

What's Available Through EPA's **Toxics Release Inventory**

U.S. EPA, TOXICS RELEASE INVENTORY PROGRAM

2019 INTERNATIONAL EMISSIONS INVENTORY CONFERENCE



Overview

- What is the Toxics Release Inventory (TRI)?
- What data and online tools are available through TRI?
 - What are the limitations?
- How can you access TRI data and tools?
- How do different stakeholders use TRI data?
 - Identifying source reduction opportunities at facilities using the TRI Pollution Prevention Tool
 - Modeling risk in communities using the Risk-Screening Environmental Indicators Model
 - Promoting awareness of TRI in tribal communities using the TRI Tribal Advanced Search Dashboard

What is TRI?

- TRI tracks the management of certain toxic chemicals that pose a threat to human health and the environment
- TRI can tell you about:



Releases



Waste transfers



Recycling



Pollution prevention



- TRI includes data about approximately **22,000 facilities** across the country and covers **595 individually-listed toxic chemicals and 33 chemical categories.**

TRI is EPA's premier "Right-to-Know" program

Right to Know (RTK):

We all have the right to know about the chemicals to which we may be exposed to in our daily lives.

This principle is authorized under Section 313 of the **Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)**.

This law requires EPA to collect, maintain, and provide public access to the TRI data.



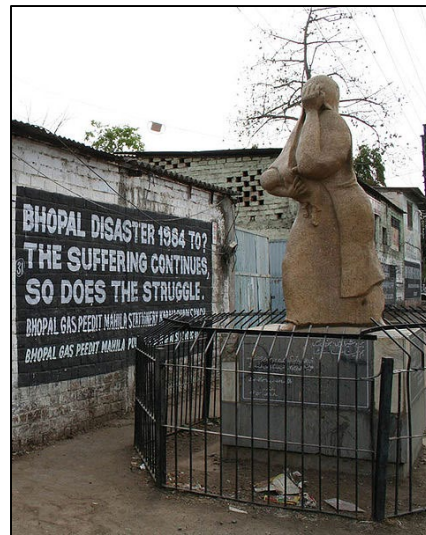
Why was the Toxics Release Inventory created?

Bhopal, India December 1984

- Methyl isocyanate gas was released at a Union Carbide chemical plant.
- Thousands died the first night, thousands more since.
- Survivors continue to suffer with permanent disabilities.

Institute, West Virginia August 1985

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



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

- These events led to increased concern about local preparedness for chemical emergencies and the availability of information on hazardous substances.
- The passage of the Emergency Planning and Community Right-to-Know Act in 1986 was part of the United States' response.

What is a “release”?

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



Air



Water



Land

The likelihood of people coming into contact with toxic chemicals depends on the type of release and other factors.

Which facilities must report to TRI?

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



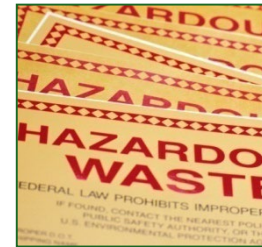
Manufacturing



**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-listed toxic 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



Waste management:

- Recycling
- Treatment
- Energy Recovery



Methods of estimation and treatment

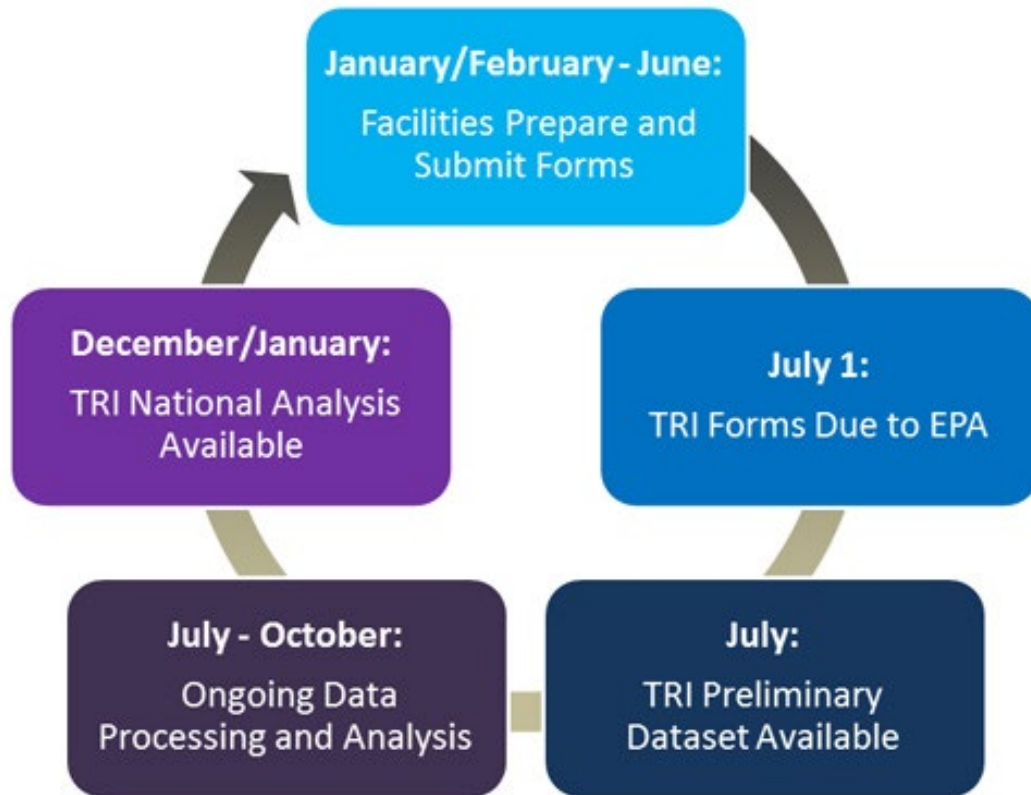
Pollution prevention activities (www.epa.gov/tri/p2)

Who uses TRI data?

- **Individuals and Communities** to start dialogues with local facilities over emissions reductions, pollution prevention, and safety
- **Federal, state and local governments** to develop environmental policies, establish priorities, and track performance
- **EPA** to complement chemical risk assessments and data quality efforts for other reporting programs
- **Non-governmental organizations** to evaluate local environmental conditions in the U.S. and design improvement goals
- **Industry** to measure progress in preventing pollution
- **Academic institutions** to research a wide range of topics including environmental justice, pollution & health, impact on stock value, and others
- **Financial analysts** to identify potential liabilities and environmentally responsible investment opportunities

www.epa.gov/toxics-release-inventory-tri-program/tri-data-uses

Annual TRI data cycle



- **Due by July 1:**
Facilities submit their TRI reporting forms to EPA.
- **July – October:**
EPA conducts data quality checks and compliance assistance activities.
- **December/January:**
TRI National Analysis (EPA’s official annual TRI report) published.

What are the limitations of TRI data?

Annual data – collected from TRI reporting facilities once/year.

Covers some, but **not all toxic chemicals and not all industry sectors.**

Small facilities are not included (under 10 employees).

Does not cover all sources of pollution, e.g. cars and trucks.

Does not describe how long or how often chemicals were released.

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

The TRI Program Covers:	The TRI Program Does Not Cover:
<ul style="list-style-type: none"> ▪ More than 650 chemicals and chemical categories ▪ Facilities in the following sectors, as well as federal facilities: <ul style="list-style-type: none"> • manufacturing • metal mining • coal mining • coal and oil-fired electric utilities • chemical wholesale distributors • petroleum terminals • hazardous waste treatment and solvent recovery 	<ul style="list-style-type: none"> ▪ Anything other than the sectors listed to the left. Excluded sources include: <ul style="list-style-type: none"> • agriculture • wastewater treatment facilities • services such as airports and hospitals • retail businesses such as gas stations • mobile sources (i.e. cars, trucks, buses, airplanes) • municipal solid waste landfills • facilities that do not meet TRI thresholds for reporting • facilities with fewer than 10 full-time employees • nuclear power plants (unless they are federal facilities)

TRI information is only one piece of the puzzle

While TRI provides important information about toxic chemical releases, seeing the whole picture requires additional information about other types of environmental releases, as well as air monitoring, compliance with environmental regulations and more. Other information to consider can include:

- Motor vehicle emissions
- Gasoline stations
- Dry cleaners
- Car painting shops
- Drum burnings/forest fires
- Underground storage tanks
- Abandoned hazardous waste sites
- Drinking water quality
- Lead paint in homes
- And more...



TRI Data & Tools

Accessing TRI Data

Downloadable data files

National Analysis report

Web-based access and analysis tools

Data dashboards

Mobile application and other materials in Spanish



TRI Explorer



Envirofacts

P2 Search Tool



Using TRI Tools

Different tools may be better for different uses and data needs

For example:

- The number of facilities included in TRI or other permitted programs (**Use:** Envirofacts, myRTK, TRI Explorer)
- The chemicals these facilities emit (**Use:** Envirofacts, TRI Explorer, myRTK)
- The health effects associated with these chemicals (**Use:** myRTK, TRI-CHIP)
- How the facilities rank compared to others in the county or nation (**Use:** myRTK, RSEI, TRI Explorer)

The Envirofacts database is now RESTful service-enabled. See the services tab below for documentation and examples, or visit: Envirofacts Web Services

- Home
- Multisystem Search
- Topic Searches
- System Data Searches
- About the Data
- Data Downloads
- Widgets
- Services
- Mobile
- Other Datasets

- How to Use Envirofacts
- News and Information
- Data Update
- Envirofacts Model



Envirofacts

Your one-stop source for Environmental Information

Get the EnviroFACTS!

Retrieve information from multiple sources of Envirofacts' System Data for your area of interest.

Enter a location such as address, zip, city, county, waterbody, park name, etc.



Advanced

Topic Searches

- Air
- Waste
- Facility
- Land
- Toxics
- Compliance
- Water
- Radiation
- Other

Envirofacts System Data Searches

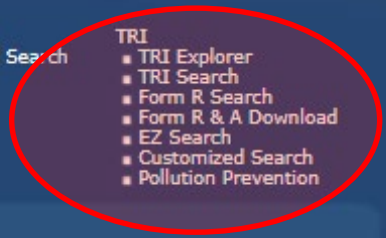
Multisystem Search

- BR
- Brownfields-Cleanups
- Cleanups
- ECHO/IDEA
- ICIS-AIR
- FRS
- EZ Search
- Organization Search
- Greenhouse Gas
- Customized Search
- ICIS
- ICR
- IGMS
- Locational Information
- Locational Search
- NEI
- PCS
- Customized Search
- RADInfo
- RadNet
- Customized Search
- RCRAInfo
- SDWIS
- SEMS
- SRS
- TSCA
- UV Index
- TRI
- TRI Explorer
- TRI Search
- Form R Search
- Form R & A Download
- EZ Search
- Customized Search
- Pollution Prevention

Other Sites of Interest

- Geospatial Download
- EnviroMapper
- MyEnvironment

www.epa.gov/enviro



How to Search for Multiple Facilities or Multiple Chemicals at Once

- Form R and A Download

- Access to all data elements on TRI Reporting Form R (492)
- 18 available search parameters
- Selection of data elements by data element name

OR

- TRI EZ Search

Select Subject Area = “Chemical releases to Air”

- 35 data elements
- Most (or all) data elements may be a search parameter
- 6 additional elements to describe ‘Coded’ elements
- Selection of data elements by Plain English text
- Options to modify layout of output tables

Both options provide powerful search capabilities (Click ‘Operator Definition’ or ‘Search Options help’ column header for assistance.)

How to Search for Multiple Facilities or Multiple Chemicals at Once (cont'd)

- Customized Query

- Access to all data elements on reporting forms, and a few group functions (sum, count, average, etc.)
- Selection of data elements by relevant Envirofacts data table
- Options to modify output layout or order of data display

Using TRI Explorer

www.epa.gov/triexplorer

The screenshot displays the EPA TRI Explorer website. At the top, the EPA logo and navigation links are visible. The main heading is "Release Reports" under the "Release Chemical Report" tab. The interface includes several filter sections: "Year of Data" (set to 2011), "Geographic Location" (All of United States), "Chemical" (All chemicals), "Industry" (All Industries), and "Data Set" (The default is the 2011 National Analysis data set). The "Report columns to include" section has three checked options: "Total On-site Disposal or Other Releases", "Total Off-site Disposal or Other Releases", and "Total On-and Off-site Disposal or Other Releases". A "Go To Home Report" button is also present.

TRI Explorer

Five steps to generate a report

Step 1. Choose Report Type

Step 2. Select a Report Grouping (How data will be summarized)

Step 3. Choose Filters (Optional - All filters have a default)

Step 4. Choose Columns to be displayed (All options have a default)

Step 5. Click on the Generate Report button.

Red ovals identify available user aids or key references

Uses of TRI Data

Examples of TRI Data Use

- Identifying source reduction opportunities at facilities using the TRI Pollution Prevention Tool
- Modeling risk in communities using the Risk-Screening Environmental Indicators Model
- Promoting awareness of TRI in tribal communities using the TRI Tribal Advanced Search Dashboard

TRI and Pollution Prevention (P2)

The goal of pollution prevention (P2) is to **eliminate or reduce the creation of pollutants** (also called “source reduction”).

TRI tracks industrial facilities’ progress toward this goal and collects data on **effective P2 practices**.

TRI can be used to:

- Identify facilities that are implementing P2 to reduce their toxic emissions.
- Promote “tech transfer” of innovative P2 activities from facilities that have successfully used P2 to facilities that could be doing more.

Access P2 Information

- Find source reduction information by industry sector, parent company, geographic area, or chemical(s)
- Data available through:
 - P2 Search Tool - <https://www3.epa.gov/enviro/facts/tri/p2.html>
 - Displays annual P2 measures, year-to-year release changes, and other P2 data submitted
 - Compares source reduction data over time, by facility, industry, or parent company
 - Provides information for facilities interested in new/additional source reduction measures, and similar facilities/industries that implement them
 - Downloadable Excel files
 - Industry Profile Dashboard - www.epa.gov/toxics-release-inventory-tri-program/tri-p2-industry-profile
 - Interactive Qlik dashboard to analyze and filter among chemicals, industry sectors, geographic areas
 - Highlights featured industry profiles

P2 Industry Profile Dashboard

Select a Featured Profile

Food Manufacturing

Auto Manufacturing

Pharmaceutical Manufacturing

Or Search for an Industry

Industry Sector

NAICS Code

Use the TRI P2 Industry Profile dashboard to analyze an industrial sector

Questions that may be answered include:

Where are TRI facilities located?

To what environmental medium are chemicals released?

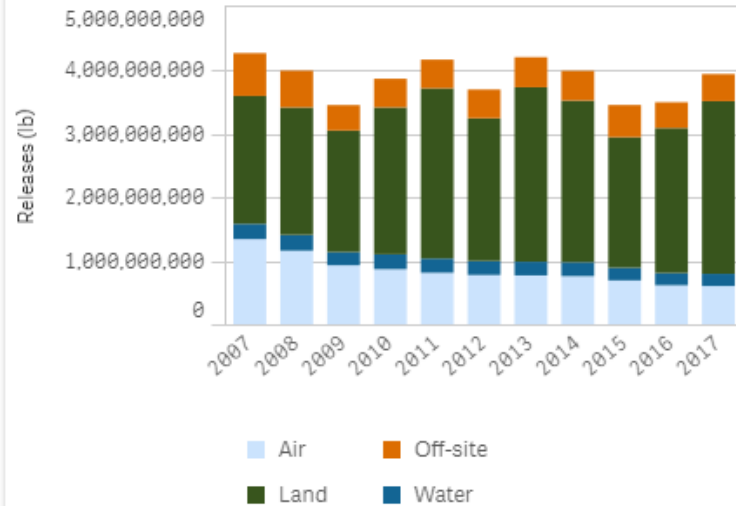
How do facilities manage chemical waste?

How much waste is sent off-site to other facilities?

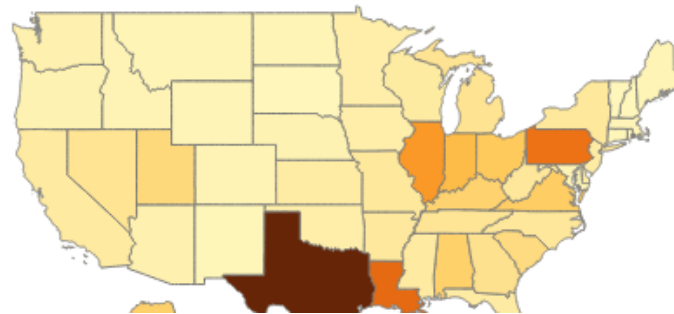
What chemicals are being released and/or otherwise managed?

What types of source reduction activities have facilities implemented?

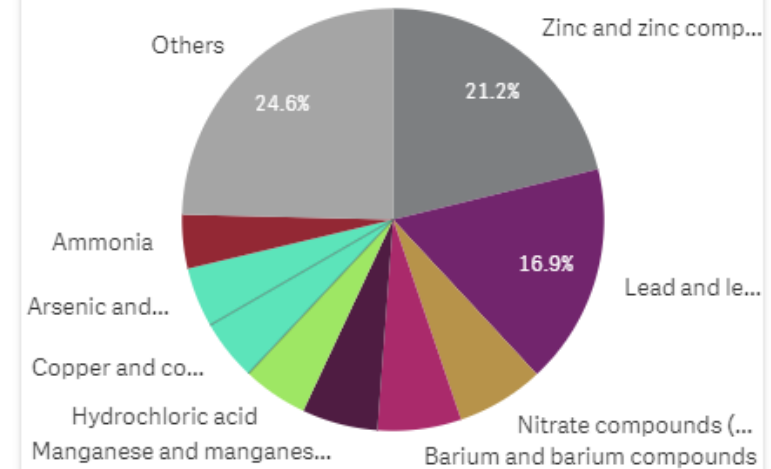
Releases by Media and Year



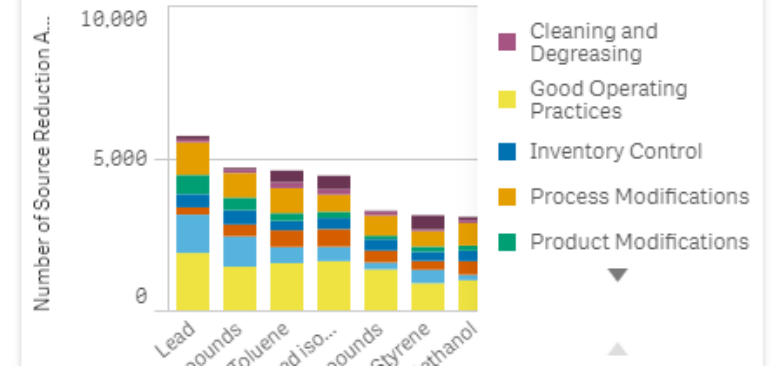
Waste Managed by State



Releases by Chemical



Top 10 Chemicals by Number of Reported Source Reduction Activities



Risk-Screening Environmental Indicators (RSEI) Model

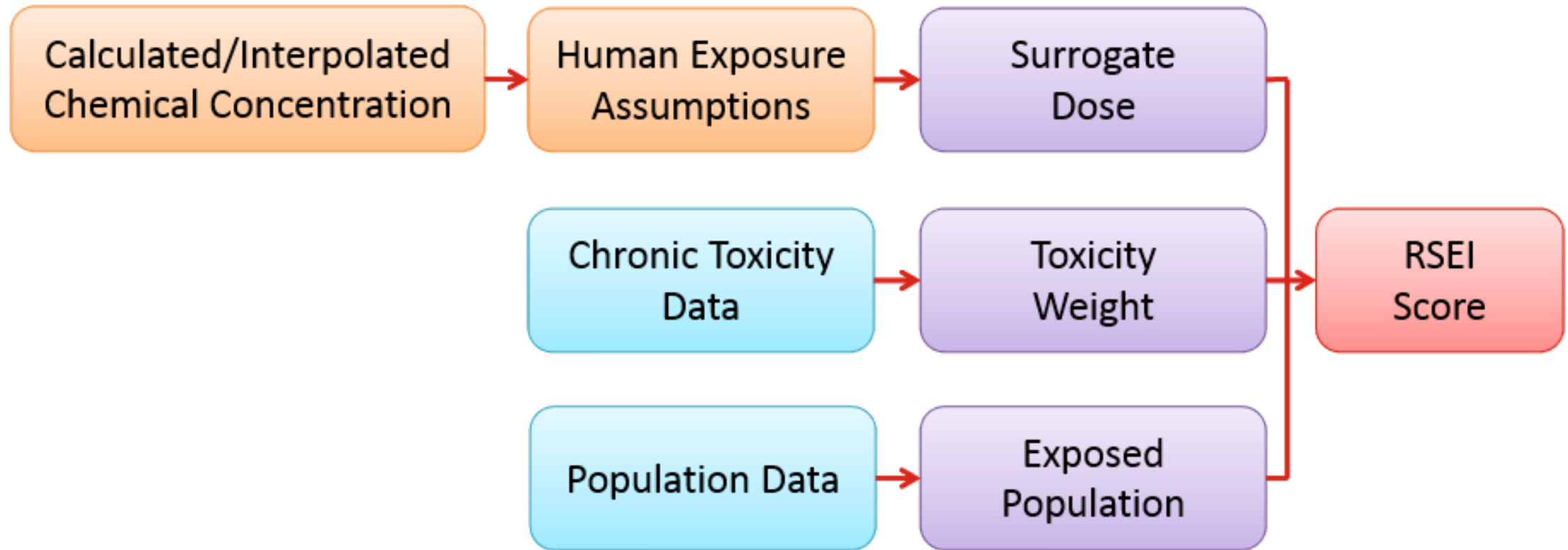
RSEI is a screening-level model for assessing potential chronic human health impacts of TRI chemical releases.

NOT a formal risk assessment, but does incorporate:

- Quantities of chemicals released
- Chemical toxicity
- Fate and transport
- Route and extent of human exposure
- Nearby populations

Provides starting point for modeling risk based on TRI releases, chemical toxicity, and additional data.

www.epa.gov/rsei



RSEI toxicity data & calculations

- RSEI toxicity weights describe the toxicity of TRI chemicals relative to each other:
 - Based on the single most sensitive pathway (oral/inhalation)
 - Oral slope factor (OSF) in risk per mg/kg-day
 - Inhalation unit risk (IUR) in risk per mg/m³
 - Reference dose (RfD) in mg/kg-day
 - Reference concentration (RfC) in mg/m³
 - Based only on *chronic human health* effects, including both cancer and noncancer effects
 - Weights range from 0.02 – 1,400,000,000
- Toxicity weights are taken from IRIS, when possible
 - Other sources are provided in the methodology documentation and ranked in order of preference (e.g., NATA; EPA Office of Pesticide Programs' Acute, Chronic and Reference Dose tables; ATSDR, etc.)

www.epa.gov/rsei/rsei-toxicity-data-and-calculations

RSEI data & analytical tools

EasyRSEI dashboard:

<https://edap.epa.gov/public/extensions/EasyRSEI/EasyRSEI.html>

- User-friendly tool to search and analyze RSEI scores by geographic area, chemical(s), facilities, release pathways, waste management type, and other modeling data
- *See next slide*

Geographic microdata: www.epa.gov/rsei/rsei-geographic-microdata-rsei-gm

- Raw RSEI model microdata for air releases for each 810m x 810m cell in the US, per year
 - Includes chemical concentrations, toxicity-weighted concentrations, and RSEI scores per cell

EasyRSEI Dashboard

The screenshot displays the EPA EasyRSEI Dashboard for Ethylene oxide. The interface includes a top navigation bar with the EPA logo and version number (2.3.7), a search bar with the chemical name, and a sidebar with navigation options. The main content area is divided into two panels: Chemical Modeling Data and Facility Modeling Data. The Chemical Modeling Data panel contains a 'Chemical Identifiers' section with the following details:

- Chemical Name: Ethylene oxide
- Sort Name: Ethylene oxide
- Full Name: Ethylene oxide
- CAS Number: 75218
- CAS Standard: 75-21-8
- Chemical Number: 293
- Is chemical a metal (including metalloid compounds)? Nonmetal
- Persistent Bioaccumulative Toxic (PBT): False

The Facility Modeling Data panel contains a 'Chemical Flags' section with the following details:

- Core Chemical Flags**
 - 1988-present core chemical flag: True
 - 1995-present core chemical flag: True
 - 1998-present core chemical flag: True
 - 2000-present core chemical flag: True
 - 2001-present core chemical flag: True
- Program Flags**
 - Hazardous Air Pollutant (HAP) Program: True
 - Clean Air Act Section 112(r): True
 - Priority Pollutant under the Clean Water Act: False
 - Primary or secondary standards under the Safe Drinking Water Act: False
 - Superfund Program (CERCLA): True
 - Recognized as a carcinogen by the Occupational Safety and Health Administration (OSHA): True
 - Added to TRI during the expansion of listed chemicals beginning with RY1995: False

TRI for Tribal Communities Dashboard

- New dashboard is a user-friendly application to search for TRI facilities and chemical release data on or within a certain distance of tribal lands
- Filters based on:
 - Tribe
 - Chemical
 - industry sector
 - media type
 - waste management method
 - geographic area
- Tool designed to promote TRI data accessibility and usability for tribal communities

TRI for Tribal Communities Dashboard

Distance Filter

Chemical

Year

Industry Sector

Primary NAICS Code

Releases are reported as either on-site (air, water, or land) or off-site

Media Type

Waste Mgmt Method

State

EPA Region

Source Reduction

HOME

Tribe(s) selected: 20 OUT OF 279

Includes only TRI facilities on tribal lands for the following years: 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017



Use the TRI for Tribal Communities dashboard to analyze chemical releases and waste management data

This dashboard provides data about industrial chemical releases and waste management on or within 10 miles of tribal lands. The default view displays TRI data for facilities located on tribal lands. To view data for facilities within 10 miles of tribal lands, excluding those facilities located on tribal lands, select "Within 10 Miles of Tribal Lands" using the Distance Filter. To view data for facilities located on or within 10 miles of tribal lands, select both the "On Tribal Lands" and "Within 10 Miles of Tribal Lands" options in the Distance Filter.

Questions that may be answered about TRI facilities on or within 10 miles of tribal lands using this dashboard include:

- Where are facilities located?
- To which environmental medium are chemicals released?
- How do facilities manage chemical waste?
- What chemicals are being released and/or otherwise managed?
- Which industries operate TRI facilities?

For basic information about TRI and tribal communities, [visit the TRI for Tribal Communities web page.](#)

Select a Tribe and/or Distance

Select a Tribe

Distance Filter

Or Search for a Facility by Name and/or ID

Total Releases by Tribe



Total Releases for 20 Tribes: 110,348,827 lbs

Puyallup Tribe of the P...

Ute Indian T...



Number of Facilities by Tribe



Total Facilities for 20 Tribes: 45 facilities

Others

Puyallup Trib...

