TRI and Beyond

The Toxics Release Inventory (TRI) is a powerful resource that provides the public with information about how TRI chemicals are managed by facilities in the United States. However, there are many other programs at EPA that collect information about chemicals and the environment.

The next figure is an overview of some of the laws that EPA implements, and the industrial activities or processes EPA regulates under these laws. While many programs at EPA focus on one area, TRI covers releases of chemicals to air, water, and land; waste transfers; and waste management activities. As a result, TRI data are especially valuable, as they can be utilized with many other datasets to provide a more complete picture of national trends in chemical use, chemical management, environmental release and other waste management practices, and environmental performance.

Note: The Emergency Planning and Community Right-to-Know Act (EPCRA) establishes requirements for emergency planning, preparedness, and reporting on hazardous and toxic chemicals involving air releases, water releases, land disposal, waste transfers, and waste management.
Throughout EPA, offices use TRI data to support their mission to protect human health and the environment. These uses include analyzing TRI data to inform decisions such as when setting program priorities, providing information to stakeholders such as when working with communities toward a common goal, and many other applications.

This section of the National Analysis highlights how TRI data complement Toxic Substances Control Act (TSCA) data and risk evaluations, and how TRI has served as a model for other pollutant release and transfer inventories around the world.

As with any dataset, there are several factors to consider when using the TRI data. Key factors associated with data presented are summarized in the Introduction. For more information see Factors to Consider When Using Toxics Release Inventory Data.
TSCA and TRI

The Toxic Substances Control Act (TSCA), as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, is the nation’s primary chemicals management law. Under TSCA, existing chemicals in commerce and new chemicals intended for use in commerce are reviewed for safety through a risk-based process with increased public transparency.

The three stages of EPA’s process for evaluating the safety of existing chemicals are prioritization, risk evaluation, and risk management. During both the prioritization and risk evaluation stages of the process, TRI serves as a source of information, as illustrated in the figure below.

Prioritization. Approximately two-thirds of the chemicals identified in the 2014 update of the TSCA Work Plan are also included on the TRI list of chemicals. TRI is well suited to help inform prioritization of chemicals for risk evaluation because TRI data contain information on release quantities of TRI chemicals to air, water and land, and the locations of these releases, and are submitted annually. Note that designation as a TRI chemical by itself does not determine high or low priority for a chemical.
Risk evaluation. A TSCA risk evaluation of a chemical is a comprehensive evaluation of the risk the chemical poses to human health and the environment over the chemical’s life cycle. The conditions of use for the chemical are evaluated, which may include manufacturing and import, processing, use, and disposal. During risk evaluation, EPA is required to assess occupational exposure, as well as general population exposure, and exposure to ecological receptors that may be sensitive to the potential hazards posed by the chemical under review. The TRI is a useful source of information for assisting in estimating these exposures, as it contains release quantities of TRI chemicals to air, water, and land, the locations of these releases, as well as information on use and waste management practices that may lead to exposure.

EPA uses TRI data as an information source to estimate and analyze environmental releases from industrial uses of the chemical in the risk evaluation. The figure below provides an example of a water release assessment for a chemical throughout the multiple phases of its industrial life cycle. At each life cycle phase, both the number of sites and quantity released are determined based on the TRI data. The release assessment estimates the amount of the chemical entering the environment, which can subsequently be used to model exposures of general populations and environmental species for each condition of use. To complete the risk evaluation stage, EPA makes a risk determination stating whether a chemical substance presents an unreasonable risk to human health or the environment under its conditions of use.

Management. If EPA determines that a chemical presents an unreasonable risk to human health or the environment, EPA will evaluate options for mitigating the risks. EPA is required to implement, via regulation, restrictions on the manufacture, processing, distribution, use and/or disposal of the chemical to eliminate the unreasonable risk. EPA is given a range of risk
management options under TSCA, including labeling, recordkeeping or notice requirements, actions to reduce human exposure or environmental release, or a ban of the chemical or of certain uses of the chemical. TRI data, such as on chemical use and pollution prevention, may be used to inform these risk management decisions.
Chemicals to be Evaluated under TSCA
In 2017, EPA published the scope of the risk evaluations to be conducted for the initial ten chemicals undergoing risk evaluation under the amended TSCA. Of these ten chemicals, seven are fully covered on the TRI list of chemicals, two are partially covered by TRI, and one is not on the TRI chemical list. For the TRI-listed chemicals, TRI can provide valuable information to the TSCA assessment process and serves as a tool for tracking the nation’s progress toward reduced environmental releases. This figure shows the trend in TRI-reported releases of the TSCA chemicals currently undergoing risk evaluation that are fully TRI-listed.

![Total Disposal or Other Releases, by Chemical](image)

*TRI reporting for 1-Bromopropane began in Reporting Year 2016.*
Source Reduction Activities for Chemicals to be Evaluated under TSCA

In addition to information on release quantities, TRI contributes information on the types of source reduction activities implemented by facilities to reduce the quantity of the chemical generated as waste. This figure shows the source reduction activities reported to TRI for the initial ten chemicals undergoing risk evaluation under the amended TSCA.

![Newly Implemented Source Reduction Activities for TRI Chemicals to be Evaluated under TSCA, 2013-2017](chart)

*TRI reporting for 1-Bromopropane began in Reporting Year 2016

Note: Facilities report their source reduction activities by selecting codes that describe their activities. These codes fall into one of eight categories listed in the graph legend and are defined in the TRI Reporting Forms and Instructions.
Barriers to Source Reduction for Chemicals to be Evaluated under TSCA

Facilities that report to TRI have the option to describe barriers that have prevented the implementation of source reduction activities. The figure below shows the barriers reported to TRI for the initial ten chemicals undergoing risk evaluation under the amended TSCA.

*TRI reporting for 1-Bromopropane began in Reporting Year 2016
Note: Facilities optionally report their barriers by checking boxes that describe barriers to source reduction that they faced. They may also provide text information related to the barrier.
TRI Around the World

In 1986, the TRI Program was established as the first national Pollutant Release and Transfer Register (PRTR) in the world. Since then, environmental agencies around the world have been increasingly implementing their own PRTR programs with the Toxics Release Inventory (TRI) serving as a model. Currently, at least 50 countries have fully established PRTRs or have implemented pilot programs, as shown in the map below. More are expected to be developed over the coming years, particularly in Asian, South American, and African countries.

As global PRTR implementation continues to grow, the TRI Program will continue to work with international organizations to:

- Assist in the development of PRTR programs in other countries
- Encourage other countries to develop initiatives aimed at making existing PRTR data more comparable to allow better analysis of the data on a global scale
- Make PRTR data more useful for assessing progress towards sustainability

For information on international PRTR activities, projects and partners, see TRI’s International webpage. As an example, the TRI Program is currently working with the Organization for Economic Co-operation and Development (OECD) on a project to use global PRTR data to assess progress toward the Sustainable Development Goals established in the United Nation’s 2030 Agenda for Sustainable Development, as described in the Project Spotlight below.
International Project Spotlight:
Using PRTR Data to Assess Progress toward the U.N. Sustainable Development Goals

Background. The TRI Program is participating in a project to use global PRTR data to assess progress toward the United Nations’ (U.N.) Sustainable Development Goals (SDGs). These goals are designed to “shift the world on to a sustainable and resilient path” by setting targets that encompass the economic, environmental, and social dimensions of sustainability. As countries and stakeholders take action toward achieving the SDGs, the U.N. will measure progress toward the Goals using existing data where possible. One such existing data source for some of the SDGs may be found in countries’ established PRTR data.

Project Objectives. The project applies and demonstrates the utility of PRTR data to inform SDGs and has three complementary objectives:

- Developing approaches for using PRTR data for global-scale sustainability analyses,
- Assessing progress towards meeting specific SDG targets through examination of global chemical pollution trends, and
- Accelerating progress towards meeting specific SDG targets by investigating the drivers of observed trends and providing an opportunity for knowledge transfer among countries facing similar chemical pollution challenges.

Initial Focus. The U.N. SDG Target 12.4 was identified as the target most directly relevant to PRTR data and is the focus of this initial phase of the project. This target focuses on reducing chemical releases to the environment.

Project Status. Global analyses of PRTR data are currently underway to aggregate data for multiple chemicals from multiple countries in order to recommend possible metrics to track progress in reducing chemical releases to the environment. A sample figure below shows the trend for 14 pollutants as reported to 7 PRTRs.

SDG Target 12.4

By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

Releases by Industry [kg]: 7 PRTRs, 14 pollutants
**Next steps.** As the project progresses and the methods and metrics are reviewed and refined, ideally the findings would be included in the next update of the [U.N. Sustainable Development Goals Report](https://www.un.org/sustainabledevelopment/). Read more about the TRI Around the World.