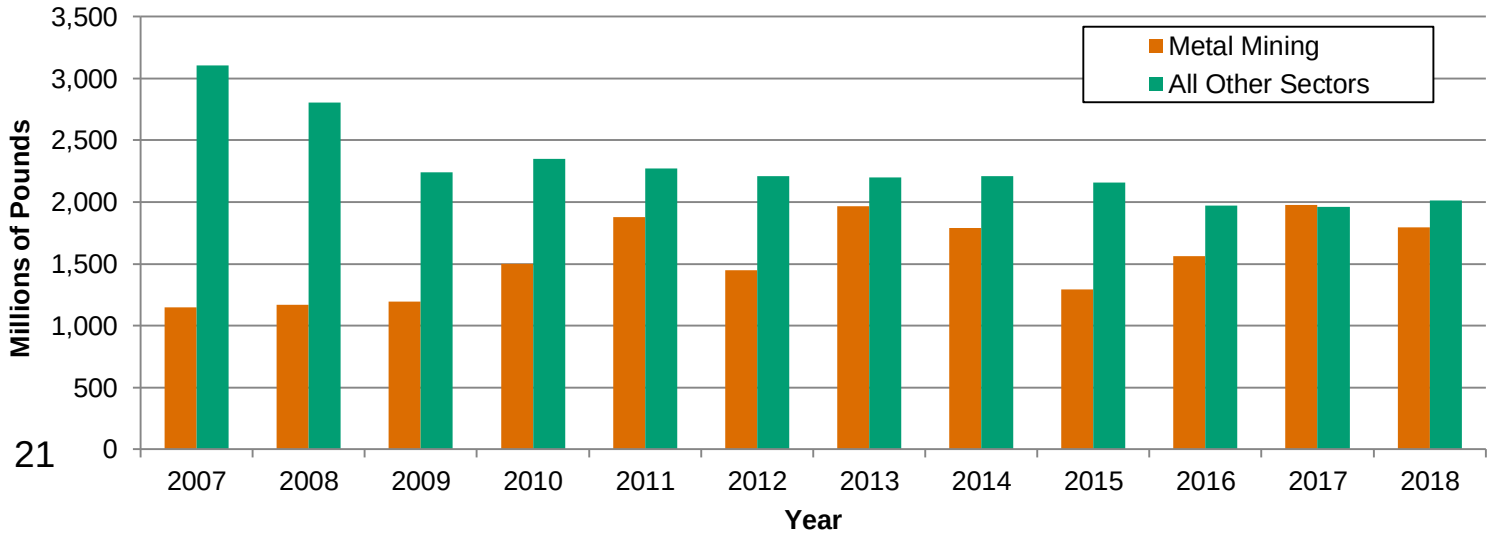
- 2017-2018: Excluding metal mining, land disposal showed little change (<1%)
- 2007-2018: Excluding metal mining, land disposal decreased 11% (-98 million lb)



Trends - Metal Mining & Other Industry Sectors

- Releases by metal mines fluctuated from 2007-2018
  - Metal mines contribute more than one-third of all TRI releases
- Other industries show decreased releases from 2007-2018
  - Electric Utilities (NAICS 2211) – Releases decreased 66% (677 million lb)
    - Only electric utilities burning coal or oil report to TRI
  - Manufacturing (NAICS 31-33) – Releases decreased 19% (346 million lb)
    - Primary Metals (NAICS 331) – Releases decreased 43% (254 million lb)

Disposal or Other Releases, 2007-2018: Metal Mining and All Other Industry Sectors



New Analysis – Regional Profiles

Region 5 serves 6 states

REGION 5'S POPULATION IS

52.5 million PEOPLE

U.S. Census Annual Estimates of the Resident Population: July 1, 2018

The **sectors** with the greatest TRI releases in the region are:

- Primary metals
- Electric utilities

The TRI **chemicals** released in the greatest quantities in the region are:

- Zinc and zinc compounds
- Manganese and manganese compounds

U.S. EPA TRI, Reporting Year 2018

5,366 facilities in the region report to TRI

U.S. EPA TRI, Reporting Year 2018

New section analyzes trends in releases and production-related waste managed in each region

New Analysis – Hazardous Waste Management Sector

What the Sector Does

This sector receives hazardous wastes from commercial or government entities and manages the waste through treatment, disposal and recycling. Only those facilities in the sector that are regulated under the Resource Conservation and Recovery Act, subtitle C (the national hazardous waste management program) are required to report to TRI.

THE SECTOR
EMPLOYS 427,000 PEOPLE

U.S. Bureau of Labor Statistics, May 2018 data for waste management and remediation services

THE SECTOR
CONTRIBUTES $64.5 BILLION TO U.S. GDP

In value-added. U.S. Bureau of Economic Analysis, Year 2018 data for waste management and remediation services

226 facilities in the sector report to TRI

U.S. EPA TRI, Reporting Year 2018

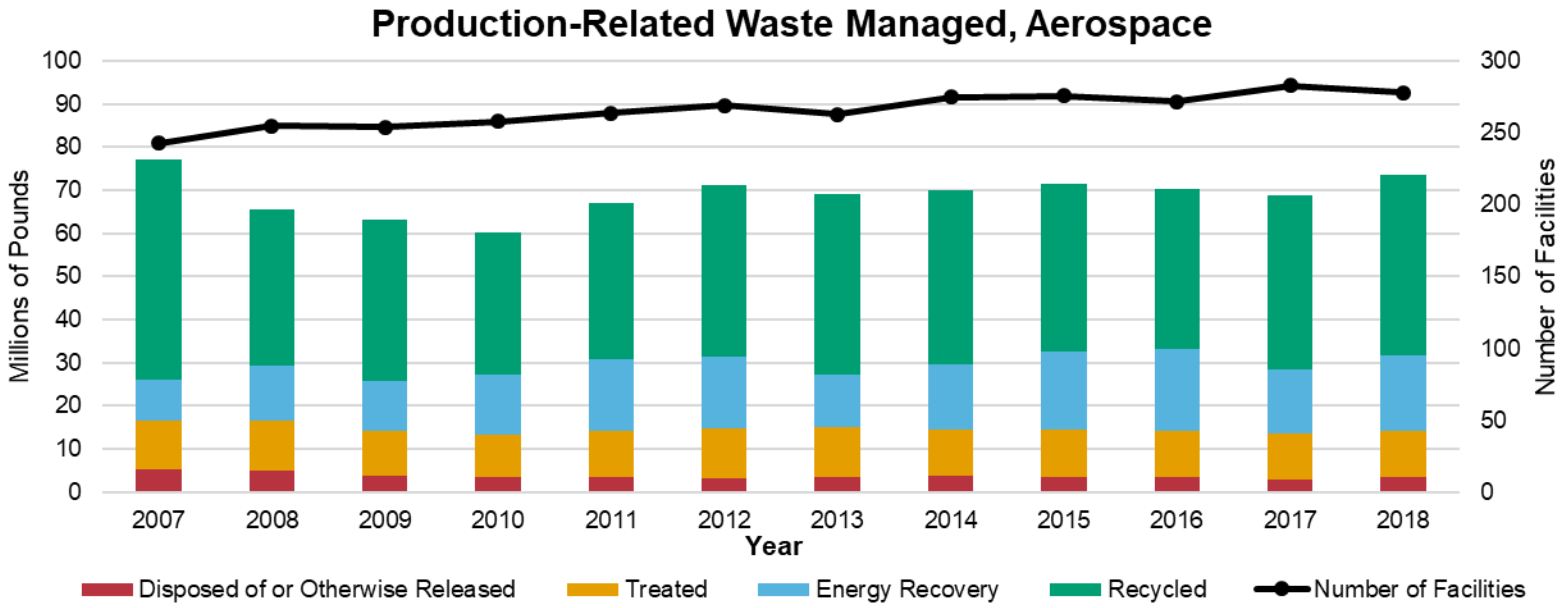
Given the year-to-year variability of the sector's inputs, examining TRI trends of this sector is not meaningful. Instead, this profile will focus on parent companies and 2018 reporting.

New Analysis – Aerospace Manufacturing Sector

- 2007-2018: Production related waste decreased by 3.8 million pounds (-5%)
  - Decrease was driven by decreased releases from one facility that reported high releases for 2007 and 2008
  - Number of facilities increased from 243 in 2007 to 278 in 2018 (13%)

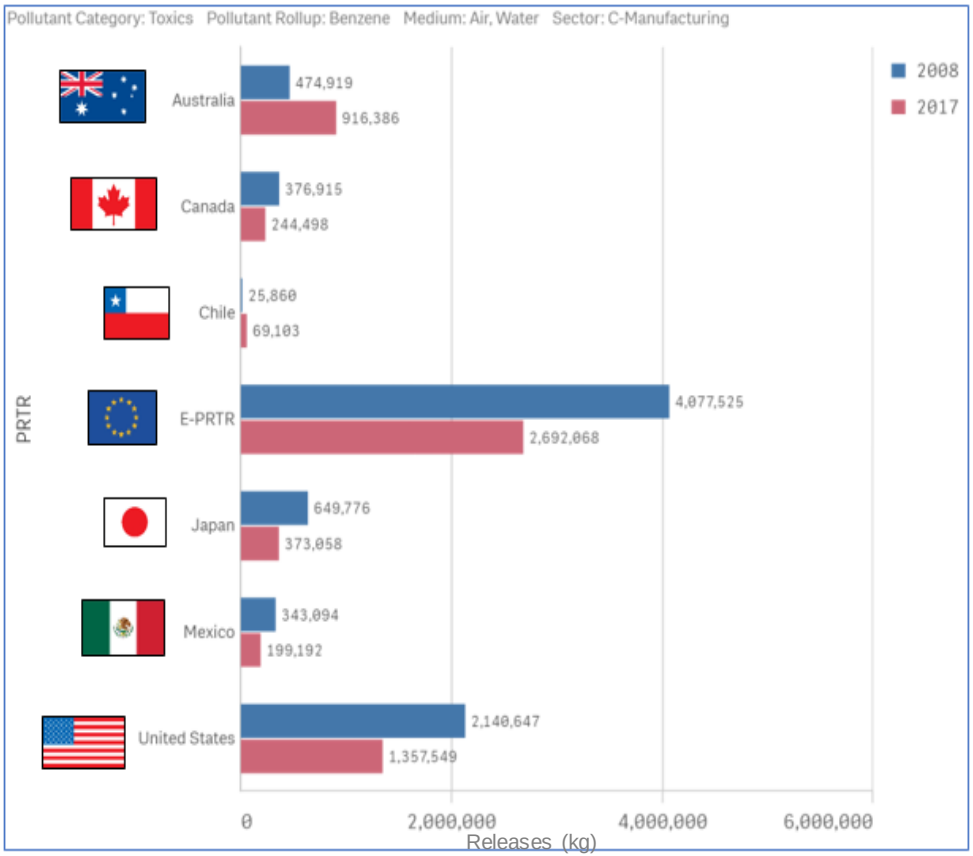
Source Reduction Activities:

- The aerospace sector had a higher than average rate of initiating source reduction activities in 2018
  - Many focus on reducing solvent use and reducing the generation of scrap metal



New – TRI Around the World

Air & Water releases of benzene by manufacturing facilities, 2008 to 2017 (kg)

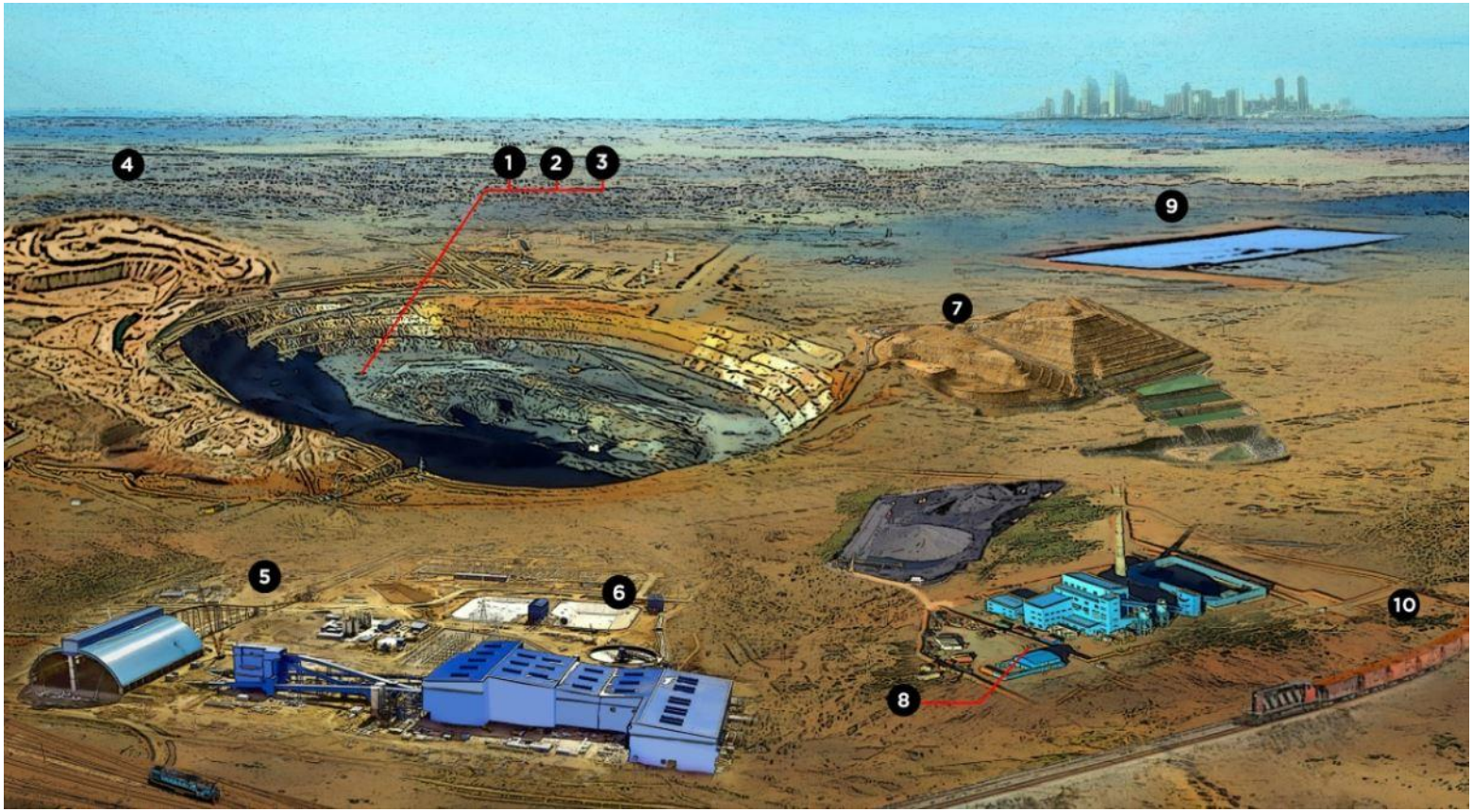


- PRTR* systems worldwide collect data comparable to TRI
- Global PRTR data can be used to determine progress toward UN Sustainable Development Goals
- Trends of 14 key pollutants are being analyzed for progress in release reductions
- PRTRs included with comparable data: Australia, Canada, Chile, E-PRTR (EU+), Japan, Mexico, and U.S. (TRI)

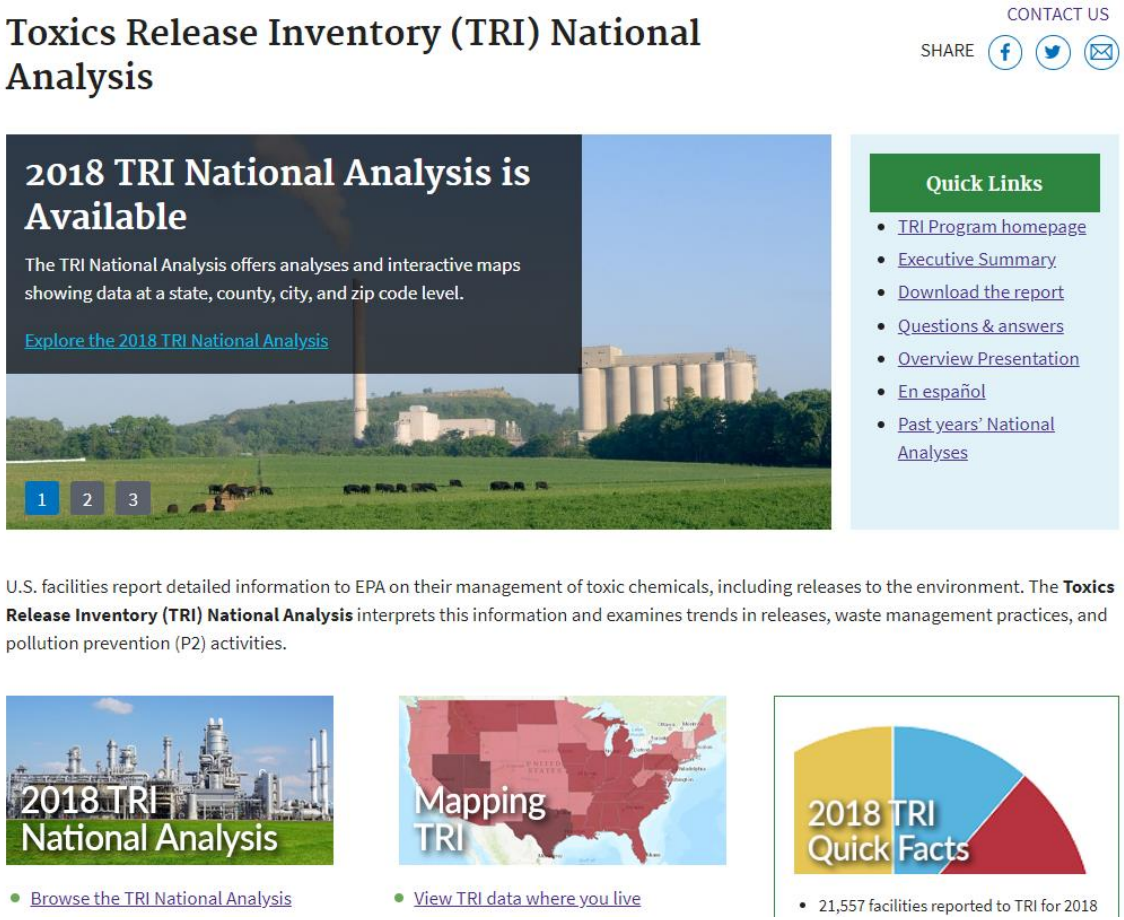
* Pollutant Release and Transfer Register (PRTR). The TRI is the United States' PRTR system.

New – Metal Mining Facility Diagram

Interactive diagram shows typical metal mining operations and how and where TRI releases are generated:



2018 National Analysis Website



www.epa.gov/trinationalanalysis