



TRI and CDR Data Use Examples

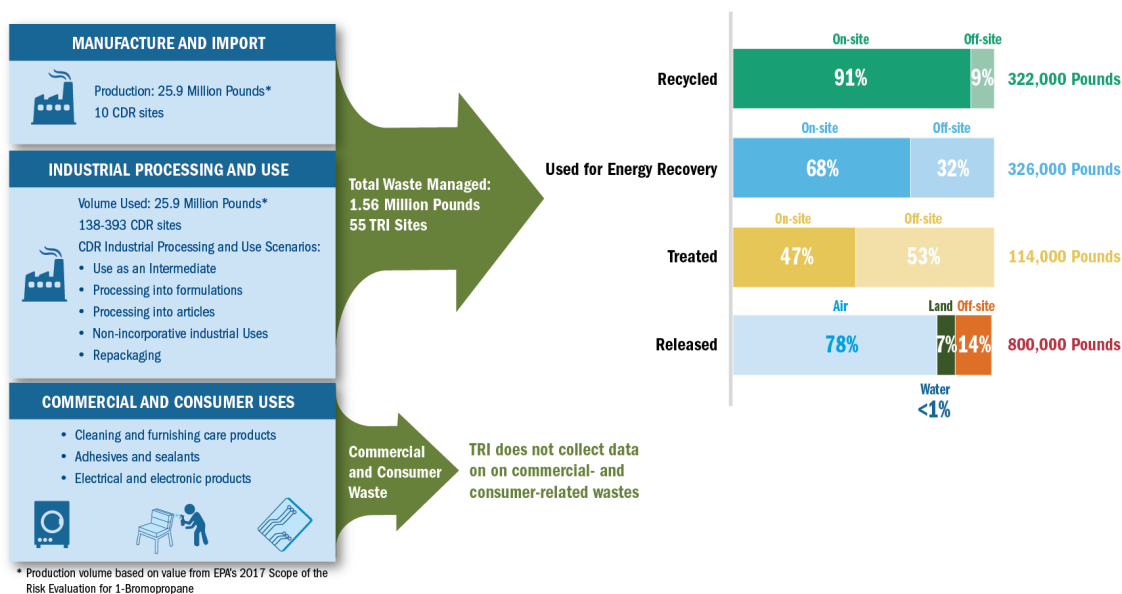
In addition to the toxic chemical management data collected through the TRI Program, EPA collects information about the manufacture (including import) and use of chemicals in U.S. commerce through the Chemical Data Reporting (CDR) rule implemented under TSCA. Combining the chemical information reported to both TRI and CDR provides a more complete picture of a chemical's lifecycle from sources of import and domestic manufacture to final deposition in the environment or products.

The TRI National Analysis reports from 2016, 2015, and 2012 included feature sections illustrating how CDR data complements TRI information. Those sections, as originally published, are presented here. For more information on the CDR program, see www.epa.gov/cdr. Additional guidance for using TRI data can be found on the www.epa.gov/toxics-release-inventory-tri-program/find-understand-and-use-tri.

TRI and CDR – Example #1

For calendar year 2015 activities, 8,707 individual chemicals were reported to the CDR, which tracks production and imports. 499 individual chemicals and chemical categories were reported to TRI. Of the chemicals reported to TRI, 250 (50%) were also reported to CDR. The remaining 249 chemicals reported to TRI are either not subject to Chemical Data Reporting under TSCA (such as pesticides, pharmaceuticals, polymers, and TRI-specific chemical categories); the facility is exempt from CDR reporting based on business size thresholds; the chemicals are produced in amounts below the CDR reporting thresholds; or the chemicals are processed or used by facilities that report to TRI, but not manufactured or imported, which are the activities required to be reported to CDR.

To illustrate how TRI information complements the TSCA chemical assessments, one chemical, 1-bromopropane (1-BP), is presented as an example.



In 2015, 10 manufacturers, including importers, reported a total production volume of 25.9 million pounds of 1-BP manufactured/imported. Industrial activities reported included use as an intermediate in chemical manufacturing, processing into chemical product formulations (e.g., solvents for cleaning and degreasing and adhesives), processing into articles (e.g., insulation), non-incorporative uses (e.g., solvent degreasing), and repackaging.

Commercial and consumer uses reported included adhesives and sealants, cleaning and furnishing care products, and electrical and electronic products. In 2016 (the first year 1-BP was a TRI-listed chemical), 55 facilities filed a TRI form for 1-BP, reporting a total of 1.56 million pounds of waste, most of which (51%) was released.

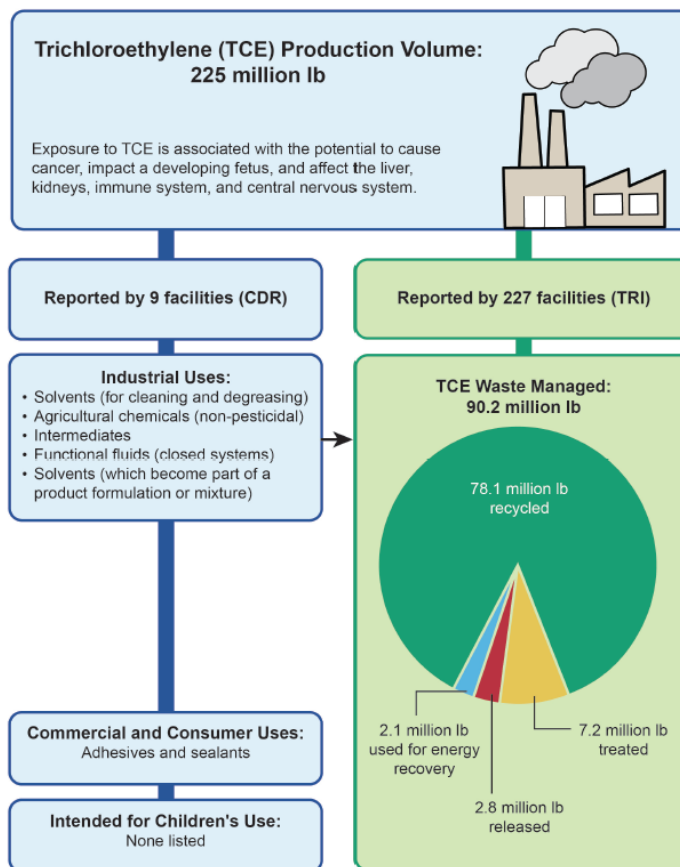
TRI and CDR – Example #2

To illustrate how TRI information complements the TSCA chemical assessments, one chemical, trichloroethylene (TCE), is presented as an example.

EPA has undertaken efforts to reduce the risks TCE poses to public health and the environment. For example, EPA has conducted a risk assessment; initiated a rulemaking to eliminate the risk of TCE in aerosol degreasers, as a spotting agent at dry cleaning facilities, and in vapor degreasing operations; and coordinated a voluntary phase out of TCE in arts and crafts spray fixative product marketed to consumers.

Utilizing the chemical information reported to TRI and collected under the CDR rule together provides a more complete picture of a chemical's lifecycle from sources of import and domestic manufacture to means of final disposition in the environment or products, as shown in this figure.

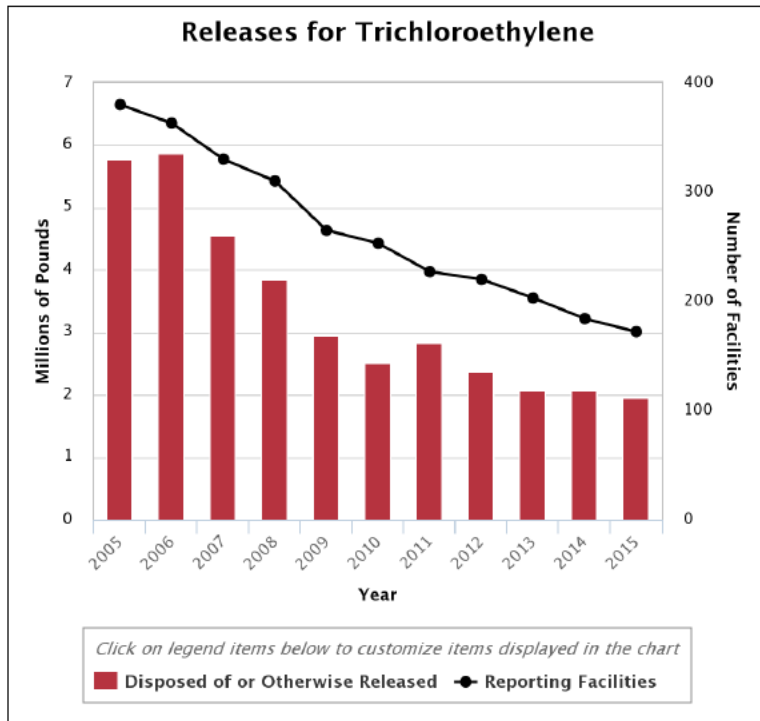
In 2011, nine manufacturers, including importers, reported a total production volume of 225 million pounds of TCE manufactured. Industrial uses reported include as a solvent or intermediate in chemical manufacturing. During the same year, 227 facilities filed a TRI form for TCE, reporting a total of 90 million pounds of waste, most of which (87%) was managed through recycling.



TRI Releases of Trichloroethylene

The figure below shows the trend in releases of trichloroethylene (TCE) reported to the Toxics Release Inventory (TRI) over the last ten years.

As shown in the figure, since 2005, releases of TCE reported to TRI have decreased by 66%. Much of the reduction is from decreased releases by the Fabricated Metals sector, which uses TCE in degreasing. EPA's TRI Pollution Prevention (P2) Spotlight provides additional information on how this sector is reducing their TCE releases. The number of facilities reporting TCE also declined considerably during this time.



TRI reporting facilities also provide information on the source reduction activities they implement to generate less waste. From 2011 through 2015, 28% of the facilities reporting TCE reported a source reduction activity; among the most common are:

- cleaning and degreasing modifications, such as changing to aqueous cleaners, and
- process modifications, such as upgrading valves or adding insulation to a degreaser to reduce TCE use and losses.

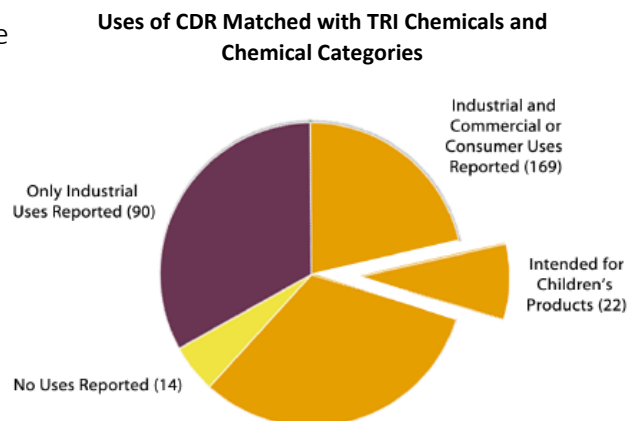
Use [the TRI P2 Search Tool](#) to view descriptions of facilities' activities

to reduce TCE wastes. For example, an aircraft component manufacturer replaced the existing steam control valve on its TCE vapor degreaser with an electronically controlled steam valve. This change enabled them to run more parts through the degreaser while reducing TCE consumption.

TRI and CDR – Example #3

For calendar year 2011 activities, 7,674 individual chemicals were reported to CDR and 514 individual chemicals and chemical categories were reported to TRI. Of the chemicals reported to TRI, 273 (53%) matched one or more CDR chemicals while the remaining 241 were not reported to CDR. Most of these 241 chemicals are not regulated by TSCA (such as pesticides, pharmaceuticals, and polymers), and thus are not required to be reported to CDR. In some cases, CDR data, including chemical identity, are withheld as confidential business information and, therefore, this analysis may underestimate the actual overlap between the two programs.

CDR complements TRI information, tracking the quantity of chemicals domestically manufactured and imported, and the known uses of chemicals in industrial processing and in consumer and commercial products. CDR reporters indicate if the product is “intended for use by children,” which means the reported chemical or mixture is used in or on a product that is specifically intended for use by children 14 or younger.



The figure to the right shows how reported TRI chemicals correlate with CDR reported uses. Nearly all chemicals (259) had industrial uses and 169 also had commercial or consumer uses.* Of the chemicals with commercial or consumer uses reported, 22 were in products intended for use by children.

TRI and CDR Data for Ethylbenzene

Ethylbenzene is used as an example of how TRI and CDR data for 2011 may be combined for a more complete picture of the chemical’s lifecycle. Ethylbenzene is reportable under both programs and used in consumer and commercial products intended for use by children. Exposure to ethylbenzene is associated with health effects including irritation of eyes, skin, and respiratory track while chronic exposure may be associated with renal cancer or other cancers, as well as damage to hearing or the inner ear.

Ethylbenzene is a natural constituent of crude oil and is present in many petrochemical products and fuels; however, most industrial grade ethylbenzene is produced by the reaction of benzene and ethylene. In 2011, 31 facilities reported to CDR a total production volume of 9.66 billion pounds of ethylbenzene manufactured (which includes quantities imported). For activities during the same timeframe, 1,315 facilities filed a TRI form for ethylbenzene.

* Industrial uses are reported for chemicals meeting the more than 100,000 pounds CDR manufacturing threshold. Therefore, if a chemical is manufactured in small amounts, it would not be reported.

The figure below combines 2011 CDR and TRI data for ethylbenzene to show its production, uses, and waste management. The 31 CDR filers reported downstream industrial uses and consumer and commercial uses, including five products intended for children's use. The CDR filers also indicated the industrial sectors that use ethylbenzene, including:

- Paint and Coating Manufacturing
- Basic Organic Chemical Manufacturing
- Plastics Material and Resin Manufacturing
- Petroleum Refineries
- Petrochemical Manufacturing

Many of the 1,315 TRI facilities reporting ethylbenzene were also in these sectors.

The TRI facilities reported managing 78.4 million pounds of ethylbenzene as waste, which represents less than 1% of the total production volume reported to CDR, indicating that the chemical was largely consumed in a process or is in a product, rather than ending up as a waste. This is further supported by the CDR data that show the two top industrial functions for this chemical are intermediates and solvents.

Almost half of the ethylbenzene waste was used for energy recovery, and 5% (3.7 million pounds) was disposed of or otherwise released primarily as air emissions or through underground injection.

underground injection.

TRI reporters also provide information on source reduction activities implemented to generate less waste. Of the 1,315 TRI facilities reporting for ethylbenzene, 121 (9%) reported a source reduction activity; among the most common are:

- Improved maintenance scheduling, recordkeeping, or procedures
- Changed production schedule to minimize equipment and feedstock changeovers
- Substituted raw materials

One facility with large reductions in ethylbenzene air emissions from 2010 to 2011 reported installing a thermal oxidizer to destroy emissions from their coating line.

