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Toxic Chemical Release Inventory Reporting Forms and Instructions

Section 313
of the Emergency Planning and Community Right-to-Know Act

(Title III of the Superfund Amendments and Reauthorization Act of 1986)

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The completed forms should be submitted in accordance with these instructions and as specified in the corresponding regulation.

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Appendix

Appendix A Trade Secret Submissions....A-1

List of Acronyms

BIA	Bureau of Indian Affairs
CASRN	Chemical Abstracts Service Registry Number
CBI	Confidential Business Information
CDX	Central Data Exchange
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
C.I.	Color Index
COPR	Chromite Ore Processing Residue
D&B	Dun & Bradstreet
DMR	Discharge Monitoring Report
DPC	Data Processing Center
EGF	Electricity Generating Facility
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Electronic Signature Agreement
FR	Federal Register
FY	Fiscal Year
GOCO	Government-Owned, Contractor-Operated
HCFC	Hydrochlorofluorocarbon
IARC	International Agency for Research on Cancer
ICR	Information Collection Request
NA	Not Applicable
NAICS	North American Industry Classification System
NDAA	National Defense Authorization Act
NON	Notice of Non-Compliance
NPDES	National Pollutant Discharge Elimination System
NPEs	Nonylphenol Ethoxylates
NTP	National Toxicology Program
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
PACs	Polycyclic Aromatic Compounds
PBBs	Polybrominated Biphenyls
PBT	Persistent Bioaccumulative Toxic
PFAS	Per- and Polyfluoroalkyl Substances
POTW	Publicly Owned Treatment Works
PPA	Pollution Prevention Act
RCRA	Resource Conservation and Recovery Act
RSEI	Risk-Screening Environmental Indicators
RY	Reporting Year
SDS	Safety Data Sheet
SIC	Standard Industrial Classification
TDX	TRI Data Exchange
TRI	Toxics Release Inventory
TRIFID	Toxics Release Inventory Facility Identification Number
TRIPS	Toxics Release Inventory Processing System
UIC	Underground Injection Control
USC	United States Code
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds

Revision Note

This version of the Toxics Release Inventory (TRI) Reporting Forms and Instructions (RFI) document supersedes previous versions.

In the past, each year's TRI RFI document contained information specific to that reporting year. This version of the RFI has been streamlined and updated for clarity and to provide reporting instructions that are generally applicable to current TRI reporting requirements. In the future, the RFI will continue to be updated to improve clarity and in accordance with regulatory changes. Links to additional information and guidance documents are provided in the appropriate sections throughout the RFI. A summary of reporting changes that became effective in recent years or will become effective in an upcoming reporting year will be available at http://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#summary.

A. General Information

TRI reporting provides information to the public on releases and other waste management of TRI-listed chemicals and provides EPA with information to assist the Agency's activities. TRI reports must include quantities of routine and accidental releases, releases from catastrophic or other one-time events, maximum amounts of TRI-listed chemicals on-site during the calendar year, and amounts contained in wastes managed on-site or transferred off-site.

TRI reporting is required by Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA, or Title III of the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499). The information in the Form R and Form A Certification Statement, which are the means of providing TRI data to EPA, constitutes a "report," and the submission of a report to the appropriate authorities constitutes "reporting."

The Pollution Prevention Act (PPA) of October 1990 (Pub. L. No. 101-508) added reporting requirements to the Form R. These requirements apply to all facilities required to submit a Form R under EPCRA Section 313.

Facilities must submit a completed Form R or Form A Certification Statement for each TRI-listed chemical manufactured, processed, or otherwise used at each covered facility as described in 40 Code of Federal Regulations (CFR) Part 372.

The Electronic Reporting Rule, published August 27, 2013 (78 FR 52860), requires that all forms that do not contain trade secret information be submitted electronically. This electronic reporting requirement includes late submissions for prior reporting years, revisions, and withdrawals. EPA will not accept paper copies of forms required to be submitted electronically. TRI reports containing trade secret information should be submitted on paper (see Appendix A).

July 1 is the TRI reporting deadline. Companies must file an accurate and complete Form R report for each chemical by July 1 each year.

EPA may take enforcement action and assess civil administrative penalties for failure to report or regarding corrections to errors in Form R reports that are not based on previously unavailable information or procedures that improve the accuracy of previously reported data. Types of errors that may result in enforcement and/or penalties include, but are not limited to: (1) errors caused by not using the most readily available information (e.g., not using monitoring data collected for compliance or other purposes with other regulations in calculating releases); (2) omitting a major source of emissions; (3) mathematical, transcription, or typographical errors that compromise the accuracy of information; and (4) other errors that seriously affect the utility of information, particularly errors in release reporting for which the facility has no records showing the derivation of the release calculation and cannot sufficiently explain the erroneous information.

GuideME. EPA's GuideME tool provides searchable access to TRI guidance materials, including Questions and Answers guidance, Reporting Forms and Instructions, Chemical and Industry Guidance Documents, Training Slides, and other materials. GuideME is available at https://guideme.epa.gov/.

A.1 Who Must Report

EPCRA Section 313 requires that owners and operators of certain U.S. facilities submit TRI reporting forms. The owners and operators of a facility must report if:

- The facility manufactures (including imports), processes, or otherwise uses any TRI-listed chemical in quantities over established thresholds in a calendar year (reporting thresholds are listed in Section B.4); **and**
- The facility either:
  a. Has 10 or more full-time employee equivalents (i.e., a total of 20,000 hours or greater; see 40 CFR 372.3) **and** is included in a NAICS code listed at https://guideme.epa.gov/ords/guidem

e_ext/f?p=guideme:gd:::::gd:naics_codes; **or**

b. Is required to report based on a determination by the Administrator under EPCRA Section 313(b)(2).

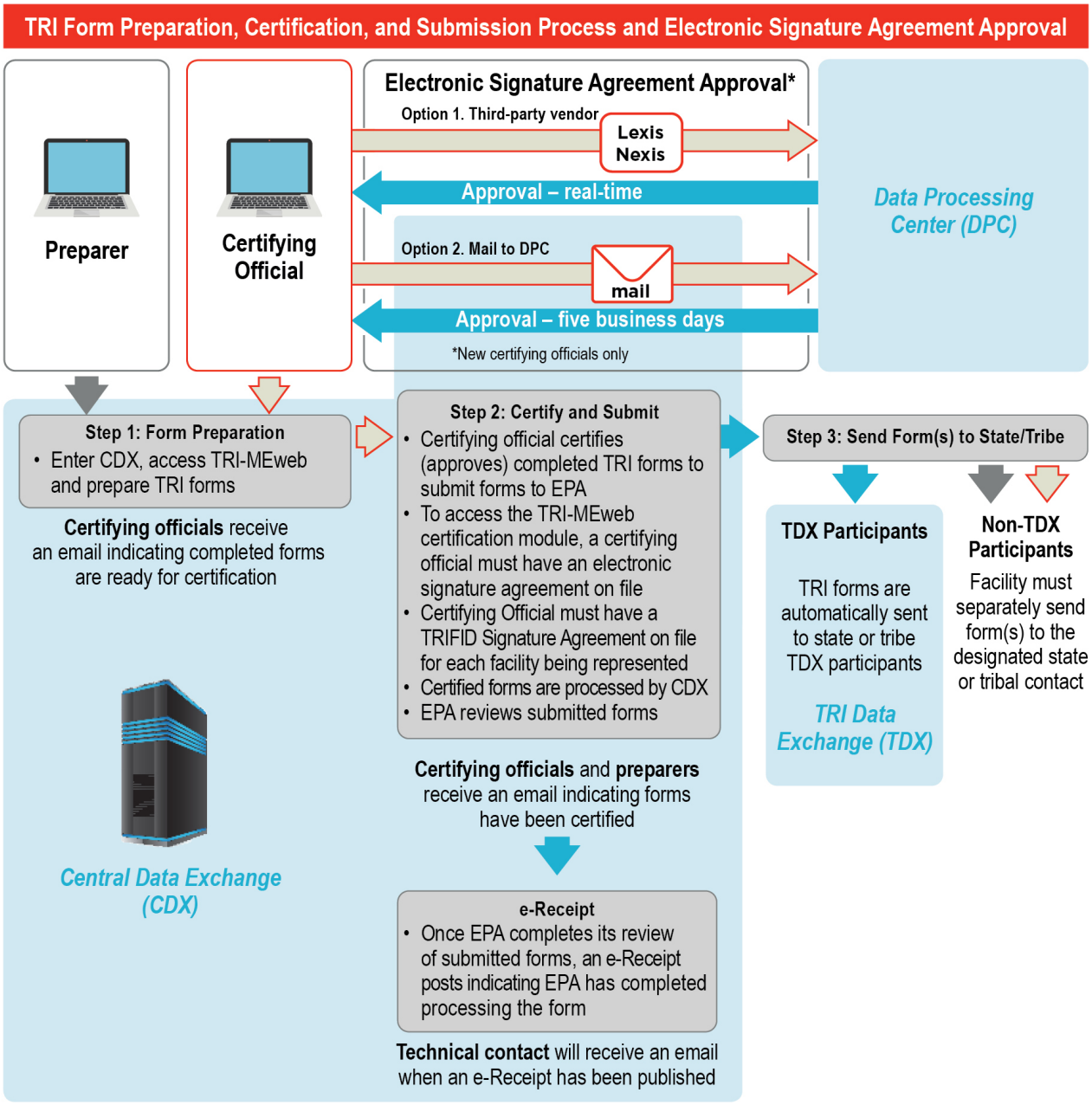


Figure 1. TRI-MEweb Preparation, Certification, and Submission Process and Electronic Signature Agreement Approval

A.2 How to Submit Forms

Facilities must use TRI-MEweb to submit non-trade secret TRI reports.

Facilities that prepare TRI reporting forms using their own software must upload and submit their TRI reporting forms using TRI-MEweb via the *Upload XML* feature. Information about the *Upload XML* feature is available at https://www3.epa.gov/tri/tutorials/TRIT-39/index.html and https://exchangenetwork.net/data-exchange/toxics-release-inventory-tri/.

Facilities must send a copy of each submitted reporting form to the state, territory, or tribe in

which that facility is located. See section A.2.f for additional information.

Facilities are legally obligated to file an accurate and complete Form R or Form A for each chemical by July 1 each year. EPA may take enforcement action and assess civil administrative penalties for failure to report or regarding corrections to errors in Form R reports that are not changes based on previously unavailable information or procedures which improve the accuracy of the data initially reported. Errors that may result in enforcement and in penalties include, but are not limited to: (1) errors caused by not using the most readily available information; for example, not using monitoring data collected for compliance with other regulations in calculating releases; (2) omitting a major source of emissions; (3) a mathematical, transcription, or typographical error that seriously compromises the accuracy of the information; and (4) other errors that seriously affect the utility of the data, particularly errors in release reporting for which the facility has no records showing the derivation of the release calculation and cannot provide a sufficient explanation of the incorrect report.

EPA's Audit Policy. Regulated entities that discover, promptly disclose, expeditiously correct, and act to prevent recurrence of potential violations may be eligible for a reduction or elimination of civil penalties that otherwise might apply. Most violations can be disclosed and processed via EPA's automated online "eDisclosure" system: https://www.epa.gov/compliance/epas-edisclosure. To learn more about EPA's violation disclosure policies, please review EPA's Audit Policy website at https://www.epa.gov/compliance/epas-audit-policy. Many states also offer incentives for self-policing. Please consult with the appropriate state agency for more information.

EPA's Small Business Compliance Policy. Facilities with 100 or fewer employees that find they may have violated EPCRA section 313 (TRI Reporting) should refer to EPA's Small Business Compliance Policy. EPA will eliminate or significantly reduce penalties for small businesses that meet the conditions of the Policy. For more information, see the Agency's website: https://www.epa.gov/compliance/small-business-compliance

A.2.a. TRI-MEweb Reporting Application

TRI-MEweb guides facilities through TRI reporting, checks entered data for common errors and enables users to electronically certify and submit TRI reporting forms to EPA. TRI-MEweb allows facilities to submit, revise, and withdraw TRI reporting forms submitted since 1991, provided the forms contain no trade secret information.

A.2.b. How to Use the TRI-MEweb Application

Reporters may access TRI-MEweb through EPA's Central Data Exchange (CDX). TRI-MEweb uses EPA's CDX network to certify and submit reports electronically. CDX allows facilities to submit paperless reports and receive instant confirmation of their submission. TRI-MEweb supports most browsers. ***For problems encountered while accessing CDX or TRI-MEweb, consult the TRI Electronic Reporting webpage***: https://www.epa.gov/tri/trimeweb.

User roles in TRI reporting. The TRI reporting process includes two user roles: preparer and certifying official. Figure 1 illustrates how these roles are involved in TRI reporting. The preparer prepares TRI forms for submission in TRI-MEweb but is not authorized to certify them. The certifying official is the person of authority or legal representative at a facility who certifies data submitted in TRI-MEweb to EPA and their state, territory, or tribe. Both TRI roles require a CDX user account with the TRI-MEweb application added to the *MyCDX* profile. Instructions for creating CDX user accounts for new preparers and certifying officials are on the TRI Electronic Reporting webpage: https://www.epa.gov/tri/trimeweb.

How to create a CDX account and use TRI-MEweb.

- Access the CDX login at https://cdx.epa.gov/. Click the "**Register**

with CDX" link to create a new CDX user account.

- When adding a Program Service while registering with CDX, search for and select "TRI-MEweb."
- New certifying officials must submit an Electronic Signature Agreement (ESA) and a TRIFID Signature Agreement form. A TRIFID Signature Agreement Form is required for each facility the certifying official represents. The ESA section below describes how to submit these forms.
- Users with a CDX account who have not previously reported to TRI need to add TRI-MEweb to their CDX account by clicking the **Manage Your Program Services** link on their "**MyCDX**" page.

Linking a new CDX account to an existing TRI facility in TRI-MEweb. Facilities that have previously submitted a TRI reporting form will have a TRI Facility Identification (TRIFID) Number that a new TRI-MEweb user will need to link to their account. See Part I, Section 4.1 for additional information.

In TRI-MEweb, access an existing TRI facility by providing the technical contact information and TRIFID used on a prior report. Alternatively, enter an access key for the facility. TRI-MEweb creates a unique access key for each facility and provides this key to preparers and certifying officials. For lost or forgotten access keys, request that TRI-MEweb provide the access key via email. Alternatively, contact the CDX Help Desk at (888) 890-1995 to obtain an access key.

A.2.c. Electronic Signature Agreement

An Electronic Signature Agreement (ESA) is a statement declaring the person electronically signing a document (i.e., a TRI reporting form) understands that an electronic signature is legally binding. EPA requires certifying officials to have an approved ESA before they can certify and submit a TRI form created in TRI-MEweb. Signed ESAs, in PDF format, can be found under the **"**Facility Management**"** tab.

Certifying officials should complete their ESA well in advance of the July 1 reporting deadline.

ESAs are created when a user creates a new CDX account with a certifying official role. Users have two options for obtaining an ESA approval from EPA:

Option 1 - LexisNexis real-time CDX ESA approval. A new certifying official may use the LexisNexis service incorporated into CDX to verify their identity to sign the ESA electronically. The certifying official must voluntarily provide personally identifying information to LexisNexis (EPA does not collect this information) to authenticate their identity.

Option 2 - Paper ESA form. A printable ESA form can be generated during the CDX registration process. The ESA form must be signed and mailed to EPA's Data Processing Center (DPC) for approval before the certifying official can certify TRI forms in CDX using TRI-MEweb. Access to the TRI-MEweb application on the "**MyCDX**" page is activated when the DPC approves the paper ESA. Paper ESA approval may take up to five business days.

Mail paper ESAs to the address below:

Attention: TRI ESA Approval Request
CGI Federal, Inc.
c/o EPA Reporting Center
12601 Fair Lakes Circle
Fairfax, VA 22033

Revocation of ESA in TRI-MEweb. TRI-MEweb allows a user to revoke an approved ESA for a certifying official who is no longer authorized to certify forms. CDX sends an email notification to the affected certifying official when an ESA is revoked within TRI-MEweb.

A user may accidentally revoke an ESA. If the revocation is accidental, a user has 45 days to request that the CDX helpdesk reactivate the ESA. After 45 days, the user must either use LexisNexis to resecure approval or submit a paper ESA form to EPA for reapproval.

TRIFID Signature Agreement. In addition to the ESA requirement, new certifying officials must sign a TRIFID Signature Agreement form for each facility they represent for TRI reporting. By signing the TRIFID Signature Agreement, certifying officials confirm they are senior management officials for the

reporting facility and are authorized to certify forms for that facility.

Before being able to certify and submit forms for a facility, a certifying official needs to add the facility in TRI-MEweb by selecting the "**Add Facility**" option to enter the TRIFID and then using the six-digit alphanumeric key or technical contact name from the previous year's report(s). Once the certifying official has added the facility in TRI-MEweb, the certifying official should click on the "**Facility Management**" tab to access the "**Manage TRIFID Signature Agreements**" page, which displays a list of TRIFIDs pending a TRIFID Signature Agreement. Select the checkbox next to the facility's TRIFID in the *Pending Signature* table and click the "**Sign Agreement**" button. If the facility is not visible in the "**Signature Received**" section, click the "**Add Facility**" button to incorporate the missing facility using the access key code method. The certifying official should enter their job title, review the TRIFID Signature Agreement, and click the "**I Agree**" button. A confirmation alert banner will appear, noting the successful signature and availability of the TRIFID Signature Agreement PDF file at the bottom of the page.

Once a certifying official has added a facility in TRI-MEweb, the facility will remain connected to the account, allowing the certifying official to certify and submit forms for the facility in future reporting years as well.

CDX ESA and TRIFID Signature Agreement Status in TRI-MEweb. The CDX ESA and TRIFID Signature Agreement status of the certifying official(s) assigned to each facility is listed under the "Status" column on the "**Manage Users**" page in TRI-MEweb.

- **No CDX ESA** indicates that no certifying officials are associated with the facility.
- **Sign CDX ESA** indicates that the new certifying official has not signed an ESA. The certifying official must sign a new CDX ESA.
- **Sign TRIFID Signature Agreement** indicates that the certifying official has obtained approval of the CDX ESA but needs to sign the TRIFID Signature Agreement within TRI-MEweb for the facility.
- **Active Certifying Official Available** indicates that the assigned certifying official has received approval of the CDX ESA, signed the TRIFID Signature Agreement form, and is ready to certify any pending forms completed by the preparer or the certifying official for a specific facility.

A.2.d. Miscellaneous Information on TRI-MEweb and Other Resources

Resetting CDX Passwords. EPA has a new process for logging into CDX and digitally signing TRI forms. The new process replaces the challenge questions CDX used to verify a user's identity.

EPA also upgraded the certification process. Certifying officials will need to upgrade to an Identity, Credential, and Access Management (ICAM)-compliant account. CDX will prompt users entering their account for the first time in RY 2025 to transition to the new authentication protocol.

Among other improvements, the ICAM-upgraded account enables a certifying official to access unsigned documents/TRI forms via emails sent by CDX.

Importing Previous Year Data into Current Year Forms. TRI-MEweb can import data into certain fields from the prior year report into each selected current year's TRI chemical report. Importing data is optional but can accelerate data entry if the same chemicals are reported to EPA each year. Importing data into reports for the current reporting year that have been already started in TRI-MEweb will result in the data being overwritten in the imported data fields. Not all data fields are populated with prior year data, so facilities must still complete calculations and run the error checking validation before they certify and submit a form.

Error Checker Software in TRI-MEweb. Once data entry is complete or data are imported into TRI forms using TRI-MEweb, click the "**Check for Errors**" button to start the error checking software. The software detects three categories of errors: critical errors, potential errors, and data quality alerts. Critical errors must be fixed before a TRI submission can be certified. Potential errors and data quality

alerts need to be reviewed and verified, but they will not prevent the submission from being certified and sent to EPA. Review detected errors and alerts by clicking the "**View/Fix Errors**" button on the "**Review Forms**" page and then clicking the "**Enter Error Navigation Mode"** button on the **Error List** pop-up. Error reports can be generated from the "**Review Forms**" page under the "**Forms**" tab.

Processing TRI Forms for Certification. After checking for errors using TRI-MEweb's error checking software and resolving all critical errors if applicable, designate a certifying official to review and sign the completed TRI form. A certifying official can return forms to editable status if a correction is necessary. To sign and submit a TRI reporting form, the certifying official will need to read a legal disclaimer and click the "**I agree, Certify and Submit Forms to EPA**" button to add their digital signature to the TRI Form R/A Certification Statement. See section A.2.e of this document for information on confirmations that forms have been properly certified and submitted.

Uncertified TRI-MEweb Submissions. A facility's registered certifying official must electronically sign Form R and/or Form A Certification Statements via TRI-MEweb before the submission is considered complete. Uncertified TRI-MEweb submissions are considered incomplete according to the reporting requirements in EPCRA Section 313. Lack of certification will prevent the submission from being processed. Failure to adhere to EPCRA's requirements and implementing regulations could result in an EPA enforcement action against a facility.

TRI-MEweb User Resources

- Electronic Reporting: https://www.epa.gov/tri/trimeweb. Contact information, links to reporting guidance, and online tutorials that provide step-by-step instructions for using TRI-MEweb.
- For regulatory reporting assistance contact TRI.help@epa.gov.
- For CDX technical support, including technical support for TRI-MEweb, contact the CDX Help Desk at (888) 890-1995.

A.2.e. Confirming TRI Submission(s)

You can use the following methods to confirm that a TRI Form R or Form A Certification Statement is properly submitted:

TRI-MEweb: Confirmation of federal and state/territory/tribal submissions can be found on the "**Submission History**" tab in TRI-MEweb.

CDX Email: A CDX email is sent to the registered email address of the certifying official, preparer, and technical contact of the reporting facility after the form is certified in TRI-MEweb. If no confirmation email is received, verify that the registered email address is correct and that the CDX email is not being diverted to a junk/spam email filter. Contact the CDX Helpdesk if you are unable to locate the email.

Electronic Receipt (eReceipt): Certified and submitted forms receive data quality checks that may take several days to complete. After data quality checks are complete, forms enter EPA's TRI database. Upon form entry into the TRI database, access an eReceipt report by reviewing the "**Submission History**" tab in TRI-MEweb. The eReceipt confirmation is provided in two reports. The *Facility eReceipt* report provides an overview of data submitted on the facility's location and NAICS code. The *Form eReceipt* report provides a copy of the processed TRI form data.

If the facility's Technical Contact provides an email address in the Form R/Form A Certification Statement, they will receive an email notifying them when their eReceipt has published for review in TRI-MEweb. The Technical Contact will receive this email following the certification and submission of a form. Data quality checks performed after form submittal may delay the eReceipt email by several days, especially if certification occurred near the July 1 deadline.

A.2.f. State (Including Territory) and Tribal Submissions

Facilities must submit a copy of each reporting form sent to EPA to the state (including territory) or tribe within whose Indian Country the facility is located. "State" includes: any state of the United States, the District of Columbia, the Commonwealth of Puerto

Rico, Guam, American Samoa, Marshall Islands, the U.S. Virgin Islands, the Commonwealth of the Northern Mariana Islands, and any other territory or possession over which the United States has jurisdiction.

Facilities submitting their reporting form to a state or tribe participating in the TRI Data Exchange (TDX) will have their forms (from 2004 to the present) sent simultaneously in electronic format to EPA and their state or tribal TRI representative.

If the state or tribe to which the facility is submitting their reporting form is not participating in the TDX, the facility must also send a paper copy of the report to that state or tribe. To verify whether a state or tribe is in the TDX system, go to: https://www.epa.gov/tri/tdx. Refer to https://www.epa.gov/toxics-release-inventory-tri-program/tri-state-contacts for the appropriate state submission addresses.

Facilities located in Indian Country must provide the three-digit Bureau of Indian Affairs (BIA) tribal code for the appropriate tribe in the "BIA Code" field on the Form R or Form A Certification Statement in Section 4.1. The "**Edit Facility**" page in TRI-MEweb provides a searchable list of BIA codes and corresponding tribes. BIA tribal codes are also accessible at https://www.epa.gov/data/tribal-identifier-data-standard.

Paper copies of TRI forms must be mailed to the official designated by the tribal chairperson or equivalent elected official of the relevant tribe. If tribes have entered into a cooperative agreement with states, report submissions should be sent to the entity designated in the cooperative agreement. Tribal TRI submissions will have a courtesy copy sent to the state after the July 1 deadline. Facilities using TRI-MEweb will be able to print a paper copy of the TRI form to mail to the official designated by the tribal chairperson or equivalent elected official of the relevant tribe. A list of TRI Tribal Contacts is available at https://www.epa.gov/toxics-release-inventory-tri-program/tri-tribal-contacts.

RYs 1991 – 2004 submissions: Facilities that prepare and submit a TRI RY 1991 through RY 2004 form using TRI-MEweb must print/save a copy of their TRI form on alternate media and send it to their state or tribal TRI coordinator, even if the state or tribe is participating in the TDX.

A.3 Trade Secret Claims

A trade secret claim may be submitted to prevent disclosure of the identity of a TRI-listed chemical. See Appendix A for instructions on preparing and submitting trade secret claims. Trade secret submissions must be on paper. TRI-MEweb does not support the preparation of trade secret TRI reporting forms. Facilities are advised to ensure each section of the Form R or Form A is completed and all calculations are accurate before mailing their trade secret claim submissions. Failure to submit complete and accurate trade secret packages may result in failure to submit required information by the July 1 deadline.

A.4 Recordkeeping

Good recordkeeping is essential for accurate and efficient TRI reporting. Facilities and EPA share an interest in properly maintaining records. Facilities must keep a copy of each report filed for at least three years from the date of submission. These reports will be useful for completing future reports.

Facilities must also maintain the documents, calculations, worksheets, and other sources on which they relied to gather information for prior reports. In the event of a problem with a facility's Form R or Form A, EPA may request documentation from the facility that supports the information reported.

EPA may conduct data quality reviews of Form R or Form A submissions and documentation used for calculating release quantities. An essential part of this process is reviewing facility records for accuracy and completeness. EPA recommends that facilities keep records of those TRI-listed chemicals for which they did not file reports.

EPA also recommends keeping records of all documentation containing CDX account information, including the ESA and the facility's unique alphanumeric access key, for preparer(s) and certifying official(s).

Records to maintain include:

- Previous years' EPCRA section 313 reports;
- EPCRA section 313 Reporting Threshold worksheets;
- Engineering calculations and other notes;
- Purchase records from suppliers;
- Inventory data;
- EPA permits (e.g., NPDES) and monitoring reports;
- EPCRA section 312 Tier II Reports;
- Monitoring records;
- Flowmeter data;
- RCRA Hazardous Waste Generator's Report(s);
- Pretreatment reports the facility filed with the local government;
- Invoices from waste management companies;
- Manufacturer's estimates of treatment efficiencies;
- RCRA manifests;
- Process diagrams that indicate emissions and other releases;
- Records for TRI-listed chemicals for which TRI reporting forms were not submitted;
- CDX account information including unique access key to add the facility to a user's TRI-MEweb account; and
- Copies of any paper ESA(s) submitted to EPA for approval.

A.5 How to Revise, Withdraw, or Delete a TRI Reporting Form

A.5.a. Revising a Submitted TRI Reporting Form

Through TRI-MEweb, a facility may request to revise TRI reporting forms submitted from RY 1991 through the current reporting year.

A facility may request a revision for one or more of the following reasons:

- RR1 - New Monitoring Data
- RR2 - New Emissions Factor(s)
- RR3 - New Chemical Concentration Data
- RR4 - Recalculation(s)
- RR5 - Other Reason(s)

New submissions for chemicals not reported in a previous reporting year are considered late (i.e., such new submissions are not considered revisions).

TRI-MEweb will indicate whether TDX will provide the revised report to the state, territory, or tribe, or whether the facility must provide the revised report to the given entity.

Please refer to the *TRI-MEweb Tutorials* for more information on how to use TRI-MEweb to revise a TRI submission: https://www.epa.gov/tri/trimeweb.

A.5.b. Withdrawing a Submitted TRI Reporting Form

Through TRI-MEweb, a facility may request to withdraw a TRI reporting form submitted for RY 1991 through the current reporting year.

A facility may request a withdrawal for one or more of the following reasons:

- WT1 - Did not meet the reporting threshold for manufacturing, processing, or otherwise use
- WT2 - Did not meet the reporting threshold for number of employees
- WT3 - Not in a covered NAICS Code
- WO1 - Other reason(s)

Withdrawal requests for forms from 2005 to the present will be automatically submitted to applicable states, territories, or tribes that participate in TDX. If the state, territory, or tribe in which the facility is located does not participate in TDX, the facility must send a copy of the report to the appropriate entity.

Withdrawing a TRI submission removes the form's content, including its original submission date.

To change previously submitted TRI data, a facility should revise rather than withdraw and resubmit a reporting form.

Refer to the *TRI-MEweb Tutorials* for more information on using TRI-MEweb to withdraw a reporting form: https://www.epa.gov/tri/trimeweb.

A.5.c. Modifying a TRI Reporting Form Submitted for Certification

A reporting form that has passed error checking and has been provided to a certifying official for certification and submission to EPA is locked (i.e., it may not be edited). If edits are necessary, a preparer or certifying official may reenable editing by clicking the "**Edit Form**" button.

By the Preparer: To unlock a form, a preparer must click the "**Forms Home**" subtab under the "**Forms**" tab, choose the Reporting Year corresponding to the unwanted forms, expand the form summary table by clicking the "**+**" sign, and select the form that requires editing. Only forms with a *Pending Certification* status can be unlocked. All chemical forms included in the selected submission will be unlocked.

By the Certifying Official: To unlock a form, a certifying official must log into their CDX account and click the ***TRI-MEweb (Certifying Official)*** link from their "**MyCDX**" page. This will open the "**My TRI**" page of TRI-MEweb. Then select the "**Forms**" tab and then the "**Pending Forms**" subtab. View the content of the submission by clicking the "**Review Forms**" sub-tab, navigating to the *Passed Forms* section, and clicking the "**Edit Form**" button. The certifying official will then confirm that this is the correct form that requires editing.

If the certifying official does not find the TRIFID for their reporting facility with pending forms listed, they can gain access to the facility by entering the access key for the facility listed in the *Pending Authentication* section on the "**Facility Management**" tab and signing the TRIFID Signature Agreement on the "**Manage TRIFID Signature Agreements**" sub-tab. The electronic signature widget will pop up to confirm authorized access to the account.

A.5.d. Deleting a Draft TRI Reporting Form

A preparer or certifying official cannot delete a TRI form submission that has already been certified (i.e., the form appears as "*Certified and Sent to EPA"* in TRI-MEweb). To change or remove data that has been certified and submitted to EPA, either **Revise** (see section A.5.a) or **Withdraw** (see section A.5.b) the submission.

Some situations may require a facility to delete a TRI reporting form that has not been certified and submitted to EPA. For instance, a preparer or certifying official may determine that the facility's chemical activities did not meet the reporting thresholds, so the draft reporting form needs to be deleted.

EPA recommends deleting any unnecessary TRI forms in draft status. This prevents data from being accidentally submitted to EPA. All TRI form(s) in *Available for Editing* status on the "**Forms Home**" page are in draft status. Click "**Delete**" to remove forms that are no longer needed.

A.6 When TRI Reporting Forms Must Be Submitted

As specified in EPCRA section 313, the Form R or Form A for any calendar year must be submitted on or before July 1 of the following year. Beginning with July 1, 2028, when July 1 falls on a Saturday or Sunday, forms submitted on the next business day following the reporting deadline will be considered late.

Voluntary revisions to a form can be submitted anytime during the calendar year for the current or any prior reporting year. Revisions for the current reporting year should be submitted by July 31 to be included in that year's TRI National Analysis.

Can I submit a paper form if I cannot certify before the July 1 deadline? No. Ensure an ESA is executed well before the July 1 deadline. If a certifying official cannot certify prior to the July 1 deadline because they do not have an approved ESA, they should log into CDX after the ESA is approved by EPA's DPC and certify any pending form(s).

If a facility could not process their ESA on time, should their certifying official still certify electronically after the July 1 deadline? Yes. However, facilities have a legal obligation to file an accurate and complete Form R or Form A Certification Statement for each chemical by July 1 each year if TRI reporting is required. EPA may take

enforcement action and assess civil administrative penalties for late or inaccurate forms.

A.7 How to Obtain TRI Reporting Forms

All TRI Forms and related guidance documents can be found at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home.

Except for trade secrets, EPA does not accept paper forms. Do not send paper forms (except for trade secret submissions) to EPA's DPC.

A.8 What to Do If a Facility Does Not Need to Submit any TRI Reporting Forms

Facilities that do not exceed any activity threshold for a TRI-listed chemical, are not in a covered NAICS code, or do not have 10 or more full-time employee equivalents are not required to report under EPCRA section 313 (see **Section B. How to Determine if Your Facility Must Submit a Form R or Form A Certification Statement** for more information). Such facilities are not required to maintain any records associated with uses, releases, or other waste management activities involving TRI-listed chemicals. Such facilities may opt to keep records of the amounts of TRI-listed chemicals they manufacture, process, or otherwise use to defend against any claim that they failed to report.

To avoid future auditing, a facility that previously reported may choose to provide voluntary information to EPA regarding the reason it is not reporting for the current reporting year in TRI-MEweb. To indicate that a facility is not reporting for one or more chemicals, go to the "**My TRI**" page, click the "**Facility Management**" tab, and select the "**Manage Facilities**" subtab. Click the *Take Action* dropdown menu for the facility providing voluntary information and then select the *Not Reporting?* option. The page may also be accessed to provide voluntary information via the "**Tasks You Can Quickly Start**" dropdown action box and selecting the *Not Reporting and Misc Information* option on TRI-MEweb's "**My TRI**" page (See **Section F. Optional Facility-Level Information and Non-Reporting** for more information).

B. How to Determine if a Facility Must Submit a Form R or Form A Certification Statement

This section discusses EPCRA section 313 reporting requirements: number of full-time employees, primary NAICS code, and chemical activity threshold quantities (see Figure 2 for more information). The EPCRA section 313 chemicals and chemical categories subject to reporting are available at 40 CFR 372.65, https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals, and https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:chemical-list-basic-search.

B.1 Full-Time Employee Determination

The number of full-time employees is dependent only upon the total number of hours worked by all employees and other individuals (e.g., contractors) for the facility during the calendar year and not the number of persons working. A full-time employee, for purposes of EPCRA section 313 reporting, is defined as one who works 2,000 hours per year. When making the full-time employee determination, the facility must include all paid holidays, paid vacation, and used sick leave as hours worked by each employee.

To determine the number of full-time employees working for a facility, add the hours worked by all employees during the calendar year, including contract employees and sales and support staff, and divide the total by 2,000 hours.

In other words, if the total number of hours worked by all employees for the facility is 20,000 hours or more, the facility meets the 10-employee threshold.

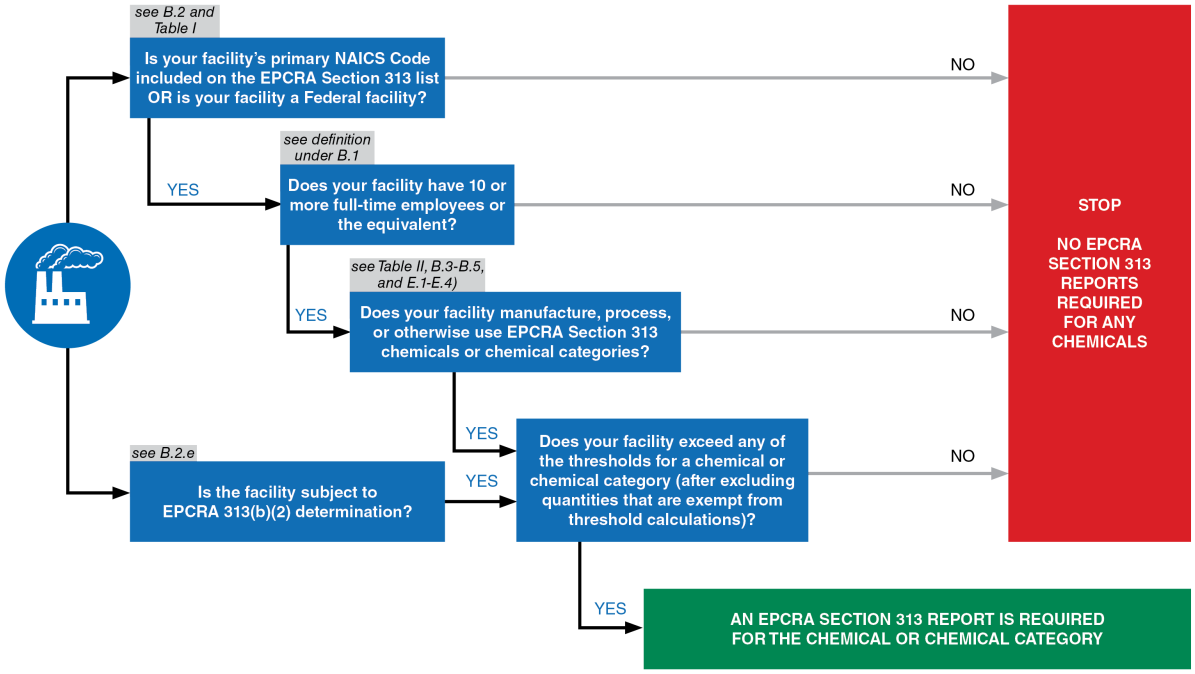
Example 1 has two scenarios demonstrating the full-time employee determination.

Example 1: Full-Time Employee Determination Scenarios

Scenario 1: Eleven employees each worked 1,500 hours for the facility in a calendar year. The total number of hours worked by all employees for the facility during the calendar year is 16,500 hours. The number of full-time employees for this facility is equal to 16,500 hours divided by 2,000 hours per full-time employee, or 8.3 full-time employees. Therefore, although 11 people worked for this facility during the calendar year, the hours worked is equivalent to 8.3 full-time employees. This facility does not meet the 10-employee threshold and is not required to report.

Scenario 2: A facility consists of six workers and three sales staff, each of whom worked 2,000 hours during the calendar year. In addition, five contract employees each worked 400 hours for the facility. The total number of hours includes the time worked by the workers (12,000 hours), plus the time worked by the sales staff (6,000 hours), plus the time worked by the contract employees (2,000 hours), or 20,000 hours. Dividing the 20,000 hours by 2,000 hours yields 10 full-time employees. This facility meets the 10-employee threshold and is subject to reporting if the other criteria are met.

Determining if a Facility Must Submit a TRI Reporting Form



Determining TRI Reporting Form Type and Method of Submission

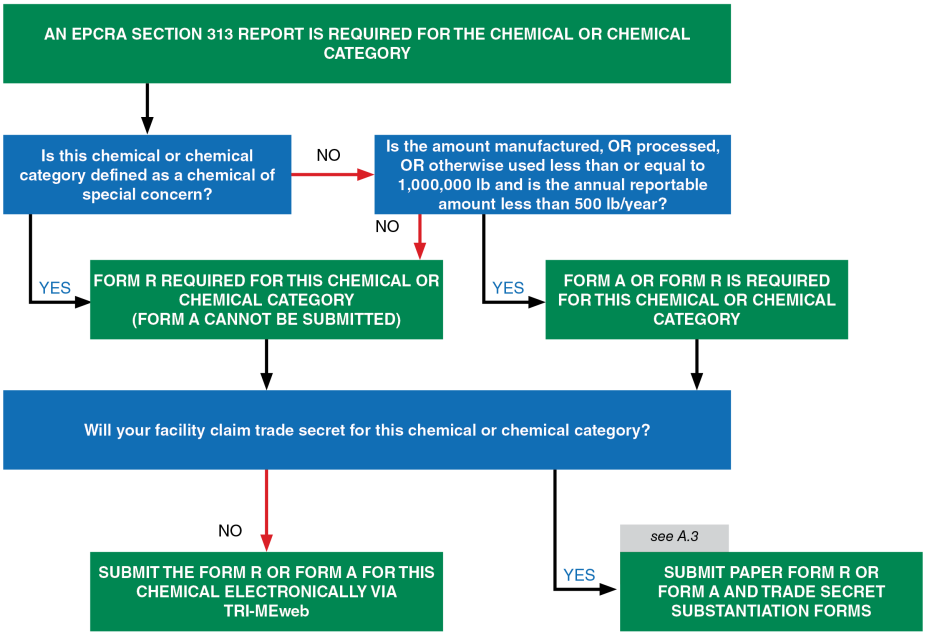


Figure 2. TRI Reporting Form Decision Diagram

B.2 Primary NAICS Code Determination

EPCRA section 313 requires reports by "facilities," which are defined as "all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with such person). A facility may contain more than one establishment." EPCRA section 313 defines "establishment" as "an economic unit, generally at a single physical location, where business is conducted or where services or industrial operations are performed." A facility should determine its North American Industry Classification System (NAICS) code(s) based on its on-site activities by conducting NAICS keyword and NAICS 2- to 6-digit code searches on the Census Bureau website at https://www.census.gov/naics/ or by referring to the 2022 NAICS Definitions at https://www.census.gov/naics/?58967?yearbck=2022.

For purposes of EPCRA Section 313 reporting, a facility should not use state-assigned codes.

The full list of NAICS codes for facilities that must report to TRI (including exceptions and/or limitations) is provided at 40 CFR 372.23. A searchable list is available at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:naics_codes.

These NAICS codes correspond to the following Standard Industrial Classification (SIC) Codes: SIC 10 (except 1011, 1081, and 1094), 12 (except 1241), 20-39, 4911 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4931 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4939 (limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce), 4953 (limited to facilities regulated under RCRA Subtitle C, 42 U.S.C. Section 6921 *et seq*.), 5169, 5171, and 7389 (limited to facilities primarily engaged in solvents recovery services on a contract or fee basis).

EPA published a final rule in the *Federal Register* on November 28, 2022 (87 FR 72891), to adopt 2022 NAICS codes for RY 2022 and subsequent reporting years.

B.2.a. Auxiliary Facilities

The Standard Industrial Classification (SIC) system defined an auxiliary facility as one that supports another covered establishment's activities (e.g., research and development laboratories, warehouses, and storage facilities). An auxiliary facility could have assumed the SIC code of another covered establishment if its primary function is to service the other covered establishment's operations. The NAICS system that replaced the SIC system for TRI reporting does not recognize the concept of auxiliary facilities and assigns NAICS codes to all establishments based on economic activity. The TRI Program uses the NAICS system for TRI reporting and accordingly treats former "auxiliary facilities" as entities with their own distinct NAICS code.

B.2.b. Multi-Establishment Facilities

A facility may include multiple establishments with different NAICS codes, some of which may not be covered under TRI. A multi-establishment facility consists of two or more distinct and separate economic units (e.g., trades or business activities) on contiguous/adjacent property owned by the same person(s). If a facility is a multi-establishment facility, calculate the value added of the products produced, shipped, or services provided from each establishment within the facility and use the following instructions to determine if the facility meets the NAICS code criterion:

- If the total value added of the products produced, shipped, or services provided at establishments with covered NAICS codes is greater than 50% of the value added of the entire facility's products and services, the entire facility meets the NAICS code criterion.
- If an establishment with a covered NAICS code has a value added of services or

products shipped or produced that is greater than any other establishment within the facility (40 CFR Section 372.22(b)(3)), the facility also meets the NAICS code criterion (see Figure 3).

Multi-Establishment Facility: Three separate establishments located on contiguous/adjacent property owned by same person(s) are considered one facility under EPCRA (40 CFR §§ 372.22 and 372.3)

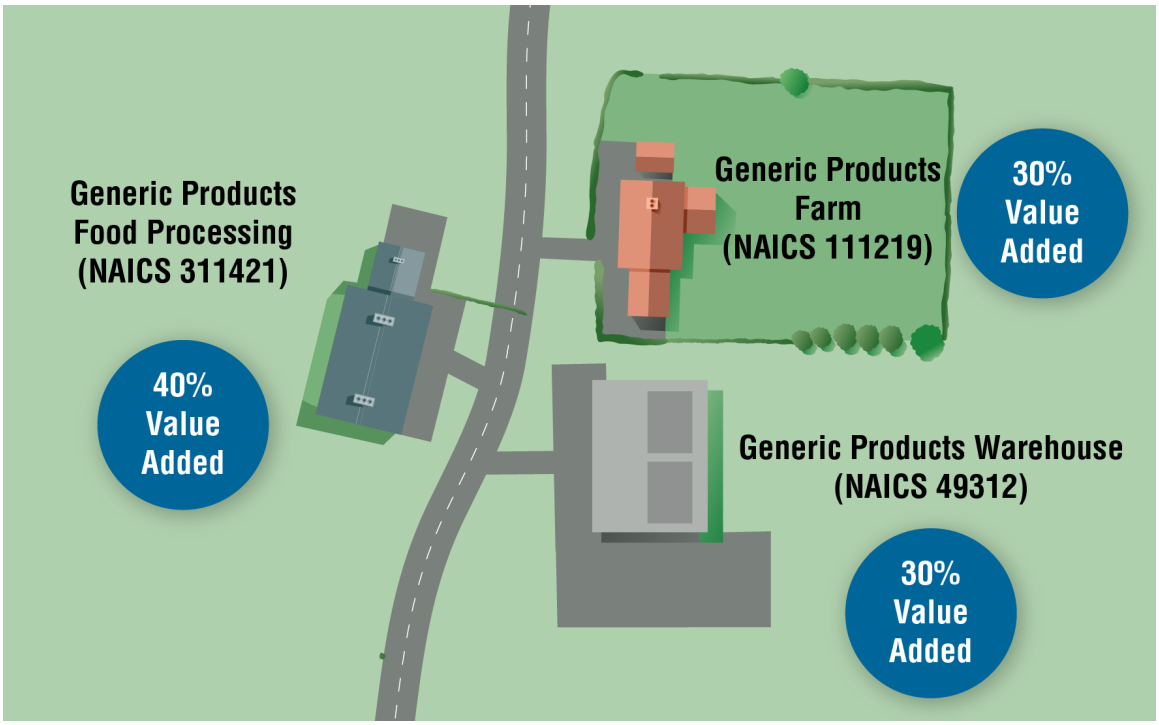


Figure 3. Example of a Multi-Establishment Facility

Isolate the value added of production or service attributable to an establishment by subtracting the product value obtained from other establishments within the same facility from the total product or service value of the facility. The value added may be defined as:

Equation 1

$$value\ added = sum(value\ of\ products\ exiting\ the\ establishment) - sum(value\ of\ products\ entering\ the\ establishment)$$

This procedure eliminates the potential for "double counting" production and services in situations in which establishments are engaged in sequential production or service activities at a single facility.

A covered multi-establishment facility must make EPCRA section 313 chemical threshold determinations and, if required, report all relevant information about releases and other waste management activities, and source reduction activities associated with a TRI-listed chemical **for the entire facility**, even including those from establishments not in covered NAICS codes. EPA realizes, however, that certain establishments in a multi-establishment facility can be, for all practical purposes, separate and distinct business units. Therefore, while threshold determinations must be made for the entire facility, individual establishments that constitute the entire facility may report their individual releases and other waste management activities separately. However, the total releases and other waste management quantities **for the entire facility** must be represented by the sum of the releases and other quantities managed as waste reported by each separate establishment. Establishments report

using the same TRIFID used for the entire multi-establishment facility.

Example 2 demonstrates the primary NAICS code determination process for two multi-establishment facility scenarios.

Example 2: Determining the Primary NAICS Code for Multi-Establishment Facilities

Scenario 1: A facility has two establishments. The first establishment, a general automotive repair service, is in NAICS code 811113 (SIC 7537), which is not a covered NAICS code. The second establishment, a metal paint shop, is in NAICS code 332812 (SIC 3479), which is a covered NAICS code. The metal paint shop paints parts received from the general automotive repair service. The facility determines the product is worth $500/unit as received from the general automotive repair service (in non-covered NAICS code 811113) and the value of the product is $1,500/unit after painting by the metal paint shop (in covered NAICS code 332812).

The value added by the metal paint shop is obtained by subtracting the value of the products from the general automotive repair service from the value of the products of the metal paint shop. (In this example, the value added = $1,500/unit - $500/unit = $1,000/unit.)

The value added ($1,000/unit) by the establishment in NAICS code 332812 is more than 50% of the product value. Therefore, the facility's primary NAICS code is 332812, which is a covered NAICS code. The facility must consider all activities at both establishments for TRI reporting purposes.

Scenario 2: A food production facility, shown in Figure 3, has three distinct establishments. The food processing establishment (NAICS 311421) is in a covered NAICS code, while the farm (NAICS 111219) and the warehouse (NAICS 493120) are in non-covered NAICS codes.

To determine the value added of the products of each establishment, the facility could first determine the value of the crops grown at the agricultural establishment, then calculate the contribution of the food processing establishment by subtracting the crop value from the total value of the product shipped from the processing establishment and the value added through warehousing.

The food processing establishment has the greatest portion of value added. Therefore, the facility's primary NAICS code is 311421, which is a covered NAICS code. Accordingly, the facility must consider all activities at all three establishments for TRI reporting purposes.

B.2.c. Property Owners

If the owners of real estate on which a covered facility is located have no other business interest in the operation of the facility (e.g., a company owns an industrial park), the real estate owners are not required to report. The operator of the facility, however, is subject to reporting requirements.

B.2.d. Discretionary Authority

Under EPCRA section 313(b)(2), the EPA administrator may apply the requirements of EPCRA section 313 to specific facilities, regardless of their primary NAICS code or number of full-time employee-equivalents. If EPA exercises this discretionary authority, EPA will announce the determination, and the effected facilities will be notified via a letter. If a facility is subject to TRI reporting requirements under this discretionary authority, that facility must make activity threshold determinations in accordance with the requirements of EPCRA section 313(f) and its implementing regulations. If activity thresholds are exceeded, the facility must report all relevant information about releases, other waste management activities, and source reduction activities for the entire facility that is the subject of EPA's determination. Those facilities must continue reporting to EPA in accordance with the determination (i.e., for the chemical(s) specified in the determination) in subsequent years. Changes in facility ownership or controllership do not alter the applicability of the determination's requirements.

B.3 TRI Chemical List and Activity Determination

The EPCRA section 313 chemicals and chemical categories subject to reporting are available at 40 CFR 372.65, https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals, and https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:chemical-list-basic-search. A facility should determine whether a TRI-listed chemical was manufactured (including imported), processed, or otherwise used in quantities over established thresholds in a calendar year. Consider threshold activities separately for each TRI-listed chemical. Separate thresholds apply to the amount of the TRI-listed chemical that is manufactured, processed, or otherwise used. Threshold determinations are further explained in Section B.4.

B.3.a. Definitions of Manufacture, Process, and Otherwise Use

Manufacture: The term ***"manufacture"*** means to produce, prepare, compound, or import a TRI-listed chemical (see Part II, Section 3.1 for more information).

Import is defined as causing the TRI-listed chemical to be imported into the customs territory of the United States. If a facility orders a TRI-listed chemical (or a mixture containing the chemical) from a foreign supplier, the facility has imported the chemical when that shipment arrives at the facility directly from a source outside the United States. If an import brokerage firm is used as an agent to obtain the TRI-listed chemical, the facility has caused it to be imported by ordering it.

Do Not Overlook Coincidental Manufacture

The term ***"manufacture"*** also includes coincidental production of a TRI-listed chemical (e.g., as a byproduct or impurity) resulting from the manufacture, processing, otherwise use, or disposal of another chemical or mixture of chemicals. In the case of coincidental production of an impurity (i.e., a TRI-listed chemical that remains in the product that is distributed in commerce), the *de minimis* exemption, discussed in Section B.3.c, may apply. The *de minimis* exemption does not apply to byproducts (e.g., a TRI-listed chemical that is separated from a process stream and further processed or disposed of).

Certain TRI-listed chemicals may be manufactured as a result of wastewater treatment or other treatment processes. For example, neutralization of wastewater containing nitric acid can result in the coincidental manufacture of a nitrate compound (solution), reportable as a member of the nitrate compounds category.

Process: The term ***"process"*** means the preparation of a TRI-listed chemical after its manufacture for distribution in commerce. Processing is usually the incorporation of a TRI-listed chemical into a product (see Part II, Section 3.2 for more information). In addition, a facility may process an impurity that already exists in a raw material by distributing that impurity into commerce. Processing includes preparation of the chemicals in the same physical state or chemical form as that received by the facility, or preparation that produces a change in physical state or chemical form. Repackaging for distribution in commerce is a type of processing. Relabeling or redistributing the TRI-listed chemical with no repackaging does not constitute otherwise use or processing. (See 62 FR 23834 and Part II, Section 3.3 for more information). "Processing" also applies to the processing of a mixture or other trade name product (see Section B.4.b) that contains a listed EPCRA section 313 chemical as one component.

Otherwise Use: The term ***"otherwise use"*** means any use of a TRI-listed chemical, including a chemical contained in a mixture or other trade name product or waste not covered by the terms "***manufacture***" or "***process***." Otherwise use of a TRI-listed chemical also includes disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction if:

(1) The TRI-listed chemical disposed of, stabilized, or treated for destruction was received from off-site for the purposes of further waste management;

or

(2) The TRI-listed chemical disposed of, stabilized, or treated for destruction was manufactured as a result

of waste management activities on materials received from off-site for the purposes of further waste management.

Example 3: Coincidental Manufacture

- A nitric acid manufacturer uses aqueous ammonia in a waste treatment system to neutralize an acidic wastewater stream containing nitric acid. The reaction of ammonia and nitric acid produces a solution of ammonium nitrate.
  - The ammonium nitrate (solution) is manufactured as a byproduct. If the quantity of ammonium nitrate produced exceeds the 25,000-pound manufacturing threshold, the facility must report under the nitrate compounds category.
  - The aqueous ammonia is considered otherwise used, and 10% of the total aqueous ammonia would be counted toward the 10,000-pound otherwise use threshold. Reports for releases of ammonia must also include 10% of the total aqueous ammonia from the solution of ammonium nitrate (see the qualifier for the ammonia listing).
- Combustion of coal or other fuel in boilers/furnaces can result in the coincidental manufacture of metal category compounds and sulfuric acid (acid aerosols), hydrochloric acid (acid aerosols), and hydrogen fluoride.

Example 4: Typical Process and Manufacture Activities

- A facility acquires toluene, a TRI-listed chemical, from another facility and reacts the toluene with air to form benzoic acid, which the facility distributes in commerce. The facility processes toluene and manufactures and processes benzoic acid. Benzoic acid, however, is not a TRI-listed chemical and thus does not trigger reporting requirements.
- A facility combines toluene purchased from a supplier with various materials to form paint, which it then sells. The facility processes toluene.
- A facility purchases a nickel compound (nickel compounds is a TRI-listed chemical category) as a bulk solid and performs various size-reduction operations (e.g., grinding) before packaging the compound in 50-pound bags, which the company sells. The facility processes nickel compounds.
- A facility acquires a prepared mixture of resin and chopped fiber to be used in the injection molding of plastic products. The resin contains a TRI-listed chemical that is incorporated into the plastic, which the company distributes in commerce. The facility processes the TRI-listed chemical.
- A facility combusts coal or oil, which may produce metal category compounds from either the parent metal or a metal compound contained in the coal or oil. If a metal undergoes a change of valence, a metal compound is considered to be manufactured. For example, during the combustion process copper in valence state zero changes to copper in valence state +2 in a compound such as copper (II) oxide (CuO). Furthermore, a metallic compound could be transformed to another metallic compound without a change in valency (e.g., copper (II) chloride ($CuCl_2$) is transformed to copper (II) oxide (CuO)). The transformation to a new compound by combustion without a change in valence state is also considered to be "manufacture" for purposes of EPCRA section 313.

Example 5: Typical Otherwise Use Activities

- When a facility's equipment is cleaned with toluene, toluene is being otherwise used. If a facility also separates two components of a mixture by dissolving one component in toluene and subsequently recovers the toluene from the process for reuse or disposal, the facility otherwise uses toluene.
- A covered facility receives a waste containing 12,000 pounds of Chemical A from off -site. The facility treats the waste, destroying Chemical A, and in the treatment process manufactures 10,500 pounds of Chemical B. Both Chemical A and Chemical B are TRI-listed chemicals, and neither chemical is classified as a chemical of special concern (see Section B.3.b for information on chemicals of special concern). Chemical B is disposed of on-site. Because the waste containing Chemical A was received from off-site for the purpose of waste management, the amount of Chemical A must be included in the otherwise use threshold determination for Chemical A. The otherwise use threshold for this chemical is 10,000 pounds, and because the amount of Chemical A exceeds this threshold, all releases and other waste management activities for Chemical A must be reported. Chemical B was manufactured in the treatment of waste received from off-site. The facility disposed of Chemical B on-site. Since Chemical B was generated from waste received from off-site for treatment for destruction, disposal, or stabilization, the disposal of Chemical B is otherwise used. Thus, the amount of Chemical B must be considered in the otherwise use threshold determination. The otherwise use reporting threshold for Chemical B has also been exceeded, and the facility must report all releases and other waste management activities for Chemical B.

B.3.b. Chemicals of Special Concern Overview

On October 29, 1999, EPA published a final rule (64 FR 58666) adding certain chemicals and chemical categories to the EPCRA section 313 list of toxic chemicals. Additionally, EPA classified these chemicals and categories, including certain other chemicals and chemical categories, as "chemicals of special concern." TRI-listed chemicals classified as chemicals of special concern have lower reporting thresholds and, as explained below, certain aspects of TRI reporting differ for such chemicals.

In creating the chemicals of special concern classification, EPA designated certain persistent bioaccumulative toxic (PBT) chemicals and PBT chemical categories as chemicals of special concern.

EPA has continued to classify certain chemicals and chemical categories as chemicals of special concern for TRI reporting purposes. The reporting thresholds for chemicals of special concern are either 100 pounds, 10 pounds, or, in the case of the dioxin and dioxin-like compounds chemical category, 0.1 grams. The list of all chemicals of special concern and the applicable manufacture, process, and otherwise use thresholds are provided at 40 CFR 372.28, https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals, and https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:chemical-list-basic-search.

The *de minimis* exemption does not apply to chemicals of special concern (except lead when contained in stainless steel, brass, or bronze alloy). Starting with RY 2024 (i.e., calendar year 2024), the *de minimis* exemption does not apply to supplier notification for chemicals classified as chemicals of special concern. Thus, as of calendar year 2024, supplier notification must be provided for chemicals of special concern even if they are present in a trade name product or mixture in concentrations below 1%. In addition, chemicals of special concern are ineligible for range reporting for on-site releases and off-site transfers for further waste management. This does not affect the applicability of range reporting of the maximum amount on-site as EPCRA section 313(g) requires.

All releases and other waste management quantities greater than 0.1 pounds of a chemical of special concern (except the dioxin and dioxin-like compounds chemical category) should be reported at a level of precision supported by the accuracy of the underlying data and estimation techniques on which the estimate is based. If a facility's release or other waste management estimates support reporting a more precise quantity than whole numbers, the more precise quantity should be reported.

Quantities of chemicals of special concern less than 0.1 pounds (e.g., 0.07 pounds) should either be rounded up to 0.1 pounds or reported to the level of precision supported by the underlying data and estimation techniques. The facility must determine, based on the accuracy of the underlying data and the estimation techniques, whether it is appropriate to round the value to 0.1 pounds, report the value as is, or round the value to 0 (zero).

For the dioxin and dioxin-like compounds chemical category, which has a 0.1-gram reporting threshold, facilities must report all release and other waste management quantities greater than 100 micrograms (i.e., 0.0001 grams). Notwithstanding the numeric precision used when determining reporting eligibility thresholds, facilities should report on the Form R to the level of accuracy that the underlying data support, up to seven digits to the right of the decimal. EPA's reporting software and data management systems support data precision to seven digits to the right of the decimal. If a facility has information on the individual congener members of the dioxin and dioxin-like compounds category, the facility must report the release and transfer quantities of each congener (see instructions in Part II, Section E).

Lead and Lead Compounds

Lead and lead compounds are considered PBT chemicals and are classified as chemicals of special concern subject to manufacture, process, and otherwise use thresholds of 100 pounds. However, lead contained in stainless steel, brass, or bronze alloys remains subject to the higher 25,000-pound manufacture and process thresholds and the 10,000-pound otherwise use threshold. Typically,

for steel to be considered stainless steel with resistance to corrosion and oxidation, it must be composed of at least 10.5% chromium. Lead contained in stainless steel is subject to the higher activity thresholds, and lead contained in non-stainless steel (i.e., steel with less than 10.5% chromium content) is subject to the 100-pound threshold.

Provided below are some important guidelines for calculating threshold and release and other waste management quantities for lead and lead compounds:

1) quantities of lead not contained in stainless steel, brass, or bronze alloy are applied to both the 100-pound threshold and the 25,000/10,000-pound thresholds;
2) quantities of lead contained in stainless steel, brass, or bronze alloys are applied only to the 25,000/10,000-pound thresholds;
3) a facility is eligible for the *de minimis* exemption for those quantities of lead in stainless steel, brass, or bronze alloys that meet the *de minimis* exemption standard (e.g., manufactured as an impurity). Accordingly, the *de minimis* exemption may apply to quantities of lead in stainless steel, brass, or bronze alloys but it may not apply to lead not in stainless steel, brass, or bronze alloys;
4) if a facility exceeds the 100-pound threshold for lead other than in stainless steel, brass, or bronze alloys, the facility may not apply Form A eligibility, range reporting in Sections 5 and 6 of the Form R, or the use of whole numbers and two significant digits to any of the lead they report. If a facility that exceeds the 25,000/10,000-pound threshold for lead in stainless steel, brass, or bronze alloy without exceeding the 100-pound threshold for non-alloyed lead, the facility may consider the Form A requirements, range reporting in Sections 5 and 6 of the Form R, and the use of whole numbers and two significant digits.

These guidelines are summarized in Figure 4.

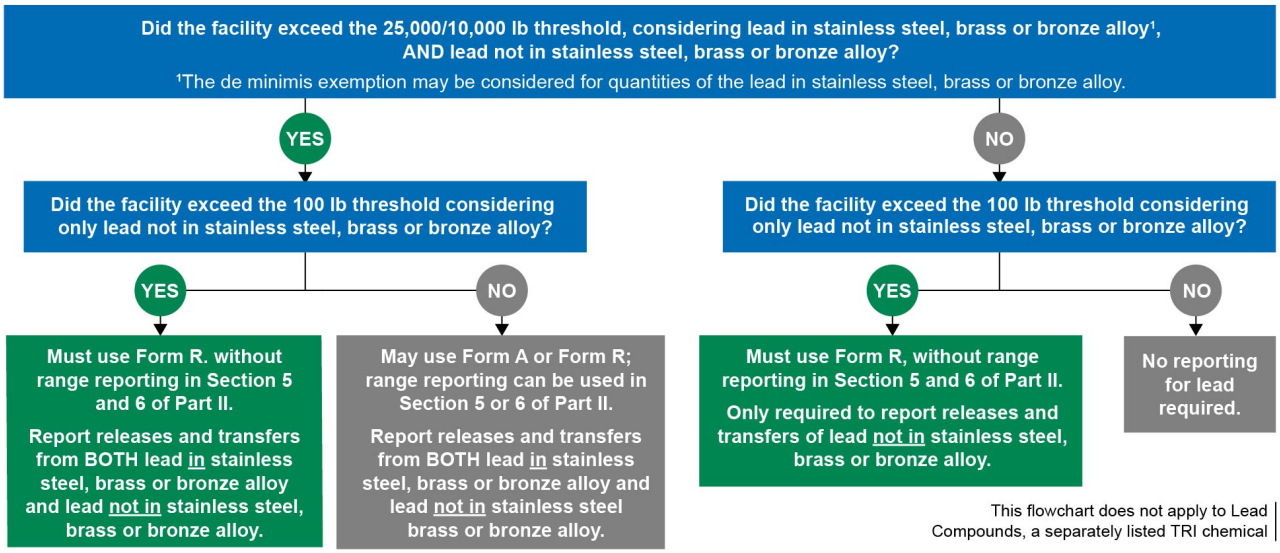


Figure 4. Lead and Lead Compounds Reporting Decision Flow Diagram

Per- and Polyfluoroalkyl Substances (PFAS)

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (Pub. L. No. 116-92) (NDAA) added certain PFAS to the EPCRA section 313 chemical list (see https://www.epa.gov/toxics-release-inventory-tri-program/addition-certain-pfas-tri-national-defense-authorization-act). PFAS are listed with manufacturing, processing, and otherwise use thresholds of 100 pounds. Beginning with RY 2024 (forms due by July 1, 2025), PFAS

added to TRI pursuant to sections 7321(b) and (c) of the NDAA are classified as chemicals of special concern. Facilities cannot use the *de minimis* exemption, Form A, or range reporting. Additional TRI reporting guidance for PFAS is available at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:pfas_resources.

B.3.c. Activity Exemptions

Otherwise Use Exemptions. Certain otherwise uses of TRI-listed chemicals are specifically exempted:

- Otherwise use as a structural component of the facility;
- Otherwise use in routine janitorial or facility grounds maintenance;
- Personal use by employees or other persons;
- Otherwise use of products containing TRI-listed chemicals for the purpose of maintaining motor vehicles the facility operates; and
- Otherwise use of TRI-listed chemicals contained in intake water (used for processing or non-contact cooling) or intake air (used either as compressed air or for combustion).

The exemption of a TRI-listed chemical otherwise used (1) as a structural component of the facility; or (2) in routine janitorial or facility grounds maintenance; or (3) for personal use by an employee cannot be applied to activities involving process-related equipment.

Articles Exemption. TRI-listed chemicals contained in articles processed or otherwise used at a covered facility are exempt from threshold determinations and release and other waste management calculations. The exemption applies if the facility receives the article from another facility or when the facility produces the article itself. The exemption applies only to the quantity of the TRI-listed chemical present in the article. If the TRI-listed chemical is manufactured (including imported), processed, or otherwise used at the covered facility other than as part of the article in excess of an applicable threshold, the facility is required to report that chemical (40 CFR 372.38(b)). For a TRI-listed chemical in an item to be exempt as part of the article, the item must meet all the criteria in the EPCRA section 313 article definition. That is, it must be a manufactured item (1) which is formed to a specific shape or design during manufacture, (2) which has end use functions dependent in whole or in part upon its shape or design during end use, and (3) which does not release a toxic chemical under normal conditions of processing or use of the item at the facility.

If the processing or otherwise use of all like items results in a total release of 0.5 pounds or less of a TRI-listed chemical in a reporting year to any environmental medium, EPA allows this release to be rounded to zero, and the manufactured items retain their article status. The 0.5-pound threshold does not apply to each individual article but applies to the sum of all releases from processing or otherwise use of all like articles. If all the releases of like articles over a reporting year are completely captured and recycled/reused on-site or off-site, those items retain their article status. Any amount released and not recycled/reused will count toward the 0.5-pound per year cut-off value.

The articles exemption applies to the normal processing or use of articles. The exemption does not apply to manufacture of the article. TRI-listed chemicals incorporated into articles produced at a facility must be factored into threshold determinations and release and other waste management calculations.

Example 6: Articles Exemption

- Nickel incorporated into a brass doorknob is processed to manufacture the brass doorknob and therefore must be counted toward threshold determinations and release and other waste management calculations. However, use of the brass doorknobs elsewhere in the facility need not be counted. Disposal of the brass doorknob after its use does not constitute a "release." Thus, the brass doorknob remains an article.
- If an item used in the facility is fragmented, the item is still an article if the fragments being discarded remain identifiable as the article (e.g., recognizable pieces of a cylinder, pieces of wire). For instance, an eight-foot piece of wire is cut into two four-foot pieces of wire without releasing any TRI-listed chemicals. Each four-foot piece is identifiable as a piece of wire. Therefore, the article status for these pieces of wire remains intact.
- TRI-listed chemicals received in the form of pellets are not articles because the pellet form is simply a convenient form for further processing of the material.

During processing or use, if an item retains its initial thickness or diameter, in whole or in part, it meets the first criterion of the article definition (i.e., it must be a manufactured item that is formed to a specific shape or design during manufacture). If the item's basic dimensional characteristics are entirely altered during processing or otherwise use, the item does not meet the first criterion. Examples of items that do not meet the definition are those that are cold extruded, such as lead ingots that are formed into wire or rods. On the other hand, the articles exemption would continue to apply to cutting a manufactured item into pieces that are recognizable as the article, provided the dimensions (i.e., the diameter or thickness) of the item remain the same. Metal wire may be bent, and sheet metal may be cut, punched, stamped, or pressed without losing their article status, provided the diameter of the wire or the thickness of the sheet is not entirely changed.

What constitutes a release of a TRI-listed chemical is important because processing or otherwise use of articles resulting in a release to the environment (or more than 0.5 pounds) negates the article status and precludes eligibility for the exemption. Cutting, grinding, melting, or other processing of manufactured items could result in a release of a TRI-listed chemical during normal conditions of processing or otherwise use, thereby negating the exemption as articles.

***De Minimis* Exemption.** The *de minimis* exemption allows facilities to disregard certain minimal concentrations of TRI-listed chemicals not classified as chemicals of special concern in mixtures or other trade name products when making threshold determinations and release and other waste management calculations. The *de minimis* exemption does not apply to the manufacture of a TRI-listed chemical unless that chemical is manufactured as an impurity and remains in the product distributed in commerce, or if the TRI-listed chemical is imported below the appropriate *de minimis* level. The *de minimis* exemption does not apply to a byproduct manufactured coincidentally as a result of manufacturing, processing, otherwise use or any waste management activities. The *de minimis* exemption does not apply to any chemical of special concern (except lead when contained in stainless steel, brass, or bronze alloy) or chemical of special concern category. A list of chemicals of special concern may be found in Section B.4.f of this document.

When determining whether the *de minimis* exemption applies to a TRI-listed chemical, consider the concentration of the chemical in mixtures and other trade name products. If the TRI-listed chemical is not classified as a chemical of special concern; is in a mixture or other trade name product; is manufactured as an impurity, imported, processed, or otherwise used; and is below the appropriate *de minimis* level; then the quantity of the chemical in that mixture or other trade name product need not be applied to threshold determinations or included

in release or other waste management determinations. *De minimis* levels for chemical categories apply to the total concentration of all chemicals in the category within a mixture, not the concentration of each individual category member within the mixture. If a TRI-listed chemical is not classified as a chemical of special concern and is in a mixture or other trade name product below the appropriate *de minimis* level, all releases and other waste management activities associated with the TRI-listed chemical in that mixture or other trade name product are exempt from TRI reporting. It is possible to exceed an activity (e.g., processing) threshold for a TRI-listed chemical on a facility-wide basis but not be required to calculate releases or other waste management quantities associated with a particular process because that process involves only mixtures or other trade name products containing the chemical not classified as a chemical of special concern below the *de minimis* level.

EPA interprets the *de minimis* exemption such that once the concentration of a TRI-listed chemical not classified as a chemical of special concern meets or exceeds the appropriate *de minimis* level in the mixture or other trade name product, the facility must make threshold determinations and release and other waste management calculations, even if the chemical later falls below the *de minimis* level in the same mixture or trade name product. Thus, all releases and other quantities managed as waste that occur after the *de minimis* level has been met or exceeded are reportable. If a TRI-listed chemical in a mixture or other trade name product at or above the *de minimis* level is brought on-site, the *de minimis* exemption never applies to that mixture or trade name product.

De minimis levels for TRI-listed chemicals and chemical categories not classified as chemicals of special concern are set at concentrations of either 1% or 0.1%. The 0.1% *de minimis* levels are dictated by determinations made by the National Toxicology Program (NTP) in its Report on Carcinogens, the International Agency for Research on Cancer (IARC) in its Monographs, or 29 CFR 1910, subpart Z. Therefore, once a TRI-listed chemical not classified as a chemical of special concern has a status under NTP, IARC, or 29 CFR 1910, subpart Z indicating that the chemical is a carcinogen or potential carcinogen, the reporting facility may disregard levels of the chemical below the 0.1% *de minimis* level provided the other criteria for the *de minimis* exemption are met.

The 'Basis of OSHA Carcinogens' document (https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:osha_carcinogen) provides the specific basis for each chemical or chemical category designated as a known or potential carcinogen.

De Minimis Exemption Application to Processing or Otherwise Use of a Mixture

The *de minimis* exemption applies to the processing or otherwise use of a TRI-listed chemical not classified as a chemical of special concern in a mixture. Threshold determinations and release and other waste management calculations begin at the point at which the chemical meets or exceeds the *de minimis* level. If a TRI-listed chemical is not classified as a chemical of special concern and is present in a mixture at a concentration below its *de minimis* level, this quantity of the chemical need not be included for threshold determinations, release and other waste management reporting, or supplier notification requirements. The exemption applies as long as the mixture containing *de minimis* amounts of a TRI-listed chemical never meets or exceeds its *de minimis* level.

Example 7: *De Minimis* Applications to Process and Otherwise Use Scenarios for TRI-Listed Chemicals not Classified as Chemicals of Special Concern

In many cases, the *de minimis* level is met, crossed, or re-crossed by TRI-listed chemicals not classified as chemicals of special concern within a process or otherwise use scenario. The following examples illustrate these complex reporting scenarios.

Increasing Concentration to or Above *De Minimis* Levels During Processing

A manufacturing facility receives toluene containing chlorobenzene at a concentration below its *de minimis* level. Through distillation, the chlorobenzene concentration in process streams is increased above the *de minimis* level of 1%. From the point at which the chlorobenzene concentration equals or exceeds 1% in process streams, the amount present must be factored into threshold determinations and release and other waste management estimates. The facility need not consider the amount of chlorobenzene in the raw material when below *de minimis* levels, i.e., prior to distillation to 1%, when making threshold determinations. The facility need not report emissions of chlorobenzene from storage tanks or any other equipment associated with that specific process where the chlorobenzene concentration is less than 1%.

Fluctuating Concentration During Processing

A manufacturer produces an ink product containing toluene, a TRI-listed chemical, below its *de minimis* level. The process causes the percentage of toluene in the mixture to fluctuate; it rises above the *de minimis* level for a time but drops below the level as the process ends. The facility must consider the chemical toward threshold determinations from the point at which it first meets the *de minimis* level. Once the *de minimis* level is met or exceeded, the exemption does not apply.

Concentration Ranges Straddling the *De Minimis* Level

There may be instances in which the concentration of a TRI-listed chemical not classified as a chemical of special concern is given as a range straddling the *de minimis* level. Example 8 illustrates how to apply the *de minimis* exemption in such scenarios.

***De Minimis* Exemption Application in the Manufacture of the Listed Chemical in a Mixture**

The *de minimis* exemption generally does not apply to the manufacture of a TRI-listed chemical. However, the *de minimis* exemption may apply to mixtures and other trade name products containing TRI-listed chemicals not classified as chemicals of special concern that are imported into the United States.

The exemption also applies to TRI-listed chemicals not classified as chemicals of special concern that are manufactured as impurities that remain in the product distributed in commerce below the *de minimis* levels. The amount remaining in the product is exempt from threshold determinations. If the chemical is separated from the final product, it cannot qualify for the exemption. Any amount that is separated or is separate from the product is considered a byproduct and is subject to threshold determinations and release and other waste management calculations. Any amount of a TRI-listed chemical that is manufactured in a waste stream must be considered toward threshold determinations and release and other waste management calculations and accounted for on the Form R even if that chemical is manufactured below the *de minimis* level.

The *de minimis* exemption also does not apply to situations in which a TRI-listed chemical in waste is diluted to below the *de minimis* level.

Example 8: Concentration Ranges Straddling the *De Minimis* Level

Scenario 1: A facility processes 8,000,000 pounds of a mixture containing 0.25% to 1.25% manganese. Manganese is eligible for the *de minimis* exemption at concentrations below 1%. The amount of mixture subject to reporting is the quantity containing manganese at or above the *de minimis* level:

[(8,000,000) × (1.25% - 0.99%)] ÷ (1.25% - 0.25%)

The average concentration of manganese not exempt (at or above the *de minimis* level) is:

(1.25% + 1.00%) ÷ (2)

Therefore, the amount of manganese subject to threshold determination and release and other waste management estimates is:

$$\left[\frac{(8{,}000{,}000)\times(1.25\%-0.99\%)}{(1.25\%-0.25\%)}\right]\times\left[\frac{(1.25\%+1.00\%)}{(2)}\right]=23{,}400\,pounds$$

= 23,400 pounds manganese (which is below the processing threshold for manganese)

In this scenario, because the facility's information pertaining to manganese was available to two decimal places, 0.99 was used to determine the amount below the *de minimis* level. If the information was available to one decimal place, 0.9 should be used, as in the scenario below.

Scenario 2: As in the previous example, manganese is present in a mixture, of which 8,000,000 pounds is processed. The SDS states the mixture contains 0.2% to 1.2% manganese. The amount of mixture subject to reporting (at or above *de minimis* level) is:

[(8,000,000) × (1.2% - 0.9%)] ÷ (1.2% - 0.2%)

The average concentration of manganese not exempt (at or above *de minimis* level) is:

(1.2% + 1.0%) ÷ (2)

Therefore, the amount of manganese subject to threshold determinations and release and other waste management estimates is:

$$\left[\frac{(8{,}000{,}000)\times(1.2\%-0.9\%)}{(1.2\%-0.2\%)}\right]\times\left[\frac{(1.2\%+1.0\%)}{(2)}\right]=26{,}400\,pounds$$

= 26,400 pounds manganese (which is above the processing threshold for manganese)

Example 9: *De Minimis* Exemption Application to the Manufacture of a Chemical in a Mixture

Manufacture as a Product Impurity

Toluene-2,4-diisocyanate reacts with trace amounts of water to form trace quantities of 2,4-diaminotoluene. The resulting product contains 99% toluene-2,4-diisocyanate and 0.05% 2,4-diaminotoluene. The 2,4-diaminotoluene would not be subject to EPCRA Section 313 reporting nor would supplier notification be required because the concentration of 2,4-diaminotoluene is below its *de minimis* level of 0.1% in the product.

Manufacture as a Commercial Byproduct and Impurity

Chloroform is a reaction byproduct in the production of carbon tetrachloride. It is removed by distillation to a concentration of less than 150 ppm (0.0150%) remaining in the carbon tetrachloride. The separated chloroform at 90% concentration is sold as a byproduct. Chloroform is subject to a 0.1% (1,000 ppm) *de minimis* level. Any amount of chloroform manufactured and separated as a byproduct must be included in threshold determinations because EPA does not interpret the *de minimis* exemption to apply to the manufacture of a chemical as a byproduct. Releases of chloroform prior to and during purification of the carbon tetrachloride must be reported. The *de minimis* exemption can, however, be applied to the chloroform remaining as an impurity in the carbon tetrachloride. Because the concentration of chloroform remaining in the carbon tetrachloride is below the *de minimis* level, and carbon tetrachloride is not classified as a chemical of special concern, this quantity of chloroform is exempt from threshold determinations, release and other waste management reporting, and supplier notification.

Manufacture as a Waste Byproduct

A small amount of formaldehyde is manufactured as a reaction byproduct during the production of phthalic anhydride. The formaldehyde is separated from the phthalic anhydride as a waste gas and burned, leaving no formaldehyde in the phthalic anhydride. The amount of formaldehyde produced and removed must be included in threshold determinations and release and other waste management estimates even if the formaldehyde is present below the *de minimis* level in the process stream where it was manufactured or in the waste stream to which it was separated because EPA does not interpret mixtures and trade name products to include wastes.

Laboratory Activities Exemption. TRI-listed chemicals that are manufactured, processed, or otherwise used in a laboratory at a covered facility under the direct supervision of a technically qualified individual need not be considered for threshold determinations and release and other waste management calculations. However, pilot-plant scale and specialty chemical production does not qualify for the laboratory activities exemption, nor does the use of TRI-listed chemicals for laboratory support activities, such as the use of chemicals for equipment maintenance.

Coal Extraction Activities Exemption. If a TRI-listed chemical is manufactured, processed, or otherwise used in extraction by facilities in NAICS codes 212114 or 212115, the quantity of that chemical manufactured, processed, or otherwise used need not be considered for threshold determinations and release and other waste management calculations (see Example 10). Reclamation activities occurring simultaneously with coal extraction activities (e.g., cast blasting) are included in the exemption. However, otherwise use of ash, waste rock, or fertilizer for reclamation purposes is not considered

part of extraction. Non-exempt amounts of TRI-listed chemicals contained in these materials must be considered toward threshold determinations and release and other waste management calculations.

Example 10: Coal Mining Extraction Activities

Included among these materials are explosives for blasting operations, solvents, lubricants, and fuels for extraction-related equipment maintenance and use, as well as overburden and mineral deposits. The TRI-listed chemicals contained in these materials are exempt from threshold determinations and release and other waste management calculations when manufactured, processed, or otherwise used during extraction activities at coal mines.

Metal Mining Overburden Exemption. If a TRI-listed chemical that is a constituent of overburden is processed or otherwise used by facilities in NAICS codes 212220, 212230, or 212290, the owner/operator is not required to consider the quantity of the TRI-listed chemical as processed or otherwise used when considering threshold determinations and release and other waste management calculations.

For purposes of TRI reporting, overburden is the unconsolidated material that overlies a deposit of useful material or ore. It does not include any portion of the ore or waste rock.

B.3.d. Chemical Qualifiers

Certain TRI-listed chemicals listed have parenthetic "qualifiers." These qualifiers indicate that these TRI-listed chemicals are subject to TRI reporting requirements if manufactured, processed, or otherwise used in a specific form or when a certain activity is performed. A TRI-listed chemical without a qualifier is subject to reporting in all forms in which it is manufactured, processed, and otherwise used. The following chemicals are reportable only if they are manufactured, processed, and/or otherwise used in the specific form(s) listed.

Chemical/ Chemical Category	CASRN/ Category Code	Qualifier
Aluminum (fume or dust)	7429-90-5	**Only** if it is a fume or dust form.
Aluminum oxide (fibrous forms)	1344-28-1	**Only** if it is a fibrous form.
Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing)	7664-41-7	**Only** 10% of aqueous forms. 100% of anhydrous forms.
Asbestos (friable)	1332-21-4	**Only** if it is a friable form.
Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7647-01-0	**Only** if it is an aerosol form as defined.
Nitrate compounds (water dissociable; reportable only when in aqueous solution)	N511	**Only** if in aqueous solution.
Phosphorus (yellow or white)	12185-10-3	**Only** if it is a yellow or white form.
Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)	7664-93-9	**Only** if it is an aerosol form as defined.
Vanadium (except when contained in an alloy)	7440-62-2	**Except** if it is contained in an alloy.
Zinc (fume or dust)	7440-66-6	**Only** if it is in a fume or dust form.

The qualifier for the following three chemicals is based on the chemical activity rather than the form of the chemical. These chemicals are subject to reporting only when the indicated activity is performed.

Chemical/ Chemical Category	CASRN/ Category Code	Qualifier
Dioxin and dioxin-like compounds (manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds if the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacture of that chemical.)	N150	**Only** if they are manufactured at the facility; or are processed or otherwise used when present as contaminants in a chemical, but only if they were created during the manufacture of that chemical.
Isopropyl alcohol (only persons who manufacture by the strong acid process are subject, no supplier notification)	67-63-0	**Only** if it is being manufactured by the strong acid process. Facilities that process or otherwise use isopropyl alcohol are not covered and should not file a report.
Saccharin (only persons who manufacture are subject, no supplier notification)	81-07-2	**Only** if it is being manufactured.

Supplier Notification Implications

No supplier notification is required for isopropyl alcohol and saccharin because the processors and users of these chemicals are not required to report. Manufacturers of these chemicals do not need to notify their customers that these are reportable TRI-listed chemicals.

Qualifier Definitions

Fume or dust. Two of the metals on the list (aluminum and zinc) contain the qualifier "fume or dust." Fume or dust refers to dry forms of these metals but does not refer to "wet" forms such as solutions or slurries. As explained in Section B.3.a, the term "manufacture" includes generation of a TRI-listed chemical as a byproduct or impurity. In such cases, a facility should determine if, for example, it generated more than 25,000 pounds of aluminum fume or dust in the reporting year as a result of its activities. If so, the facility must report that it manufactures "aluminum (fume or dust)." Similarly, certain technologies may process one of these metals in the form of a fume or dust to make other TRI-listed chemicals or other products for distribution in commerce. In reporting releases, the facility would only report releases of the fume or dust.

EPA considers dusts to consist of solid particles generated by any mechanical processing of materials including crushing, grinding, rapid impact, handling, detonation, and decrepitation of organic and inorganic materials such as rock, ore, and metal. Dusts do not tend to flocculate, except under electrostatic forces.

EPA considers a fume to be an airborne dispersion consisting of small solid particles created by condensation from a gaseous state, in contrast to a gas or vapor. Fumes arise from the heating of solids such as lead. The condensation is often accompanied by a chemical reaction, such as oxidation. Fumes flocculate and sometimes coalesce.

Manufacturing qualifiers. Two TRI-listed chemicals have a qualifier relating to manufacture. For isopropyl alcohol, the qualifier is "only persons who manufacture by the strong acid process are subject, no supplier notification." For saccharin, the qualifier is "only persons who manufacture are subject, no supplier notification." For isopropyl alcohol, the qualifier means that only facilities manufacturing isopropyl alcohol by the strong acid process are required to report. For saccharin, only manufacturers of the TRI-listed chemical are subject to the reporting requirements. A facility that only

processes or otherwise uses either of these TRI-listed chemicals is not required to report for these chemicals. In both cases, supplier notification does not apply because only manufacturers, not processors or users, of these two chemicals must report.

Ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10 percent of total aqueous ammonia is reportable under this listing). The qualifier for ammonia means that anhydrous forms of ammonia are 100% reportable and aqueous forms are limited to 10% of total aqueous ammonia. Therefore, when determining thresholds, releases, and other waste management quantities, all anhydrous ammonia is included but only 10% of total aqueous ammonia is included. Any evaporation of ammonia from aqueous ammonia solutions is considered anhydrous ammonia and should be included in threshold determinations and release and other waste management calculations.

Sulfuric acid and Hydrochloric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size). The qualifier for sulfuric acid and hydrochloric acid means that the only forms of these chemicals that are reportable are airborne forms. Aqueous solutions are not covered by this listing, but aerosols generated from aqueous solutions are.

Nitrate compounds (water dissociable; reportable only when in aqueous solution). The qualifier for the nitrate compounds category limits the reporting to nitrate compounds that dissociate in water, generating nitrate ions. For the purposes of threshold determinations, the entire weight of the nitrate compound must be included in all calculations. For the purposes of reporting releases and other waste management quantities, only the weight of the nitrate ion should be included in the calculations of these quantities.

Phosphorus (yellow or white). The phosphorus listing is qualified by the term "yellow or white." This means that only manufacturing, processing, or otherwise use of phosphorus in the yellow or white chemical form triggers reporting. Manufacturing, processing, or otherwise use of "black" or "red" phosphorus does not trigger reporting. Supplier notification applies only to distribution of yellow or white phosphorus.

Asbestos (friable). The listing for asbestos listing is qualified by the term "friable," referring to the physical characteristic of being able to be crumbled, pulverized, or reduced to a powder with hand pressure. Only manufacturing, processing, or otherwise use of asbestos in the friable form triggers reporting. Supplier notification applies only to distribution of mixtures or other trade name products containing friable asbestos. The asbestos (CASRN 1332-21-4) listing includes six specific forms of asbestos with their own individual CAS numbers: Actinolite (77536-66-4), Amosite (12172-73-5), Anthophyllite (7068-78-9), Chrysotile (12001-29-5), Crocidolite (12001-28-4), and Tremolite (77536-68-6). Therefore, those types of asbestos are reportable with CASRN 1332-21-4 as long as they are manufactured, processed, or otherwise used in the friable form.

Aluminum oxide (fibrous forms). The aluminum oxide listing is qualified by the term "fibrous forms." Fibrous refers to a man-made form of aluminum oxide that is processed to produce strands or filaments that can be cut to various lengths depending on the application. Only manufacturing, processing, or otherwise use of aluminum oxide in the fibrous form triggers reporting. Supplier notification applies only to distribution of mixtures or other trade name products containing fibrous forms of aluminum oxide.

Chemical Categories with Exemptions

The four TRI-listed chemical categories listed below have specific chemical exemptions.

Chemical Category	Category Code	Exempted Chemical(s)
Barium Compounds	N040	Barium sulfate (7727-43-7)
Chromium Compounds	N090	Chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the chromite ore processing residue (COPR). COPR is

		the solid waste remaining after aqueous extraction of oxidized chromite ore that has been combined with soda ash and kiln roasted at approximately 2,000 °F.
Copper Compounds	N100	Copper phthalocyanine compounds that are substituted with only hydrogen, and/or chlorine, and/or bromine.
Cyanide Compounds	N106	Hydrogen cyanide (74-90-8) (Hydrogen cyanide is an individually-listed chemical)

B.4 Threshold Determinations

TRI reporting is required if threshold quantities are exceeded. Separate thresholds apply to the amount of the TRI-listed chemical that is manufactured, processed, or otherwise used.

A report is required for any TRI-listed chemical that is not a chemical of special concern and that is:

- Manufactured in excess of 25,000 pounds in the calendar year (manufacture includes import of the chemical);
- Processed in excess of 25,000 pounds in the calendar year; or
- Otherwise used in excess of 10,000 pounds in the calendar year.

The reporting thresholds for chemicals of special concern are either 100 pounds, 10 pounds, or, in the case of the dioxin and dioxin-like compounds chemical category, 0.1 grams.

The list of all chemicals of special concern and the applicable manufacture, process, and otherwise use thresholds are provided at 40 CFR 372.28, https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals, and https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:chemical-list-basic-search.

B.4.a. How to Determine if a Facility Has Exceeded a Threshold

To determine if a facility has exceeded a reporting threshold, compare quantities of TRI-listed chemicals that were manufactured, processed, or otherwise used to the respective thresholds for those activities. Reporting threshold worksheets to assist facilities in determining whether they exceed any of the reporting thresholds for TRI-listed chemicals are available at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#downloadable. Additionally, EPA provides an online threshold screening tool at https://www.epa.gov/tri/screeningtool.

Facilities should maintain records of the information source(s) used in determining whether they exceed the reporting thresholds. Possible information sources include purchase records, inventory data, and calculations by a process engineer. While the reporting threshold worksheets provide a format for facilities to maintain records, use of these worksheets is not required, and the completed worksheet(s) should not accompany Form R submissions.

Complete the appropriate reporting threshold worksheet for each TRI-listed chemical or chemical category. Base the threshold determination for chemicals with qualifiers only on the quantity of the chemical satisfying the qualifier.

The reporting threshold worksheets are divided into three steps:

- *Step 1* records the gross amount of the TRI-listed chemical or chemical category involved in activities throughout the facility. Pure forms as well as the amounts of the chemical or chemical category present in mixtures or other trade name products must be considered. The types of activity (i.e., manufacturing, processing, or otherwise use) for which the chemical is used must be identified because separate thresholds apply to each of these activities. The data collected in Step 1 will be totaled for each activity to identify the overall amount of the TRI-listed chemical or chemical category manufactured (including imported), processed, or otherwise used.
- *Step 2* identifies uses of the TRI-listed chemical or chemical category that were included in Step 1 but are exempt. Do not include in Step 2 exempt quantities of the TRI-listed chemical not included in the calculations in Step 1. For example, if freon contained in the building's air conditioners was not reported in Step 1, do not include the amount as exempt in Step 2. Step 2 is intended for use when a quantity or use of the chemical is exempt while other quantities require reporting. Note the type of exemption for future reference. Also identify, if applicable, the fraction or percentage of the TRI-listed chemical present that is exempt. Add the amounts in each activity to obtain a subtotal for exempted amounts of the chemical or chemical category at the facility.
- *Step 3* subtracts the result of Step 2 from the results of Step 1 for each activity. Compare this net sum to the applicable activity threshold. If the threshold is exceeded for any of the three activities, a facility must submit a Form R for that chemical or chemical category. Do not sum quantities of the chemical manufactured, processed, or otherwise used at the facility, because each of these activities requires a separate threshold determination. For example, if in a calendar year a facility processed 20,000 pounds of a TRI-listed chemical and otherwise used 6,000 pounds of that same chemical, the facility has not exceeded any applicable threshold and thus is not required to report for that chemical.

Facilities must submit a report if any threshold is exceeded for any TRI-listed chemical or chemical category. For example, if a facility processes 22,000 pounds of a TRI-listed chemical that is not classified as a chemical of special concern, and also otherwise uses 16,000 pounds of that same chemical, it has exceeded the otherwise use threshold (10,000 pounds), and the facility must report though it did not exceed the process threshold (25,000 pounds). In preparing reports, the facility must consider all non-exempted activities and all releases and other

waste management quantities of the chemical from the facility, not just releases and other waste management quantities from the otherwise use activity.

Threshold determinations are based on actual amounts of a chemical manufactured, processed, or otherwise used over the course of the calendar year. The threshold determination may not relate to the amount of a TRI-listed chemical on-site during the calendar year. For example, if a stockpile of 100,000 pounds of a chemical remained present on-site from a preceding calendar year but only 20,000 pounds of that chemical is applied to a process in the current calendar year, only the 20,000 pounds processed are counted toward the threshold determination, not the entire 100,000-pound stockpile.

B.4.b. Threshold Determinations for On-Site Reuse Operations

Threshold determinations for TRI-listed chemicals reused at the facility are based only on the amount of the chemical added during the year, not the total volume in the system. For example, a facility operates a refrigeration unit that contains 15,000 pounds of anhydrous ammonia at the beginning of the year. The system is charged with 2,000 pounds of anhydrous ammonia during the year. The facility has therefore "otherwise used" only 2,000 pounds of anhydrous ammonia, which is below the otherwise use threshold for anhydrous ammonia, and is not required to report (unless other "otherwise use" activities of ammonia, when taken together, exceed the reporting threshold). If, however, the whole refrigeration unit was recharged with 15,000 pounds of anhydrous ammonia during the year, then the facility would have exceeded the otherwise use threshold and would be required to report.

This does not apply to chemicals "recycled" or "reused" off-site and returned to a facility. Such chemicals returned to a facility are considered equivalent to newly purchased material for purposes of threshold determinations.

B.4.c. Threshold Determinations for Ammonia

The listing for ammonia includes the qualifier "includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10% of total aqueous ammonia is reportable under this listing."

The term "anhydrous" means "lacking water," whereas "aqueous" means "dissolved in water." Anhydrous ammonia (in either the gas or compressed liquid state) may, however, contain a small amount of water. The presence of water in anhydrous ammonia does not constitute aqueous ammonia unless the amount of water present is sufficient to dissolve the ammonia. If ammonia is not actually dissolved in water, the ammonia must be considered anhydrous.

The qualifier for ammonia means that anhydrous forms of ammonia are 100% reportable and aqueous forms are limited to 10% of total aqueous ammonia. Therefore, when determining threshold quantities, 100% of anhydrous ammonia is included, but only 10% of total aqueous ammonia is included. If any ammonia evaporates from aqueous ammonia solutions, 100% of the evaporated ammonia is included in threshold determinations.

For example, if a facility processes aqueous ammonia, it has processed 100% of the aqueous ammonia in that solution. If the ammonia remains in solution, then 10% of the total aqueous ammonia is counted toward the threshold. If there is any evaporative loss of anhydrous ammonia, then 100% of those losses must be counted toward the processing threshold. If a manufacturing, processing, or otherwise use threshold for the ammonia listing is exceeded, the facility must report 100% of these evaporative losses in Sections 5 and 8 of the Form R.

B.4.d. Threshold Determinations for Chemical Categories

Several chemical compound categories are subject to reporting. When making threshold determinations for a chemical category, all individual members of a category that are

manufactured, processed, or otherwise used must be counted. Where generic names are used for a mixture at a facility, base threshold determinations on the listed chemical or chemical category. For example, Isonate 125M does not appear among the reportable chemicals, but its CASRN indicates Isonate 125M is a synonym for 4,4'-methylenedi(phenyl isocyanate), an individually-listed member of the diisocyanates chemical category (code N120). If a covered facility manufactures, processes, or otherwise uses more than one member of a listed chemical category, the total quantity of all the members of the category must be counted toward the applicable activity threshold(s) (40 CFR 372.27(d)). Do not include in these threshold determinations for a category any chemicals that are also individually listed. Individually listed chemicals are subject to their own individual threshold determinations.

Threshold determinations are made the same way for both delimited (i.e., each chemical that is a member of the category is identified) and non-delimited chemical categories (i.e., chemicals included in the category are not individually identified (e.g., for the mercury compounds category, any unique chemical substance that contains mercury as part of that chemical's structure)). For reporting on delimited categories, only the members specifically listed as part of the category are subject to EPCRA Section 313 reporting. When reporting other non-delimited chemical categories, any unique chemical substance that contains the named category compound as part of that chemical's structure or any compound meeting the specified molecular formula is subject to threshold determinations.

Organic Compounds

For the organic compound categories, account for the entire weight of all compounds within a specific compound category (e.g., glycol ethers) at the facility for both the threshold determination and release and other waste management estimates.

Metal Category Compounds

Threshold determinations for metal category compounds present a special case. If, for example, a facility processes several nickel compounds, base the threshold determination on the total weight of all nickel compounds processed. However, if the facility processes both the "parent" metal (nickel) as well as one or more nickel compounds, threshold determinations are required for both nickel (CASRN 7440-02-0) and nickel compounds (chemical category code N495) because they are separately listed. If a facility exceeds thresholds for both the parent metal and compounds of that same metal, EPA allows submission of one combined report (e.g., one report for nickel compounds, including nickel) because the release information required for the metal category compounds is the total quantity of the parent metal released. If filing one combined report, use the name of the metal compound category on the Form R. In the example above, the facility that exceeded reporting thresholds for both the nickel and nickel compounds chemical category based on total weight processed could submit a single Form R for the nickel compounds chemical category, which would contain release and other waste management information for the metal portion of both nickel and nickel compounds. This is explained further in Section B.5.

Only elemental metals without a chemical qualifier can be reported with their associated metal category compound on a combined Form R. Elemental metals with qualifiers that are only reportable if they are manufactured, processed, or otherwise used in a specific form(s) cannot be reported with their associated metal compound category on the same Form R. For example, a facility that exceeds an activity threshold for both zinc (fume or dust) and zinc compounds must not report both zinc (fume or dust) and zinc compounds on the same Form R. Similarly, vanadium (except when contained in an alloy) and vanadium compounds must not be reported on the same Form R.

TRI-MEweb prompts users to indicate whether the form contains reports for both the parent metal and compounds of that same metal (e.g., nickel and nickel compounds).

Some metal category compounds may contain more than one listed metal. For example, lead chromate is both a lead compound and a chromium compound. In such cases, if applicable thresholds are exceeded,

two separate reports are required: one for lead compounds and one for chromium compounds. Apply the total weight of the lead chromate to the threshold determinations for both lead compounds and chromium compounds. Only the quantity of each parent metal released or otherwise managed as waste—not the quantity of the compound—would be reported on the appropriate sections of both Form Rs. See Section B.5 for more information.

Nitrate Compounds (water dissociable; reportable only when in aqueous solution)

For the nitrate compounds category (water dissociable; reportable only when in aqueous solution), the entire weight of the nitrate compound is counted in making threshold determinations. A nitrate compound is covered by this listing only when in water and only if dissociated. If no information is available on the identity of the type of nitrate that is manufactured, processed, or otherwise used, assume that the nitrate compound exists as sodium nitrate.

Chromium Compounds

The TRI chromium compounds category excludes chromite ore mined in the Transvaal Region of South Africa and the unreacted ore component of the chromite ore processing residue (COPR). COPR is the solid waste remaining after aqueous extraction of oxidized chromite ore that has been combined with soda ash and kiln roasted at approximately 2,000 °F. If a facility makes any change to the chemical composition of the chromite ore, it has manufactured a new chromium compound that is not exempt from reporting.

B.4.e. Threshold Determinations for Chemical Abstracts Service Registry Numbers (CASRNs) that Include Multiple Isomers of a Chemical

Certain CASRNs on the TRI chemical list may include multiple isomers of a listed chemical. Individual isomers of a listed chemical may have their own individual CASRNs and be separately listed. Examples of this include:

- There is a TRI listing for a "mixed isomers" CASRN, which includes multiple isomers. In some cases, there are separate TRI listings for the individual isomers.
- There is a TRI listing for a chemical where the CASRN includes all isomers in cases when the position of a particular atom(s) is unspecified. In some cases, there are separate TRI listings for the individual isomers.

If the CAS name does not indicate a specific isomer, then the chemical may include multiple isomers as well as unspecified/unknown isomers.

When a facility is considering a chemical that contains an individual isomer:

- If the CASRN for the individual isomer is on the TRI list, report using the CASRN for the individual isomer.
- If the CASRN for the individual isomer is not on the TRI list, but the TRI list has a CASRN that includes multiple isomers of the chemical, one of which is the specific individual isomer, report using the CASRN that includes multiple isomers.

Example 1111: Reporting an Individual Isomer that is part of another TRI-listed CASRN

A facility processes *trans*-1,2-Dichloroethylene (156-60-5), which is not individually listed on the TRI list but is an isomer of 1,2-Dichloroethylene (540-59-0), which is TRI-listed. The facility should calculate thresholds and report *trans*-1,2-Dichloroethylene (156-60-5), as applicable, under the 1,2-Dichloroethylene (540-59-0) TRI listing.

When a facility is considering a chemical that contains a mixture of different isomers:

- When there is a CASRN on the TRI list that includes multiple isomers, as well as separate CASRNs on the TRI list for **each one** of the individual isomers in the mixture:
  - If the thresholds and *de minimis* level for **each one** of the isomers in the mixture are exceeded individually, report using either the CASRN that includes multiple

isomers or the CASRN for each individual isomer in the mixture.
    - If the threshold and/or *de minimis* level for **each one** of the isomers in the mixture are not exceeded individually, but the threshold and/or *de minimis* level for the CASRN that includes multiple isomers is exceeded when the isomers are counted collectively, report using the CASRN that includes multiple isomers. A facility need not combine threshold quantities for different isomers where they are not part of a mixture.
    - If the specific identity and/or quantity of **each one** of the individual isomers in the mixture is unknown, report using the CASRN that includes multiple isomers.
- When there is a CASRN on the TRI list that includes multiple isomers, but there are not separate CASRNs on the TRI list for **each one** of the specific isomers in the mixture, report the entire mixture using the CASRN that includes multiple forms.
- When there is only a CASRN that includes multiple isomers on the TRI list, report using the CASRN that includes multiple isomers.

Example 1212: Reporting a Mixture of Isomers that are Part of Another TRI-listed CASRN

A facility manufactures a chemical that contains a mixture of *o*-Xylene (95-47-6), *m*-Xylene (108-38-3), and *p*-Xylene (106-42-3), all of which are listed individually on the TRI list. Xylene (mixed isomers) (1330-20-7) is also on the TRI list and includes the *o*-, *m*-, and *p*-Xylene isomers. The manufacturing thresholds and *de minimis* levels for all three isomers in the mixture are exceeded. The facility may choose to report as Xylene (mixed isomers) (1330-20-7), which includes the three isomers, *or* report each isomer individually as *o*-Xylene (95-47-6), *m*-Xylene (108-38-3), and *p*-Xylene (106-42-3).

See Figure 5 for a flow diagram showing how to determine the threshold for CASRNs that include multiple isomers of a chemical.

If thresholds are separately exceeded for: (1) a CASRN that includes multiple isomers (e.g., a "mixed isomers" listing) **and** (2) for one or more of the CASRNs of the constituent individual isomers, a facility may choose to submit a combined Form R under the CASRN that includes multiple isomers. For example, if a facility processes o-xylene, p-xylene, and xylene (mixed isomers) in three separate process streams and exceeds thresholds for each of these listed substances, the facility may combine the appropriate information on the *o*-xylene, *p*-xylene, and xylene (mixed isomers) into one Form R for xylene (mixed isomers).

A non-exhaustive example list of TRI-listed chemicals with CASRNs that include multiple isomers is provided at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:isomers.

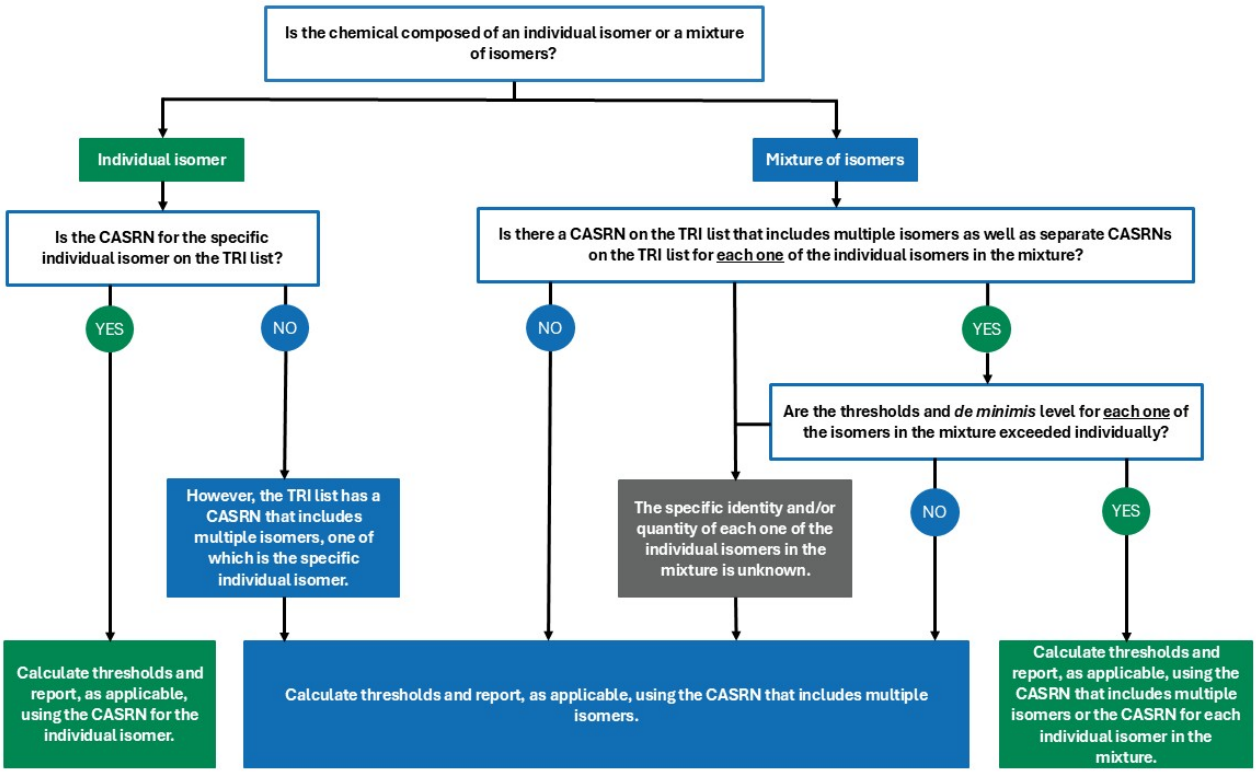


Figure 5. Flow Diagram for Determining Thresholds for CASRNs That Include Multiple Isomers of a Chemical

B.4.f. Threshold Determinations for Chemicals of Special Concern, Including PFAS

Three separate thresholds are set for chemicals of special concern. These thresholds are based on the chemicals' potential to persist and bioaccumulate in the environment. The manufacturing (including import), processing, and otherwise use thresholds for most chemicals of special concern are 100 pounds, while for a subset of chemicals of special concern that are highly persistent and highly bioaccumulative are 10 pounds. For the dioxin and dioxin-like compounds chemical category, the thresholds are 0.1 gram. The chemicals of special concern, their CASRN or chemical category code, and their reporting thresholds are listed at 40 CFR 372.28 and in the table below. The list of all chemicals of special concern (including PFAS added by 15 U.S.C. 8921(b)(1) and (c)(1), and individual members of the dioxin and dioxin-like compounds chemical category, the PACs chemical category, and the hexabromocyclododecane category) and their applicable thresholds is provided at https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals and https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:chemical-list-basic-search.

Chemical of special concern or chemical category name	CASRN or chemical category code	Activity Thresholds (lbs, unless noted otherwise)
Aldrin	309-00-2	100
Benzo[g,h,i]perylene	191-24-2	10
Chlordane	57-74-9	10
Dioxin and dioxin-like compounds category (manufacturing; and the processing or otherwise use of dioxin and dioxin-like compounds category if	N150	0.1 grams

the dioxin and dioxin-like compounds are present as contaminants in a chemical and if they were created during the manufacturing of that chemical)		
Heptachlor	76-44-8	10
Hexabromocyclododecane category	N270	100
Hexachlorobenzene	118-74-1	10
1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta[g]-2-benzopyran	1222-05-5	100
Isodrin	465-73-6	10
Lead (this threshold does not apply to lead contained in stainless steel, brass or bronze alloy)	7439-92-1	100
Lead compounds category	N420	100
Mercury	7439-97-6	10
Mercury compounds category	N458	10
Methoxychlor	72-43-5	100
Octachlorostyrene	29082-74-4	10
Pendimethalin	40487-42-1	100
Pentachlorobenzene	608-93-5	10
PFAS (Individually listed PFAS added by 15 U.S.C. 8921(b)(1) and (c)(1)) (see 40 CFR 372.65(d) & (e))	Multiple	100
Polychlorinated biphenyls	1336-36-3	10
Polycyclic aromatic compounds category (PACs)	N590	100
Tetrabromobisphenol A	79-94-7	100
Toxaphene	8001-35-2	10
Trifluralin	1582-09-8	100

B.4.g. Threshold Determinations for Mixtures and Other Trade Name Products

TRI-listed chemicals contained in mixtures and other trade name products must be factored into threshold determinations and release and other waste management calculations.

Facilities that processed or otherwise used mixtures or other trade name products during the reporting year are required to use the best readily available data (or reasonable estimates if such data are not readily available) to determine whether the chemicals in a mixture meet or exceed their respective *de minimis* levels and, therefore, whether they must be included in threshold determinations and release and other waste management calculations. If a mixture or other trade name product is known to contain a specific TRI-listed chemical, combine the amount of the chemical in the mixture or other trade name product with other amounts of the same chemical processed or otherwise used at the facility for threshold determinations and release and other waste management calculations. If a mixture is known to contain a TRI-listed chemical but it is present below its *de minimis* level, do not consider the amount of the TRI-listed chemical present in that mixture for purposes of threshold determinations and release and other waste management calculations. Chemicals of special concern are ineligible for the *de minimis* exemption except lead contained in stainless steel, brass, or bronze alloy.

Observe the following guidelines in estimating concentrations of TRI-listed chemicals in mixtures when only limited information is available:

- If only the upper bound concentration is known, use it for threshold determinations (40 CFR 372.30(b)(ii)).
- If the lower and upper bound concentrations are known, EPA recommends using the midpoint of these two concentrations for threshold determinations.
- If only the lower bound concentration is known, EPA recommends subtracting out the percentages of any other known components to determine a reasonable upper bound concentration, then determining a midpoint.
- If no information other than the lower bound concentration is known, EPA recommends

calculating a midpoint assuming an upper bound concentration of 100%.

See Example 13 for additional guidance on determining whether TRI-listed chemicals within mixtures and other trade name products exceed TRI reporting thresholds.

Example 13: Mixtures and Other Trade Name Products

Scenario #1: A facility otherwise uses 12,000 pounds of an industrial solvent (Solvent X) for equipment cleaning. The Safety Data Sheet (SDS) for the solvent indicates that it contains at least 50% *n*-hexane, a TRI-listed chemical. It also states that the solvent contains 20% non-hazardous surfactants. This is the only *n*-hexane-containing mixture used at the facility.

EPA recommends the following steps to determine if the quantity of the TRI-listed chemical in Solvent X exceeds the threshold for otherwise use:

1) Determine a reasonable maximum concentration for the TRI-listed chemical by subtracting out the non-hazardous surfactants listed on the SDS (i.e., 100% - 20% = 80%).

2) Determine the midpoint between the known minimum (50%) and the reasonable maximum concentration calculated above (i.e., (80% + 50%)/2 = 65%).

3) Multiply the total weight of Solvent X otherwise used by the 65% midpoint (0.65).

   12,000 pounds × 0.65 = 7,800 pounds

4) Because the total amount of *n*-hexane otherwise used at the facility was less than the 10,000-pound otherwise use threshold, the facility is not required to file a Form R for *n*-hexane.

Scenario #2: A facility otherwise used 15,000 pounds of Solvent Y to clean printed circuit boards. The SDS for the solvent lists only that Solvent Y contains at least 80% of a TRI-listed chemical identified only as "chlorinated hydrocarbons."

EPA recommends the following steps to determine if the quantity of the TRI-listed chemical in the solvent exceeds the threshold for otherwise use:

1) Because the specific chemical is unknown, the Form R will be filed for "chlorinated hydrocarbons." This name will be entered into Part II, Section 2.1, "Mixture Component Identity." (Note: Because the facility's supplier is claiming the TRI-listed chemical identity as a trade secret, substantiation forms are not required).

2) The upper bound limit is assumed to be 100% and the lower bound limit is known to be 80%. Using this information, the specific concentration is estimated to be 90% (i.e., the midpoint between upper and lower limits).

   (100% + 80%)/2 = 90%

3) The total weight of Solvent Y is multiplied by 90% (0.90) when calculating for threshold exceedances.

   15,000 × 0.90 = 13,500

4) Because the total amount of chlorinated hydrocarbons exceeds the 10,000-pound otherwise use threshold, the facility must file a Form R for this chemical.

B.5 Release and Other Waste Management Calculations for Chemical Categories (Including Metals, Metal Category Compounds, and Nitrate Compounds)

Chemical Category Reporting

In calculating release and other waste management quantities for chemical categories, except for the scenarios described below involving metal and nitrate category compounds, report the aggregated total weight of compounds belonging to the chemical category for each reported Form R data element. As provided below, for metal category and nitrate category compounds, use only the metal or nitrate content of the compounds belonging to the category when calculating release and other waste management quantities. The entire weight of the compounds is used for threshold calculation purposes, including for metal category and nitrate category compounds.

Metal Category Compounds

Although the total weight of metal category compounds must be used in threshold determinations for the metal compounds category, only the weight of the metal content of the metal category compounds is considered for release and other waste management calculations or estimates. For metal category compounds that consist of more than one metal, base release and other waste management reporting on the weight of each metal, provided the appropriate thresholds have been exceeded.

Combined Form R for Metals and Metal Category Compounds

If thresholds are separately exceeded for both the "parent" metal and its compound category, EPA allows for a combined Form R for the "parent" metal and its category compounds (except for elemental metals with a chemical qualifier (i.e., zinc and vanadium)). This Form R would include all release and other waste management information for both the "parent" metal and metal content of the related metal category compounds. For example, if one or more thresholds for chromium and chromium compounds are both exceeded, instead of filing two Form Rs, EPA allows for one combined Form R that contains information on quantities of chromium released or otherwise managed as waste and the quantities of the chromium content of the chromium compounds released or otherwise managed as waste. When filing one combined Form R for a TRI-listed metal and metal compound category, facilities should identify the chemical reported as the metal compound category name and code.

Note that these instructions do not apply to the Form A. See Section B.6.f for instructions for reporting metals and metal category compounds using Form A. See the Reporting Waste Management Information for Metals guidance document at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:waste_management_metals for more information about reporting the release and other waste management of metals and metal compounds.

Nitrate Compounds (water dissociable; reportable only in aqueous solution)

Although the total weight of the nitrate compound is used for threshold determinations for the nitrate compounds category, only the nitrate content of the compound is used for release and other waste management calculations.

B.6. Facility Eligibility Determination for Alternate Threshold and for Reporting on a Form A Certification Statement

This section discusses criteria to submit the simplified Form A. The criteria are based on the total annual reportable amount of the listed chemical or chemical category and the amount manufactured, processed, or otherwise used. The criteria are explained below. For more information about the final rule for the Form A, see the TRI homepage at: https://www.epa.gov/tri/lawsregs.

B.6.a. Alternate Threshold

The "TRI Alternate Threshold for Facilities with Low Annual Reportable Amounts" provides facilities that otherwise exceed EPCRA Section 313 reporting thresholds the option of certifying on a simplified Form A, instead of the Form R, provided they do not exceed 500 pounds for the total annual reportable amount (defined in Section B.6.c) for that chemical and that their amounts manufactured, processed, or otherwise used do not exceed 1 million pounds. As with determining Section 313 reporting thresholds, amounts manufactured, processed, or otherwise used are to be considered independently. All chemicals of special concern (except certain instances of reporting lead in stainless steel, brass, or bronze alloys) are excluded from eligibility for the alternate threshold.

B.6.b. What is the Form A Certification Statement?

The Form A, which is described as the "certification statement" in 59 FR 61488, is intended to reduce the compliance burden associated with EPCRA Section 313. Facilities wishing to take advantage of this burden-reducing option may submit a Form A for chemicals that meet the conditions described in Section B.6.a and should not also submit a Form R for the same chemicals. The information submitted on the Form A includes facility identification information and the chemical or chemical category identity. The information submitted on the Form A will appear in the TRI database in the same manner as the Form R.

B.6.c. What Is the Annual Reportable Amount?

The annual reportable amount is equal to the combined total quantities of the following waste management activities:

- released at the facility (including disposed of within the facility),
- treated at the facility (as represented by amounts destroyed or converted by treatment processes),
- recovered at the facility as a result of recycling operations,
- combusted for the purpose of energy recovery at the facility, and
- amounts transferred from the facility to off-site locations for the purpose of recycling, energy recovery, treatment, and/or disposal.

These quantities correspond to the sum of amounts reportable for data elements on the Form R as Part II, column B, Section 8, data elements 8.1 (quantity released), 8.2 (quantity used for energy recovery on-site), 8.3 (quantity used for energy recovery off-site), 8.4 (quantity recycled on-site), 8.5 (quantity recycled off-site), 8.6 (quantity treated on-site), and 8.7 (quantity treated off-site).

B.6.d. Recordkeeping

Each owner or operator who is eligible for and elects to apply the alternate threshold to a particular chemical must retain records substantiating this determination for three years from the date of submission of the Form A. These records must include sufficient documentation to support calculations that confirm the facility's eligibility for each chemical for which the alternate threshold was applied.

Facilities that are eligible for the Form A may also have further regulatory relief from other federal or state regulations that apply to facilities on the basis of their EPCRA Section 313 reporting status. A facility should reference other applicable regulations to determine if their actual requirements may be affected by this reporting modification.

B.6.e. Multi-establishment Facilities

For the purposes of using Form A, a facility must also make its determination based upon the entire facility's operations, including all of its establishments (see 59 FR 61488 for greater detail). If the facility is able to take advantage of the alternate threshold, a single Form A is required for that chemical. All the information necessary to make the determination must be assembled at the facility level.

B.6.f. Metals and Metal Category Compounds

For metal category compounds, the threshold applies to the total amount (weight) of the metal category compounds manufactured, processed, or otherwise used. For Form A certification involving both listed parent metals and associated metal compounds, the 1-million-pound alternate threshold must be applied separately to the listed parent metal and the associated metal compound(s). Threshold determinations must be made independently for each because they are separately listed chemicals.

Unlike the Form R (see Section B.5), EPA does not allow for a combined Form A for the "parent" metal and its associated category compounds. For example, if both the parent metal and associated category compounds do not exceed the alternate threshold, the facility must report the parent metal and associated category compounds separately on the Form A. It is appropriate to make this distinction for metals and metal category compounds when filing the Form R and Form A because the Form R accounts for amounts of metal released or otherwise managed and Form A verifies that the alternate threshold for each listed chemical or chemical category was not exceeded.

B.6.g. Other Categories

Similarly, even if EPA allows combined reporting on Form R for two or more listed chemicals (e.g., *o*-xylene, *p*-xylene, and xylene (mixed isomers)), the facility must report the chemicals separately on the Form A. For example, if a facility processes o-xylene, *p*-xylene, and xylene (mixed isomers) in three separate process streams and exceeds the conditions of the alternate threshold for each of these listed substances, the facility may combine the appropriate information on the *o*-xylene, *p*-xylene, and xylene (mixed isomers) into one Form R, but cannot combine the information into one Form A.

Facilities that process *o*-xylene, *p*-xylene, and xylene (mixed isomers) in separate process streams and do not exceed the conditions of the alternate threshold for one or more of the compounds may submit a separate Form A for each xylene isomer meeting the alternate threshold and report on Form R for those isomers that do not. Similar to reporting on parent metals and their associated category compounds described above, facilities that separately process all types (i.e., isomers) of xylene with individual activity levels within the conditions of the alternate threshold should list each xylene isomer separately on the Form A.

Instructions for Completing the TRI Form R and A Certification Statement

The following are instructions on how to enter data for non-trade secret reporting using TRI-MEweb. Supplemental instructions for submitting trade secret claims are provided in Appendix A.

TRI-MEweb collects the same facility identification information and chemical-specific information that facilities previously submitted on the paper TRI Forms. In some cases, TRI-MEweb does not sequentially follow the Sections numerically as listed on the Forms. As such, the TRI-MEweb experience differs somewhat from the sequential nature of the instructions in this document.

Facility identification information provided in Part I is entered only once per facility in TRI-MEweb and is imported to all forms submitted (except the Technical and Public Contact, which are collected separately for each chemical reported) (See Part I, Sections 4.3 and 4.4). For facilities that have previously submitted TRI Forms, the facility information remains with the facility's profile and needs to be updated only if facility or parent company changes have occurred.

Chemical-specific information in Part II (including Technical and Public Contact information) is entered separately for each chemical reported.

Reporting Codes. All reporting codes used for the Form R and Form A Certification Statements are included in this document. Additionally, a list of current reporting codes is available at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:reporting_form_codes.

EPA Emission Factors. EPA's *Compilation of Air Pollutant Emissions Factors from Stationary Sources* (AP-42) contains emissions factors and process information for over 200 air pollution source categories. WebFIRE is a database of emissions factors developed by EPA for criteria air pollutants and hazardous air pollutants for industrial and non-industrial processes.

C. Part I. Facility Identification Information (Form R and A Certification Statement)

Section 1. Reporting Year

The reporting year is the calendar year to which the reported information applies, not the year in which reports are submitted. For example, information for the 2025 reporting year must be submitted on or before July 1, 2026.

Section 2. Trade Secret Information

Section 2 is not to be completed by TRI-MEweb users for non-trade secret reports. For instructions on completing trade secret submissions, see Appendix A.

Section 3. Certification

Both Form R and Form A are signed by a senior official with management responsibility for the person (or persons) completing the form. A senior management official must certify the accuracy and completeness of the information reported by signing and dating the form.

Certifying officials who sign an ESA and TRIFID Signature Agreement must electronically certify completed forms using TRI-MEweb. For more information regarding certifying forms, see Section A.2.

Unlike the certification statement found on Form R, the certification statement provided on Form A relates to whether the facility met the eligibility conditions as described in 40 CFR 372.27 (see also section B.6).

Section 4. Facility Identification

4.1 Facility Name, Location, TRI Facility Identification Number, and Bureau of Indian Affairs (BIA) Tribal Code

Enter the full facility name that the facility presents to the public and its customers in doing business (e.g., the name that appears on invoices, signs, and other official business documents).

Enter the physical street address, mailing address, city, county, three-digit Bureau of Indian Affairs (BIA) tribal code (if applicable), state, and ZIP code in the space provided. The street address provided must be the location where the TRI-listed chemicals are manufactured, processed, or otherwise used. Do not use a PO Box as a facility address. If the mailing address and street address are the same, select "**Yes**" for "**Is Mailing Address Same as Facility Address?**". If it is not, select "**No**" and enter a mailing address.

If a facility is not in a county, provide the name of the city, district (e.g., District of Columbia), or parish (if the facility is in Louisiana) in the county block of TRI-MEweb. "**NA**" or "**None**" are not acceptable entries. TRI-MEweb provides a dropdown menu for county names, including city districts and parish names.

Facilities located in Indian country as defined by 18 USC §1151 must enter the three-digit Bureau of Indian Affairs (BIA) tribal code in the "BIA Code" field. BIA tribal codes are accessible via https://www.epa.gov/data/tribal-identifier-data-standard. Facilities using TRI-MEweb to complete their forms can select the correct BIA code using the dropdown menu.

Facility identification information for a facility that has previously submitted data to EPA.

Facilities that submitted a Form R or A in previous reporting years are already assigned a TRI Facility Identification Number (TRIFID). To identify a TRIFID used in prior years' submissions, search for this information while setting up a TRI-MEweb account, contact a Regional TRI Program representative, or use Envirofacts to look up the address, facility name, or TRIFID at https://enviro.epa.gov/.

Previously submitted facility data remain with user profiles. Users who have not previously submitted EPCRA Section 313 data using TRI-MEweb can add a facility to their profile using the six-digit alphanumeric access key. To request a previously assigned access key, proceed to add a new facility by selecting the option to indicate that the facility has previously reported to TRI, then enter the TRIFID and technical contact information for the prior reporting year to gain access to the facility. Alternatively, request the access key in TRI-MEweb. The access key will arrive via email from no-reply@epacdx.net to the email address registered with CDX.

Facility identification information for a facility that previously submitted data to EPA but has moved its operations to a different physical location.

TRIFIDs are associated with the physical location of a facility. If a facility has moved its operations to a location that has previously reported to TRI and has an existing TRIFID, use the location's existing TRIFID and update facility information in TRI-MEweb to reflect the change in ownership of the facility, as appropriate. If a facility has been established in a new location that has not previously been assigned a TRIFID, request a new TRIFID for the facility. To request a new TRIFID, add a new facility to TRI-MEweb and choose to report as a new reporting facility (option 3). TRI-MEweb will automatically generate a new TRIFID for the facility. Use the TRIFID assigned to the new reporting facility for all future TRI reporting.

Facility identification information for a facility that changed ownership

The first Form R or A a facility submits for a particular location establishes the TRIFID. Only a change in physical location requires filing with a new TRIFID; otherwise, the facility retains the existing TRIFID even if the facility changes name, ownership, production processes, NAICS code(s), etc.

Facilities that change ownership during the reporting year do not require a new TRIFID. Use the previous owner's TRIFID and use TRI-MEweb to update facility information to reflect the change of ownership.

The owner or operator of the facility on the annual July 1 reporting deadline is responsible for reporting for the entire previous year's operations at that facility. EPA may also hold liable any other owner or operator of the facility before the reporting deadline. The form(s) submitted for a given reporting year must reflect the names used by the facility and its U.S. and foreign parent company on December 31 of that reporting year, even if the facility changed its name or ownership at any time during the reporting year. For guidance on specific

scenarios, facilities should contact tri.help@epa.gov or their Regional TRI Program representative.

A facility has been established at a new location and is submitting TRI reporting forms for the first time.

Upon creating a CDX account and adding the TRI-MEweb application, facilities reporting for the first time are prompted to add a facility to their account. TRI-MEweb will then generate a new TRIFID and a six-digit alphanumeric access key for the facility. Use the TRIFID assigned to the facility's location in all future reporting of TRI data. The six-digit access key can also be used to load the same facility reporting record to other authorized users' TRI-MEweb accounts.

Example 14: Reporting After a Change in Name or Ownership

The owner/operator of a covered facility is preparing Form Rs for a facility. The facility and its parent company both changed their names after the reporting year. What names should be reported by the owner/operator (for both the facility and the parent company) on the Form Rs covering the reporting year?

The facility should report the names used by the facility and parent company during that reporting year. When the owner/operator submits Form Rs for the next reporting year, these reports should reflect the names used by the facility and parent company during the new reporting year. (Note: the TRIFID will not change.)

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #786

If a covered facility does not have a Dun & Bradstreet number but the parent company does, should this number be reported?

Report the Dun & Bradstreet number for the facility. If a facility does not have a Dun & Bradstreet number, enter 'NA' in Part I, Section 4.6. Enter the parent company's Dun & Bradstreet number in Part I, Section 5.2 relating to U.S. parent company information and Section 5.4 relating to the foreign parent company information.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #119

Company A purchases a facility from Company B between January 1 and June 30 of the same year. For reporting forms covering the prior year, which company's name and what TRIFID should be on the form?

In the case that a facility is purchased between January 1 and June 30, the form submitted for the previous year must reflect the name used by the facility on December 31 of that reporting year (Monthly Call Center Report Question, EPA530-R-98-005; October 1998). In this example, Company B's name should appear on the form because it owned the facility for the duration of the reporting year. The TRIFID is location-specific; thus, the TRIFID will stay the same even if the facility changes names, production processes, or NAICS codes. The owner or operator of the facility on the annual July 1 reporting deadline (i.e., Company A) is primarily responsible for reporting the data for the previous year's operations at that facility. However, EPA may hold all prior owners and operators responsible back to January 1 of the year covered in the report if the current owner or operator does not submit a report.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #82

4.2 Full or Partial Facility Indication and Federal Facility Designation

Full or Partial Facility Indication (Form R only)

EPCRA Section 313 requires reports by "facilities," which are defined as "all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or under common control with such person). A facility may contain more than one establishment."

EPCRA Section 313 defines "establishment" as "an economic unit, generally at a single physical location, where business is conducted or where services or industrial operations are performed." Under Section 372.30(c) of the reporting rule, a separate Form R is required for each establishment or for groups of establishments in a facility, provided all releases and other waste management activities and source reduction activities involving the TRI-

listed chemical from the entire facility are reported. This allows the option of reporting separately on the activities involving a TRI-listed chemical at each establishment or group of establishments (e.g., part of a covered facility), rather than submitting a single Form R for that chemical for the entire facility. However, if an establishment or group of establishments does not manufacture, process, or otherwise use or does not release or otherwise manage as waste a TRI-listed chemical, a report is not required for that establishment or group of establishments (See Section B.2.b).

A covered facility must report all releases, other waste management activities, and source reduction activities of a TRI-listed chemical if the facility meets a reporting threshold for that chemical. Whether submitting a report for the entire facility or separate reports for the establishments, make the threshold determination(s) based on the entire facility. Indicate in Section 4.2 whether a report is for the entire covered facility as a whole or for part(s) of a covered facility (i.e., one or more establishments).

In TRI-MEweb, facilities may submit separate Form Rs for each establishment or group of establishments by selecting "**Reporting by Part**" on the "**Manage Facilities**" page to set up unique establishments within the facility. All establishments reporting by part use the same TRIFID but use unique facility names.

Note that the reporting by part option is not applicable for facilities submitting a Form A for a TRI chemical. Unlike the Form R, the Form A does not utilize Sections 4.2a or 4.2b, which provide the option of reporting full or partial facility information if the facility is composed of several distinct establishments.

Federal Facility Designation

Federal facilities may submit TRI reports in TRI-MEweb. Users should select (1) Federal (see Section 4.2c), (2) GOCO (government-owned, contractor-operated) facility (see Section 4.2d), or (3) neither. Federal facilities should select only "Federal" even if the report contains release and other waste management information from contractors located at the facility. Contractors at federal facilities that are required by EPCRA Section 313 to file TRI forms independently of the federal facility should select "GOCO." This information is important to prevent duplication of federal facility data. (See the Federal Facility Reporting Information guidance document at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:fed_fac for further guidance on these instructions.)

4.3 Technical Contact Information

In TRI-MEweb, facilities must enter the name and telephone number (including area code and extension) of a technical representative whom EPA, state, or tribal officials may contact for clarification of the information reported. This should be the number for the technical representative rather than a general number for the facility. Facilities should also provide an email address for the technical contact so this person can receive important program updates and email alerts. If the technical contact does not have an email address, leave the field blank. This contact person need not be the same person who prepares the report or signs the certification statement and does not necessarily need to be someone at the location of the reporting facility. However, this person should be familiar with the details of the reporting forms so they can answer questions about the information provided. As facilities may report unique technical contacts for each form, technical contact details are entered in TRI-MEweb with chemical-specific data rather than facility-identification information.

4.4 Public Contact Information

In TRI-MEweb, facilities must enter the name and telephone number (including area code and extension) of a person who can respond to questions from the public about the form. Facilities should also provide an e-mail address for this person. If the Public Contact does not have an email address, leave the field blank. To designate the same person as both the technical and the public contact, click "Use the same information as Technical Contact". This contact person need not be the same person who prepares or certifies the form and need not be someone at the location of the reporting facility. As facilities may report unique public contacts for each form, public contact details are entered in TRI-

MEweb as chemical- rather than facility-specific information.

4.5 North American Industry Classification System (NAICS) Codes

Enter the appropriate six-digit NAICS code that is the primary NAICS code for the facility in Section 4.5(a). A list of all industries that are covered under EPCRA Section 313 and their corresponding NAICS codes are provided at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:naics_codes.

4.6 Dun & Bradstreet Number(s)

Enter the nine-digit number assigned by Dun & Bradstreet (D&B) for the facility or each establishment within the facility. These numbers code the facility for financial purposes and may be available from the facility's treasurer or financial officer. Alternatively, obtain the D&B numbers from Dun & Bradstreet by visiting https://www.dnb.com/duns-number/lookup.html.

If a facility does not subscribe to the D&B service, the facility may contact Dun & Bradstreet to obtain a D&B number.

If no establishments are assigned a D&B number, check "Dun & Bradstreet Numbers Not Applicable." If only some establishments are assigned D&B numbers, enter those numbers in Part I, Section 4.6.

Section 5. Parent Company Information

For TRI Reporting purposes, "parent company" is defined at 40 CFR 372.3. "Parent company" means the highest-level company (or companies) of the facility's ownership hierarchy as of December 31 of the year for which data are being reported. The U.S. parent company is located within the United States while the foreign parent company is located outside the United States:

(1) If the facility is entirely owned by a single U.S. company not owned by another company, that single company is the U.S. parent company.

(2) If the facility is entirely owned by a single U.S. company that is, itself, owned by another U.S.-based company (e.g., it is a division or subsidiary of a higher-level company), the highest-level company in the ownership hierarchy is the U.S. parent company. If there is a higher-level parent company that is outside of the United States, the highest-level foreign company in the ownership hierarchy is the foreign parent company.

(3) If the facility is owned by more than one company (e.g., company A owns 40 percent, company B owns 35 percent, and company C owns 25 percent), the highest-level U.S. company with the largest ownership interest in the facility is the U.S. parent company. If there is a higher-level foreign company in the ownership hierarchy, that company is the foreign parent company.

(4) If the facility is owned by a 50:50 joint venture or a cooperative, the joint venture or cooperative is its own parent company.

(5) If the facility is entirely owned by a foreign company (i.e., without a U.S.-based subsidiary within the facility's ownership hierarchy), the highest-level foreign parent company is the facility's foreign parent company.

(6) If the facility is federally owned, the highest-level federal agency or department operating the facility is the U.S. parent company.

(7) If the facility is owned by a non-federal public entity (e.g., a state, municipal, or tribal government), that entity is the U.S. parent company.

(8) If no higher-level U.S. company owns the TRI facility, select the "No U.S. Parent Company (for TRI reporting purposes)" checkbox. Nearly all facilities will report a U.S. parent unless a facility has entirely foreign ownership.

Note that under the final rule for defining "parent company," all TRI facilities must report their highest-level U.S. parent company and highest-level foreign parent company according to the instructions above.

EPA has also provided a guidance document to assist TRI facilities with interpreting the appropriate parent company(ies) to report, including examples under different ownership scenarios. This guidance document is available at

https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:parent_company.

5.1 U.S. Parent Company Name

Enter the name of the corporation or other business entity that is the highest-level U.S. parent company.

Under the TRI parent company reporting rule (87 FR 63950), TRI facilities must report their parent company names according to the standardized format. TRI-MEweb is preloaded with the standardized U.S. parent company names that TRI facilities previously reported.

The general standardization rules for parent company names are:

- Remove periods and commas
- Remove leading, trailing, and duplicate spaces
- Replace commonly used acronyms and terms according to the table below:

Commonly Used Acronym/Term:	Replace With:
AND	&
ASSOCIATION	ASSOC
CORPORATION	CORP
COMPANY	CO
COMPANIES	COS
DIVISION	DIV
INC. INCORP INCORP. INCORPORATED INCORPERATED	INC
LIMITED PARTNERSHIP	LP
LIMITED	LTD
LIMITED LIABILITY COMPANY LIMITED LIABILITY CO.	LLC
PARTNERSHIP	PTNR
U.S.A. U.S.A U S A UNITED STATES OF AMERICA	USA
U.S. U.S U S UNITED STATES	US

A full list of standardized parent company names for the current reporting year is available for download at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#downloadable.

5.2 U.S. Parent Company's Dun & Bradstreet Number

Enter the D&B number for the ultimate U.S. parent company, if applicable. The number may be obtained from the treasurer or financial officer of the company or by visiting this website: https://www.dnb.com/duns-number/lookup.html.

If the U.S. parent company does not have a D&B number, select "Parent Company Dun & Bradstreet Number Not Applicable."

5.3 Foreign Parent Company Name

Enter the name of the corporation or other business entity that is the highest-level foreign parent company. If the facility has no foreign parent company under the definition of "parent company," select the "No Foreign Parent Company (for TRI reporting purposes)" checkbox.

Under the TRI parent company reporting rule (87 FR 63950), TRI facilities must report their parent company names according to the standardized format. TRI-MEweb is preloaded with the standardized foreign parent company name TRI facilities previously reported. If the facility's foreign parent company name is not listed there, select the "Foreign Parent Company Not Listed" checkbox and enter the foreign parent company's name manually using the standardization rules (see section 5.1).

5.4 Foreign Parent Company's Dun & Bradstreet Number

Enter the D&B number for the facility's highest-level foreign parent company, if applicable. The number may be obtained from the treasurer or financial officer of the company or by visiting: https://www.dnb.com/duns-number/lookup.html. If the foreign parent company name is selected from the preloaded list, its D&B number may appear automatically.

If the foreign parent company does not have a D&B number, select "Foreign Parent Company Dun & Bradstreet Number Not Applicable."

Example 15: Identifying the Parent Company

When a facility changes ownership after a Form R has been submitted, who is required to respond to a Notice of Non-Compliance (NON) related to the Form R? Is the current or prior owner/operator required to respond to the NON?

The current owner/operator has the primary responsibility for responding to a NON. However, all prior owners/operators back to January 1 of the reporting year may also be held responsible if the current owner/operator does not respond to the NON in an accurate, complete, and timely manner.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #98

Who is the parent company for a 50/50 joint venture?

The 50/50 joint venture is its own parent company (40 CFR 372.3).

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #101

Mom and Pop Plastics is a wholly-owned subsidiary of a major chemical company which is a wholly-owned subsidiary of Big Oil Corporation, located in St. Paul, MN. Which is the parent company?

Big Oil Corporation is the highest-level U.S. parent company.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #103

Example 16: Reporting for Multiple Sites and/or Owners

If two plants are separate establishments under the same site management, must they have separate Dun & Bradstreet numbers?

They may have separate Dun & Bradstreet numbers, especially if they are distinctly separate business units. However, different divisions of a company located at the same facility usually do not have separate Dun & Bradstreet numbers.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #120

An electricity generating facility has multiple independent owners. Each individual owner runs their own separate operation, but each has a financial interest in the operation of the entire facility. What name should be entered as the U.S. parent company in Part I, Section 5.1 of the Form R? Should the facility report under one holding company name?

The electricity generating facility should enter in Part I, Section 5.1 of the Form R the name of the U.S. holding or parent company, consortium, joint venture, or other entity that owns, operates, or controls the facility and in Section 5.2 the name of the foreign parent company, if applicable.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #100

A covered facility sells one of its establishments to a new owner. The operator of the newly-sold establishment, however, does not change. The same operator operates the newly-sold establishment and the rest of the facility. Although the facility makes its threshold determinations based on the activities at the entire facility (including the newly-sold establishment), the facility chooses to report separately for the different establishments. What parent name should the newly sold establishment use: the parent name of the owner or the parent name of the operator (i.e., the same as the rest of the facility)?

All establishments of a covered facility must report the highest-level U.S. and foreign parent company name. Therefore, in the instance described above, the newly sold establishment should use the U.S. and foreign parent company name, if applicable, of the facility operator (i.e., the same U.S. and foreign parent company name the rest of the facility is using).

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #104

Two distinct NAICS code operations covered under EPCRA Section 313 (e.g., an electricity generating facility and a cement plant) are located on adjacent properties and are owned by the same parent company. The two operations are operated completely independently of one another (e.g., separate accounting procedures, employees, etc.). Are these two operations considered one facility under EPCRA Section 313?

Yes. Under EPCRA Section 313, a facility is defined as: "all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person" (40 CFR Section 372.3). Because these two operations are located on adjacent properties and are owned by the same person, they are considered one facility for EPCRA Section 313 reporting purposes. The person owning and/or operating contiguous or adjacent sites is the same if there is a common highest-level U.S. or foreign parent company that owns and/or operates the sites.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #25

Example 16: Reporting for Multiple Sites and/or Owners (continued)

Company A purchases a facility from Company B between January 1 and June 30 of the same year. For reporting forms covering the prior year, which company's name and what TRIFID should appear on the form?

In the case that a facility is purchased between January 1 and June 30 of the same year, the form submitted for the previous year must reflect the name used by the facility on December 31 of that reporting year (Monthly Call Center Report Question, EPA530-R-98-005; October 1998). In this example, Company B's name should appear on the form because it owned the facility for the duration of the reporting year. The TRIFID is location-specific; thus, the TRIFID will stay the same even if the facility changes names, production processes, or NAICS codes. With regard to reporting, the owner or operator of the facility on the annual July 1 reporting deadline (here, Company A) is primarily responsible for reporting the data for the previous year's operations at that facility. However, all prior owners and operators back to January 1 of the year covered in the report may also be held responsible if the current owner or operator does not submit a report.

EPCRA Section 313 Questions and Answers Document 2019 Consolidation Document, Question #82

A piece of contiguous property consists of three covered sites with various buildings, structures, and equipment. The three sites are owned by two different companies - Company A and Company B. All three sites operate independently of each other and have separate personnel, finances, and environmental reporting systems. Site 1 and its buildings and structures are owned and operated by Company A and site 3 and its buildings and structures are owned and operated by Company B. The middle site, site 2 and its buildings and structures, are owned by Company A and operated by Company B (see diagram). Are all three sites and their buildings and structures considered separate facilities under EPCRA Section 313? Who is responsible for reporting for each?

Site 1	**Site 2**	**Site 3**
Owned and operated by A	Owned by A and operated by B	Owned and operated by B

Under 40 CFR 372.3, a facility is defined as "all buildings, equipment, structures, and other stationary items that are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person." Because all buildings and structures located on sites 1 and 2 are located on contiguous property and are owned by the same person, they are considered one facility. Because all buildings and structures located on sites 2 and 3 are located on contiguous property and are owned by the same person, they are also considered one facility. Therefore, for purposes of determining thresholds, the toxic chemicals manufactured, processed, and otherwise used at site 2 must be counted toward both Facility A's and Facility B's threshold determinations. Because the operator is primarily responsible for reporting, estimating and reporting releases and other waste management calculations for sites 2 and 3 are the primary responsibility of Company B, and the release and other waste management reporting for site 1 is the primary responsibility of Company A. EPA allows the release and other waste management reporting to be done in this manner to avoid "double-counting" releases and waste management activities at site 2. However, provided thresholds have been exceeded, if no reports are received from a covered facility, both the owner and the operator are liable for penalties.

EPCRA Section 313 Questions and Answers Document 2024 Consolidation Document, Question #90

D. Part II. Chemical-Specific Information (Forms R and A)

In Part II, facilities enter:

- The TRI-listed chemical being reported;
- The type of reporting form used (i.e., Form R or Form A);
- The general uses and activities involving the TRI-listed chemical at the facility (Form R only);
- On-site releases of the TRI-listed chemical from the facility to air, water, and land (Form R only);
- Quantities of the TRI-listed chemical transferred to off-site locations (Form R only);
- Information for on-site and off-site disposal, treatment, energy recovery, and recycling of the TRI-listed chemical (Form R only); and
- Source reduction activities (Form R only).

In TRI-MEweb, chemical-specific information is entered by initiating a form for a chemical or chemical category. Use the "Add Form(s)" search tool to look up chemical and chemical categories by name, Chemical Abstracts Service Registry Number (CASRN), or synonym to begin a new TRI reporting form. Alternatively, use the "Import prior year form(s)" function to create and pre-populate forms based on prior year forms the facility submitted. TRI-MEweb will prompt users to indicate if the report is a TRI Form R or Form A.

TRI-MEweb does not allow reporting of chemicals not listed in a particular reporting year. For example, the nonylphenol category is not available in TRI-MEweb prior to RY 2016 as it was first added for RY 2016. Facilities reporting a generic name a supplier provided should see instructions in Section D.2.

TRI-MEweb will also allow the search of delimited TRI chemical categories by individual category member and their CASRN; however, only the chemical category name and category ID will populate the TRI Form R and Form A.

Reporting via Form A for metals, metal category compounds, and mixed isomers differs somewhat from Form R reporting. Refer to Section B.6.f for more information.

Section 1. EPCRA Section 313 Chemical Identity (Forms R and A)

1.1 CAS Registry Number or Chemical Category ID

Initiating a Form R or A for a chemical or chemical category in TRI-MEweb automatically completes this section.

1.2 Chemical or Chemical Category Name

Initiating a Form R or A for a chemical or chemical category in TRI-MEweb automatically completes this section.

1.3 Generic Chemical Name

Section 1.3 is completed only for trade secret submissions. For instructions on reporting trade secret claims, see Appendix A.

Example 17: Mixture Containing an Unidentified TRI-Listed Chemical

A facility uses 20,000 pounds of a solvent that the supplier claims contains 80% "chlorinated aromatic," the generic name for a chemical subject to reporting under EPCRA Section 313 that is not classified as a chemical of special concern. The facility, therefore, used 16,000 pounds of a TRI-listed chemical, which exceeds the "otherwise use" threshold. The facility would file a Form R and enter the name "chlorinated aromatic" as the generic chemical name.

Section 2. Mixture Component Identity (Forms R and A)

Complete this section only if reporting a TRI-listed chemical for which the identity has been withheld by the chemical supplier. Do not supply trade secret substantiation forms for this chemical because it is the supplier that is claiming the chemical identity as a trade secret.

2.1 Generic Chemical Name Provided by Supplier

Enter the generic chemical name in this section only if the following three conditions apply:

1) The mixture contains a TRI-listed chemical, but the only identity known for that chemical is a generic name;

2) Either the specific concentration of the TRI-listed chemical component or a maximum or average concentration is known; and

3) By multiplying the concentration by the total annual amount of the whole mixture processed or otherwise used, it is determined that the processing and/or otherwise use threshold is exceeded for that single, generically-identified component of the mixture.

To begin a TRI Form R or A for a generic chemical in TRI-MEweb, navigate to the "**Form Home**" page, click the "**Add Form(s)"** button for the facility reporting on a generic chemical, click the "**Create new form(s)**" link, click the "**Add generic chemicals"** link on the search window pop-up, then enter the generic chemical name. The generic chemical name may not be a TRI-listed chemical or chemical category and must be fewer than 70 characters in length. Click the "**Add Chemical to List**" button next to the generic chemical name that will be added to the list of forms to be created, then click the "**Start Form**" button.

Section 3. Activities and Uses of the TRI-listed Chemical at the Facility (Form R)

The remaining Part II Sections apply to the Form R only.

Indicate whether the TRI-listed chemical is manufactured (including imported), processed, or otherwise used at the facility and the general nature of such activities and uses at the facility during the reporting year (see Figure 6). For each type of activity the facility performed for the reported chemical (i.e., manufactured, processed, or otherwise used), specify how that chemical was used, select the corresponding checkboxes, and provide the corresponding sub-use codes as appropriate for categories that contain specific sub-uses (e.g., processing as a reactant provides for P codes to describe the processing activity in more detail). Facilities are not required to report on Form R the quantity manufactured, processed, or otherwise used. Report activities and uses that take place only at the reporting facility, not activities and uses that take place at other locations involving the reporting facility's products.

Check all the boxes in this section that apply to the facility's chemical activities and uses, regardless of exemptions that may apply when determining reporting threshold and release and other waste management calculations. Some processing and otherwise use activities contain sub-use codes. Select all codes that apply.

The characterization of a facility's activities and uses when indicating sub-uses under Process and Otherwise Use on the Form R should be based on best professional judgment. For certain industries, some of these sub-uses may overlap in scope. If the appropriate industry uses any of these terms synonymously, or discretely as two separate uses (e.g., "feedstock" and "raw material"), or there is some uncertainty as to which term is most applicable, indicate the option(s) that best align(s) with industry norms.

Refer to the definitions of "manufacture," "process," and "otherwise use" in Section B.3.a or 40 CFR 372.3 for additional explanations.

3.1 Manufacture the TRI-Listed Chemical

Facilities that manufacture (including import) the TRI-listed chemical must check at least one of the following:

a. ***Produce*** — The TRI-listed chemical is produced at the facility.

b. ***Import*** — The TRI-listed chemical is imported by the facility into the Customs Territory of the United States. (See Section B.3.a of these instructions for further clarification of "import".)

And check at least one of the following:

c. ***For on-site use/processing*** — The TRI-listed chemical is produced or imported and then further processed or otherwise used at the same facility. If this box is checked, generally at least one item in Part II, Section 3.2 or 3.3 should be checked.

d. ***For sale/distribution*** — The TRI-listed chemical is produced or imported specifically for sale or distribution outside the manufacturing facility.

e. ***As a byproduct*** — The TRI-listed chemical is produced coincidentally during the manufacture, processing, or otherwise use of another chemical substance or mixture and, following its production, is separated from that other chemical substance or mixture. TRI-listed chemicals produced as a result of waste management are also considered byproducts.

f. ***As an impurity*** — The TRI-listed chemical is produced coincidentally as a result of the manufacture, processing, or otherwise use of another chemical but is not separated and remains in the mixture or other trade name product with that other chemical.

In summary, manufacturers of TRI-listed chemicals must check (a) and/or (b) and at least one of (c), (d), (e), and (f) in Section 3.1.

3.2 Process the TRI-Listed Chemical

Facilities that process the TRI-listed chemical must select at least one of the following processing use codes:

a. ***As a reactant*** — A natural or synthetic TRI-listed chemical is used in chemical reactions for the manufacture of another chemical substance or of a product.
If the chemical is processed as a reactant, select the applicable sub-use code(s):

P101	Feedstocks
P102	Raw materials
P103	Intermediates
P104	Initiators
P105	Catalyst
P106	Binder
P199	Other

b. ***As a formulation component*** — A TRI-listed chemical is added to a product (or product mixture) prior to further distribution of the product that acts as a performance enhancer during use of the product. If the chemical is processed as a formulation component, select the applicable sub-use code(s):

P201	Additives
P202	Dyes
P203	Reaction diluents
P204	Initiators
P205	Solvents
P206	Inhibitors
P207	Emulsifiers
P208	Surfactants
P209	Lubricants
P210	Flame retardants
P211	Rheological modifiers
P212	Binder
P213	Fuel Agents
P214	Deodorizer
P215	Fragrance
P216	Plasticizer

P217	Semiconductor and photovoltaic agent
P218	Energy Releasers (explosives, motive propellant)
P219	Foamant
P220	Propellants, non-motive (blowing agents)
P221	Chemical reaction regulator
P222	Corrosion inhibitor
P223	Soil amendments (fertilizer)
P224	Sealant (barrier)
P225	Explosion inhibitor
P226	Fire extinguishing agent
P227	Flavoring and nutrient
P228	Embalming agent
P229	Preservative
P299	Other

c. ***As an article component*** — A TRI-listed chemical becomes an integral component of an article distributed for industrial, trade, or consumer use, such as the pigment components of paint applied to a chair that is sold.

d. ***During repackaging*** — This consists of processing or preparation of a TRI-listed chemical (or product mixture) for distribution in commerce in a different form, state, or quantity. This includes, but is not limited to, the transfer of material from a bulk container, such as a tank truck to smaller containers such as cans or bottles. This does not include sending toxic chemicals off-site into commerce for recycling, which is indicated as (f) Recycling.

e. ***As an impurity*** — The TRI-listed chemical is processed but is not separated and remains in the mixture or other trade name product with that/those other chemical(s).

f. ***Recycling*** — This consists of processing or preparing a TRI-listed chemical (or product mixture) for distribution in commerce in a different form, state, or quantity for purposes of recycling or reclamation.

In summary, if a facility processes the TRI-listed chemical, check (a), (b), (c), (d), (e), and/or (f), and select all the P codes for (a) or (b) that apply in Section 3.2.

3.3 Otherwise Use the TRI-Listed Chemical (non-incorporative activities)

Facilities that otherwise use the TRI-listed chemical must enter at least one of the following otherwise use codes:

a. ***As a chemical processing aid*** — A TRI-listed chemical that is added to a reaction mixture to aid in the manufacture or synthesis of another chemical substance but is not intended to remain in or become part of the product or product mixture is otherwise used as chemical processing aid. If the chemical is otherwise used as a chemical processing aid, select the applicable sub-use code(s):

Z101	Process solvents
Z102	Catalysts
Z103	Inhibitors
Z104	Initiators
Z105	Reaction terminators
Z106	Solution buffers
Z107	Corrosion Inhibitor
Z108	Absorbent
Z109	Adsorbent
Z110	Semiconductor and photovoltaic agent
Z111	Explosion Inhibitor
Z112	Tracer
Z199	Other

b. ***As a manufacturing aid*** — A TRI-listed chemical that aids the manufacturing process but does not become part of the resulting product and is not added to the reaction mixture during the manufacture or synthesis of another chemical substance is otherwise used as a manufacturing aid. If the chemical is otherwise used as a manufacturing aid, select the applicable sub-use code(s):

Z201	Process lubricants
Z202	Metalworking fluids
Z203	Coolants
Z204	Refrigerants
Z205	Hydraulic fluids

Z206	Corrosion inhibitor
Z207	Heat transferring agent
Z208	Refrigerants
Z209	Plating agent
Z299	Other

c. ***Ancillary or other use*** — A TRI-listed chemical used at a facility for purposes other than aiding chemical processing or manufacturing as described above is otherwise used as an ancillary or other use. If the chemical is otherwise used as an ancillary or other use, select the applicable sub-use code(s):

Z301	Cleaner
Z302	Degreaser
Z303	Lubricant
Z304	Fuel
Z305	Flame retardant
Z306	Waste treatment
Z307	Water treatment
Z308	Construction materials
Z309	Deodorizer
Z310	Fragrance
Z311	Abrasives
Z312	Binder
Z313	Sealant (barrier)
Z314	Energy releasers (explosives, motive propellant)
Z315	Etching agent
Z316	Fire extinguishing agent
Z317	Embalming agent
Z399	Other

In summary, if a facility otherwise uses the TRI-listed chemical, check (a), (b), and/or (c), and select all the Z-codes for (a), (b), or (c) that apply in Section 3.3.

SECTION 1. TOXIC CHEMICAL IDENTITY
(Important: DO NOT complete this section if you are reporting a mixture component in Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
	334-88-3
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
	Diazomethane
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY **(Important: DO NOT complete this section if you completed Section 1.)**

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☒ Produce b. ☐ Import	a. ☒ As a reactant b. ☐ As a formulation component c. ☐ As an article component d. ☐ Repackaging e. ☐ As an impurity f. ☐ Recycling	a. ☐ As a chemical processing aid b. ☐ As a manufacturing aid c. ☐ Ancillary or other use
If Produce or Import c. ☒ For on-site use/processing d. ☒ For sale/distribution e. ☐ As a byproduct f. ☐ As an impurity	Enter 4-digit code(s) from instruction package	Enter 4-digit code(s) from instruction package

Figure 6. Reporting TRI-Listed Chemical or Mixture Identity, Activities, and Uses

Example 18: Manufacturing and Processing Activities of TRI-Listed Chemicals

In the two examples below, it is assumed that the threshold quantities for manufacture, process, or otherwise use have been exceeded and the reporting of TRI-listed chemicals is therefore required.

1. A facility manufactures diazomethane and sells 50% as a product. The remaining 50% is reacted with *alpha*-naphthylamine, forming *N*-methyl-*alpha*-naphthylamine, and also producing nitrogen gas.

- The facility manufactures diazomethane, a TRI-listed chemical, for sale/distribution as a commercial product and for on-site use/processing as a feedstock in the *N*-methyl-*alpha*-naphthylamine production process. The facility also processes diazomethane: 50% is sold directly as a product, and the other 50% is further processed as a reactant. See Figure 6 for how this information would be reported in Part II, Section 3 of the Form R.
- The facility also processes *alpha*-naphthylamine as a reactant to produce *N*-methyl-*alpha*-naphthylamine, a chemical not on the TRI list.

2. A facility is a commercial distributor of Missouri bituminous coal, which contains mercury at 1.5 ppm (w:w). Check the box in Part II, Section 3.2.e for processing mercury as an impurity.

Section 4. Maximum Amount of the TRI-Listed Chemical On-site at Any Time During the Reporting Year (Form R)

For data element 4.1 of Part II, select the code (see codes below) that indicates the maximum quantity of the TRI-listed chemical on-site at the facility (e.g., in storage tanks, process vessels, on-site shipping containers, or in wastes generated) at any one time during the calendar year. If the TRI-listed chemical was present at several locations within the facility, use the maximum total amount present at the entire facility at any one time. While range reporting is not allowed for chemicals of special concern elsewhere on Form R, it is allowed for the Maximum Amount On-site.

Weight Range in Pounds

Range Code	From	To
01	0	99
02	100	999
03	1,000	9,999
04	10,000	99,999
05	100,000	999,999
06	1,000,000	9,999,999
07	10,000,000	49,999,999
08	50,000,000	99,999,999
09	100,000,000	499,999,999
10	500,000,000	999,999,999
11	1 billion	more than 1 billion

If the TRI-listed chemical present at the facility was part of a mixture or other trade name product, determine the maximum quantity present at the facility by calculating the weight of the TRI-listed chemical only.

Do not include the weight of the entire mixture or other trade name product. This data may be found in the Tier II form that a facility may have prepared under EPCRA Section 312. See 40 CFR 372.30(b) for further information on how to calculate the weight of the TRI-listed chemical in the mixture or other trade name product. For TRI-listed chemical categories (e.g., nickel compounds), include all chemical compounds in the category when calculating the maximum amount, using the total weight of each compound.

Weight Range in Grams (Dioxin and Dioxin-like Compounds)

When reporting for the dioxin and dioxin-like compounds category, use the following gram quantity range codes:

Range Code	From	To
12	0	0.099
13	0.1	0.99
14	1.0	9.99
15	10	99
16	100	999
17	1,000	9,999
18	10,000	99,999
19	100,000	999,999
20	1,000,000	more than 1 million

Section 5. Quantity of the TRI-Listed Chemical Entering Each Environmental Medium On-Site (Form R)

In Section 5, account for the total aggregate on-site releases of the TRI-listed chemical to the environment from the facility for the calendar year.

On-site releases to the environment include emissions to the air, discharges to surface waters, and releases to land (including underground injection wells).

Enter the values in Section 5 in pounds (or, for the dioxin and dioxin-like compounds category, grams). For TRI-listed chemicals not classified as chemicals of special concern, enter the values as whole numbers. For chemicals of special concern (except the dioxin and dioxin-like compounds category), report release and other waste management quantities greater than 0.1 pounds, provided the accuracy of the underlying data on which the estimate is based supports this level of precision.

For the dioxin and dioxin-like compounds chemical category, which has reporting activity thresholds of 0.1 grams, facilities need only report all release and other waste management quantities greater than 100 micrograms (i.e., 0.0001 grams) (see Example 19.) Notwithstanding the numeric precision used when determining reporting activity thresholds, facilities should report on Form R to the level of accuracy their data support, up to seven digits after the decimal.

Example 19: Reporting Dioxins and Dioxin-Like Compounds

If the total quantity for Section 5.2 (i.e., stack or point air emissions) of the Form R is 0.00005 grams or less, zero can be entered. If the total quantity is between 0.00005 and 0.0001 grams, 0.0001 grams or the actual quantity can be entered (e.g., 0.000075).

NA vs. a Numeric Value (e.g., 0 (Zero)). Generally, "Not Applicable" (NA) is appropriate if the waste stream that contains or contained the TRI-listed chemical is not directed to the relevant environmental medium or if leaks, spills, and fugitive emissions cannot occur. If the waste stream that contains or contained the TRI-listed chemical is directed to the environmental medium or if leaks, spills, or fugitive emissions can occur, do not use NA, even if treatment or emission controls result in a release of zero. If the annual aggregate release of the chemical was equal to or less than 0.5 pounds, report the value as 0 (zero) (unless the chemical is a chemical of special concern).

For Section 5.1, NA generally is not appropriate for volatile organic compounds (VOCs). For Section 5.5.4, NA is generally not appropriate, recognizing the possibility of accidental spills or leaks of the TRI-listed chemical.

Nitric acid involved in a facility's processing activities is an example that illustrates use of NA vs. a numeric value (e.g., 0 (zero)). If the facility neutralizes the wastes containing nitric acid to a pH of 6 or above, the facility reports a release of 0 (zero) for the nitric acid, not NA. Another example is if the facility has no underground injection well, in which case NA should be checked in Part II, Section 5.4.1 and 5.4.2 of the Form R. Also, if the facility does not place the acidic waste in a landfill, the facility should check NA in Part II, Section 5.5.1B of the Form R.

Classify all releases of the TRI-listed chemical to the air as either stack or fugitive emissions and include them in the total quantity reported for these releases in Sections 5.1 and 5.2. Instructions for columns A, B, and C follow the discussions of Sections 5.1 through 5.5. Column C only applies to Section 5.3.

5.1 Fugitive or Non-Point Air Emissions

Report the total of all releases of the TRI-listed chemical to the air that are not released through stacks, vents, ducts, pipes, or any other confined air stream. Include (1) fugitive equipment leaks from valves, pump seals, flanges, compressors, sampling connections, open-ended lines, etc.; (2) evaporative losses from surface impoundments and spills; (3) releases from building ventilation systems; and (4) any other fugitive or non-point air emissions. Engineering estimates and mass balance

calculations (using purchase records, inventories, engineering knowledge or process specifications of the quantity of the chemical entering a product, hazardous waste manifests, or monitoring records) may be useful in estimating fugitive emissions. Check "**NA**" in Section 5.1 if the facility does not engage in activities that result in fugitive or non-point air emissions of the TRI-listed chemical. For VOCs, NA generally is not appropriate.

5.2 Stack or Point Air Emissions

Report the total of all releases of the TRI-listed chemical to the air that occur through stacks, confined vents, ducts, pipes, or other confined air streams. Include storage tank emissions. Air releases from air pollution control equipment are generally part of this category. Monitoring data, engineering estimates, and mass balance calculations may help complete this section. Check "**NA**" in Section 5.2 if the facility has no stack air activities involving the waste stream that contains or contained the TRI-listed chemical.

5.3 Discharges to Receiving Streams or Water Bodies

In Section 5.3, enter the names of all the receiving streams or water bodies to which the facility directly discharges the reported chemical. Facilities may enter releases to as many unique receiving streams or water bodies as needed. Facilities may also enter the 14-digit reach code, which is a unique code assigned to each water reach by the National Hydrography Dataset that identifies a continuous piece of surface water with similar hydrologic characteristics. See www.usgs.gov/national-hydrography/national-hydrography-dataset for more information.

EPA maps all reported discharges to receiving streams or water bodies for purposes of its Risk-Screening Environmental Indicators (RSEI) model, the Water Pollutant Loading Tool, and for other analyses. Additionally, identifying and entering a reach code in this section ensures that EPA maps reported discharges to the correct water stream segment.

In TRI-MEweb, facilities have the option of using an interactive map interface to locate and identify the receiving stream or water body to which the chemical was discharged. TRI-MEweb will populate the appropriate reach code when a receiving stream or water body is selected on the map provided in the user interface for this section.

The name of the receiving stream or water body and reach code may be manually entered by following the "***Can't find or identify your stream or water body on the map***?" link. In such a case, report the name of the receiving stream or water body and reach code as they appear on a discharge permit or other appropriate documentation. If the stream is not included in the NPDES permit or its name is not identified in the NPDES permit, enter the name of the off-site stream or water body by which it is publicly known. If the receiving waters are unnamed, enter the first publicly named water body to which the receiving waters are a tributary. Do not list a series of streams through which the TRI-listed chemical flows. Include all the receiving streams or water bodies that receive stormwater runoff from the facility. Do not enter names of streams to which off-site treatment plants discharge.

Check "**NA**" in Section 5.3 if the facility has no discharges to receiving streams or water bodies of the waste stream that contains or contained the chemical (See discussion of NA vs. a Numeric Value (e.g., zero) in the introduction of Section 5).

Enter the total annual amount of the TRI-listed chemical released from all discharge points at the facility to each receiving stream or water body. Include process outfalls such as pipes and open trenches, releases from on-site wastewater treatment systems, and the contribution from stormwater runoff, if applicable (see instructions for column C below). Do not include discharges to a publicly owned treatment works (POTW) facility or to other off-site wastewater treatment facilities in this section. These off-site transfers must be reported in Part II, Section 6 of Form R. Wastewater analyses and flowmeter data may provide the quantities needed to complete this section.

Discharges of listed acids (e.g., hydrogen fluoride, nitric acid) may be reported as zero if the discharges have been neutralized to pH 6 or above. If wastewater containing a listed acid is discharged

below pH 6, releases of the acid must be reported. In this case, use pH measurements to estimate the amount of mineral acid released.

Sections 5.4 and 5.5: Disposal to Land On-site

TRI-MEweb provides eight predefined subcategories for reporting quantities released to land within the boundaries of the facility, including underground injection. Do not report land disposal at off-site locations in this section. Accident histories and spill records may be useful when completing this section (e.g., release notification reports required under EPCRA Section 304, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 103, and accident histories required under Clean Air Act Section 112(r)(7)(B)(ii)). Where relevant, check "**NA**" in Sections 5.4.1 through 5.5.3 if the facility has no disposal activities for the waste stream that contains or contained the chemical (See discussion of NA vs. a Numeric Value (e.g., zero) in the introduction of Section 5). For Section 5.5.4, facilities generally should report zero, recognizing the potential for spills or leaks.

Reporting for this section is chemical-specific. An amount reported should reflect the weight of the chemical, not the weight of the waste stream in which the chemical is located.

5.4.1 Class I Underground Injection Wells

Enter the total amount of the TRI-listed chemical that was injected into Class I wells at the facility. Chemical analyses, injection rate meters, and RCRA Hazardous Waste Generator Reports are good sources of data for completing this section.

5.4.2 Class II-V Underground Injection Wells

Enter the total amount of the TRI-listed chemical that was injected into wells at the facility other than Class I wells. Chemical analyses and injection rate meters are good sources of data for completing this section.

5.5.1A RCRA Subtitle C Landfills

Enter the total amount of the TRI-listed chemical that was placed in RCRA Subtitle C landfills. Facilities are not required to estimate leaks from landfills because the amount of the chemical has already been reported as a release.

5.5.1B Other Landfills

Enter the total amount of the TRI-listed chemical that was placed in landfills other than RCRA Subtitle C landfills. Facilities are not required to estimate leaks from landfills because the amount of the chemical has already been reported as a release.

5.5.2 Land Treatment/Application Farming

Land treatment is a disposal method in which a waste containing a TRI-listed chemical is applied onto or incorporated into soil. While this disposal method is considered a release to land, any volatilization of the chemical into the air occurring during the disposal operation must not be included in this section. Include volatilization in the total fugitive air releases reported in Part II, Section 5.1 of the Form R.

5.5.3 Surface Impoundments

A surface impoundment is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (though some may be lined with man-made materials) designed to hold liquid wastes or wastes containing free liquids. Examples of surface impoundments are holding, settling, storage, and elevation pits; ponds; and lagoons. If the pit, pond, or lagoon is intended for storage or holding without discharge, it is considered a surface impoundment used as a final disposal method. A facility must determine, to the best of its ability, the percentage of a volatile chemical (e.g., benzene) in waste sent to a surface impoundment that evaporates during the reporting year. The facility must report this as a fugitive air emission in Section 5.1.

Quantities of the TRI-listed chemical released to surface impoundments that are used merely as part of a wastewater treatment process generally are not reported in this section. However, if an impoundment accumulates sludges containing the chemical, include an estimate in this section unless the sludges are removed and otherwise disposed of (in which case they must be reported under the appropriate section of the form). Storage tanks are not considered to be a type of disposal and are not to be reported in this section of the Form R.

5.5.3A RCRA Subtitle C Surface Impoundments

Enter the total amount of the TRI-listed chemical that was placed in RCRA Subtitle C surface impoundments.

5.5.3B Other Surface Impoundments

Enter the total amount of the TRI-listed chemical that was placed in surface impoundments other than RCRA Subtitle C surface impoundments.

5.5.4 Other Disposal

Includes any amount of a TRI-listed chemical released to land that does not fit the categories of landfills, land treatment/application farming, or surface impoundments. Other disposal includes any spills or leaks of the chemical to land. For example, 2,000 pounds of benzene leaks from an underground pipeline into the land at a facility. Because the pipe was only a few feet from the surface at the erupt point, 30% of the benzene evaporates into the air. The 600 pounds released to the air is reported as a fugitive air release (Part II, Section 5.1). The remaining 1,400 pounds is reported as a release to land, other disposal (Part II, Section 5.5.4).

Section 5 Column A: Total Release

Only on-site releases of the TRI-listed chemical to the environment for the reporting year are reported in this section of Form R. The total on-site releases from a facility do not include transfers or shipments of the chemical from a facility for sale or distribution in commerce or of wastes to other facilities for disposal, treatment, energy recovery, or recycling (see Part II, Section 6). Routine releases, such as fugitive air emissions, and accidental or non-routine releases, such as chemical spills, must be included in the estimated quantity released.

Releases of Less Than 1,000 Pounds. For total annual releases or off-site transfers of a TRI-listed chemical from the facility of less than 1,000 pounds, report the amount either as an estimate or by range code (range reporting in Section 5 does not apply to chemicals of special concern). Do not enter a range code and an estimate in the same box in column A.

The reporting range codes are:

Code	Reporting Range (in pounds)
A	1-10
B	11-499
C	500-999

For total annual on-site releases of a TRI-listed chemical from the facility of less than 1 pound, round the value to the nearest pound. If the estimate is greater than 0.5 pounds, either select range code "A" for "1-10" or enter "1" in column A. If the release is equal to or less than 0.5 pounds, round to zero and enter "0" in column A.

Total annual releases of 0.5 pounds or less from the processing or otherwise use of all like items of an article maintain the article status of that item. Thus, if the only releases are from processing an article, and such releases from all like items are equal to or less than 0.5 pounds per year, a report is not required for that chemical. The 0.5-pound release determination does not apply to just a single article. It applies to the cumulative releases from the processing or otherwise use of the same type of article (e.g., sheet metal or plastic film) over the course of the reporting year (see Section B.3.c for more information on the articles exemption).

If a range code is entered in column A, some TRI data tools the public uses will display the midpoint of the range (i.e., 5, 250, or 750 lbs).

Releases of 1,000 Pounds or More. For releases to any medium that amount to 1,000 pounds or more for the year, an estimate in pounds per year is required in column A.

Data Precision. Generally, estimates need not be reported to more than two significant figures. This estimate should be in whole numbers. However, facilities should report releases and other waste management amounts at a level of precision supported by the accuracy of the underlying data and the estimation techniques on which the estimate is based. If a facility's release or other management calculations support reporting an amount that is more precise than two significant

figures, then the facility should report that more precise amount.

Calculating On-Site Releases. To provide the release information in column A, EPCRA Section 313(g)(2) requires a facility to use readily available data (including monitoring data) collected pursuant to other provisions of law, or, where such data are not readily available, "reasonable estimates" of the amounts involved. If available data (including monitoring data) are known to be non-representative, facilities must make reasonable estimates using the best readily available information.

Make reasonable estimates of the amounts released using emissions factors, mass balance calculations, or engineering calculations. Do not use emissions factors or calculations to estimate releases if more accurate data are available.

No additional monitoring or measurement of the quantities or concentrations of any TRI-listed chemical released into the environment, or of the frequency of such releases, beyond that required under other provisions of law or regulation or as part of routine plant operations, is required for the purpose of completing the Form R.

Estimate the quantity (in pounds) of the TRI-listed chemical or chemical category that is released annually to each environmental medium on-site. Include only the quantity of the chemical in this estimate. If the chemical present at the facility was part of a mixture or other trade name product, calculate only the releases of the TRI-listed chemical, not the other components of the mixture or other trade name product. If the releases of the mixture or other trade name product can only be estimated as a whole, assume the release of the TRI-listed chemical is proportional to its concentration in the mixture or other trade name product. See 40 CFR 372.30(b) for further information on how to calculate the concentration and weight of the TRI-listed chemical in the mixture or other trade name product.

If reporting a TRI-listed chemical category rather than a specific chemical, combine the release data for all chemicals in the chemical category (e.g., all listed members of certain glycol ethers or all listed members of chlorophenols). For example, if a facility releases 3,000 pounds per year of 2-chlorophenol, 4,000 pounds per year of 3-chlorophenol, and 4,000 pounds per year of 4-chlorophenol to air as fugitive emissions, report that the facility released 11,000 pounds of chlorophenols to air as fugitive emissions in Part II, Section 5.1.

For aqueous ammonia solutions, report releases based on 10% of total aqueous ammonia. Ammonia evaporating from aqueous ammonia solutions is considered anhydrous ammonia; therefore, report 100% of the anhydrous ammonia if it is released to the environment.

For dissociable nitrate compounds, base release estimates on the weight of the nitrate only.

For metal category compounds (e.g., chromium compounds), report releases of only the parent metal. For example, a user of various inorganic chromium salts would report the total chromium released regardless of the chemical compound and exclude any contribution to mass made by the other content of the compound.

Section 5 Column B: Basis of Estimate

For each release and otherwise managed waste estimate (Sections 5 & 6), indicate the principal method used to determine the amount of release and otherwise managed waste reported. Select the basis of estimate that applies to the largest portion of the total estimated release and otherwise-managed waste quantity.

The codes are as follows:

C Mass Balance. Estimate is based on mass balance calculations, such as calculation of the amount of the TRI-listed chemical in streams entering and leaving process equipment.

E1 Emission Factor, Published. Estimate is based on published emissions factors, such as those relating release quantity to throughput or equipment type (e.g., air emissions factors). This may include emissions factors in a trade association's publication or AP-42.

E2 Emission Factor, Site-specific. Estimate is based on site-specific emissions factors, such as those relating release quantity to

throughput or equipment type (e.g., air emissions factors). This may include emissions factors developed for a specific piece of equipment and that consider conditions on-site.

M1 Monitoring, Continuous. Estimate is based on continuous monitoring data or measurements for the TRI-listed chemical.

M2 Monitoring, Periodic/Random. Estimate is based on periodic or random monitoring data or measurements for the TRI-listed chemical.

O Other. Estimate is based on other approaches such as engineering calculations (e.g., estimating volatilization using published mathematical formulas) or best engineering judgment. This includes applying estimated removal efficiency to a waste stream, even if the composition of the stream before treatment was fully identified through monitoring data.

For example, if 40% of stack emissions of the reported TRI-listed chemical were calculated using source testing data, 30% by mass balance, and 30% by published chemical-specific emissions factors, select "the estimate is considered based on periodic or random emission monitoring" (M2).

If the monitoring data, mass balance, or emissions factor used to estimate the release are not specific to the TRI-listed chemical reported, identify that the estimate is based on other methods of estimation (O).

If a mass balance calculation yields the flow rate of a waste, but the quantity of the reported TRI-listed chemical in the waste is based on solubility data, select "O" because engineering calculations are the basis of estimate of the quantity of the chemical in the waste.

If the concentration of the TRI-listed chemical in the waste was measured by continuous emissions monitoring equipment and the flow rate of the waste was determined by mass balance, the primary basis of the estimate should be "continuous emission monitoring" (M1). Although a mass balance calculation contributed to the estimate, indicate "continuous emission monitoring" because monitoring data were used to estimate the concentration of the chemical in waste.

Only indicate mass balance ("C") if it is directly used to calculate the mass (weight) of the chemical released. Only indicate monitoring data as the basis of the estimate if the TRI-listed chemical concentration is measured in the waste. Do not indicate monitoring data, for example, if the monitoring data relate to a concentration of the TRI-listed chemical in other process streams within the facility.

The accuracy and proficiency of release estimation will improve over time. However, the use of new emissions factors or estimation techniques to revise previous Form R submissions is not required.

Section 5 Column C: Percent from Stormwater

This column relates only to Section 5.3 of the Form R (Discharges to Receiving Streams or Water Bodies). If a facility has monitoring data on the amount of the TRI-listed chemical in stormwater runoff (including unchanneled runoff), include the quantity of the chemical in the water release in column A and indicate the percent (by weight) of the total quantity of the chemical contributed by stormwater in column C (Section 5.3C).

If a facility has monitoring data on the TRI-listed chemical and an estimate of flow rate, use these data to determine the percent from stormwater runoff.

If a facility has monitored stormwater but did not detect the TRI-listed chemical, enter 0 ("zero") in column C. If a facility has no stormwater monitoring data for the chemical, check "**NA**."

If a facility does not have periodic measurements of stormwater releases of the TRI-listed chemical but has submitted chemical-specific monitoring data in permit applications, use these data to calculate the percent contribution from stormwater. One way to calculate the flow rates from stormwater runoff is the Rational Method. In this method, flow rates, Q, are estimated by multiplying the land area of the facility, A, by the runoff coefficient, C, and then multiplying that figure by the annual rainfall intensity, I. The rainfall intensity, I, is specific to the geographical area where the facility is located and

may be obtained from most standard engineering manuals for hydrology. The flow rate, Q, will have volumetric dimensions per unit time, and must be converted to pounds per year.

Equation 2

$Q = A \times C \times I$

where:

Q = flow rate
A = land area of the facility
C = runoff coefficient (see Equation 3)
I = rainfall intensity

The runoff coefficient represents the fraction of rainfall that runs off as stormwater. The runoff coefficient is directly related to how the land in the drainage area is used (see table below).

Description of Land Area	Runoff Coefficient
Business	
Downtown areas	0.70-0.95
Neighborhood areas	0.50-0.70
Industrial	
Light areas	0.50-0.80
Heavy areas	0.60-0.90
Railroad yard areas	0.20-0.40
Unimproved areas	0.10-0.30
Streets	
Asphaltic	0.70-0.95
Concrete	0.80-0.95
Brick	0.70-0.85
Drives and walks	0.70-0.85
Roofs	0.75-0.95
Lawns: Sandy Soil	
Flat, 2%	0.05-0.10
Average, 2% - 7%	0.10-0.15
Steep, >7%	0.15-0.20
Lawns: Heavy Soil	
Flat, 2%	0.13-0.17
Average, 2% - 7%	0.18-0.22
Steep, >7%	0.25-0.35

Choose the most appropriate runoff coefficient for the site or calculate a weighted-average coefficient that accounts for different types of land use:

Equation 3

Weighted-average runoff coefficient =

(Area 1 % of total)(C1) + (Area 2 % of total)(C2) + (Area 3 % of total)(C3) + ... + (Area i % of total)(Ci)

where:

Ci = runoff coefficient for a specific land use of Area i.

Example 20: Stormwater Runoff

A facility is located in a semi-arid region of the United States with an annual precipitation (including snowfall) of 12 inches (convert snowfall to the equivalent inches of rain by assuming one foot of snow is equivalent to one inch of rain). The total area the facility covers is 42 acres (about 170,000 square meters

or 1,829,520 square feet). The area of the facility is 50% unimproved area, 10% asphaltic streets, and 40% concrete pavement.

The total stormwater runoff from the facility is therefore calculated as follows:

Land Use	% Total Area	Runoff Coefficient
Unimproved area	50	0.20
Asphaltic streets	10	0.85
Concrete pavement	40	0.90

Weighted-average runoff coefficient = [(50%) × (0.20)] + [(10%) × (0.85)] + [(40%) x (0.90)] = 0.545

(Rainfall) × (land area) × (conversion factor) × (runoff coefficient) = stormwater runoff

(1 ft/year) × (1,829,520 ft^2) × (7.48 gal/ft^3) × (0.545) = 7,458,222 gallons/year

Total stormwater runoff = 7,458,222 gallons/year

Stormwater monitoring data show that the average concentration of zinc in the stormwater runoff from the facility from a biocide containing a zinc compound is 1.4 milligrams per liter. The total amount of zinc discharged to surface water through the plant wastewater discharge (non-stormwater) is 250 pounds per year. The total amount of zinc discharged with stormwater is:

(7,458,222 gallons stormwater) × (3.785 liters/gallon) = 28,229,370 liters stormwater

(28,229,370 liters stormwater) × (1.4 mg zinc/liter) × 10^3 g/mg × (1/454) lb/g = 87 lb zinc.

The total amount of zinc discharged from all sources at the facility is:

250 pounds zinc from wastewater discharged
+87 pounds zinc from stormwater runoff
337 pounds zinc total water discharged

The percentage of zinc discharge through stormwater reported in Section 5.3 column C on the Form R is:

(87/337) × 100% ~ 26%

Section 5.5: Optional Waste Rock Piles Information

Facilities that manage TRI-listed chemicals in waste rock disposed of on-site may elect to provide additional optional information. Waste rock refers to rock that contains insufficient metal concentration to economically process at any given time and is thus typically removed from the mine to allow access to the ore-grade rock. Waste rock does not refer to slag, tailings, or other beneficiated rock or ore. Check the optional box to indicate that reported Section 5.5 quantities include management of the chemical in "waste rock piles." Additionally, the quantity of the chemical reported in Section 5.5 that was managed in waste rock piles may be entered optionally. If the optional box is checked, TRI-MEweb will allow for inclusion of optional free text for a facility to further characterize its on-site management of waste rock. Any information provided in the free-text field is added to Section 9.1 (Miscellaneous Information) of the Form R.

Section 6. Transfer(s) of the TRI-Listed Chemical in Wastes to Off-Site Locations (Form R)

In this section, report the total annual quantity of the TRI-listed chemical in wastes sent to any off-site facility for purposes of disposal, treatment, energy recovery, or recycling. Report the total amount of the chemical transferred off-site after any on-site waste treatment, recycling, or removal.

Enter the values in Section 6 in pounds (or, for the dioxin and dioxin-like compounds category, grams). For TRI-listed chemicals not classified as chemicals of special concern, enter the values as whole numbers. For chemicals of special concern, report release and other waste management quantities greater than 0.1 pounds (except the dioxin and dioxin-like compounds category), provided the accuracy and the underlying data on which the estimate is based support this level of precision.

Reporting for this section is chemical-specific. An amount reported should reflect the weight of the chemical, not the weight of the waste stream in which the chemical is located.

Dioxin and dioxin-like compounds category. Facilities should report at a level of precision supported by the accuracy of the underlying data and the estimation techniques on which the estimate is based. Notwithstanding the numeric precision used when determining reporting eligibility thresholds, facilities should report on Form R to the level of accuracy their data support, up to seven digits to the right of the decimal. The smallest quantity reported on the Form R for the dioxin and dioxin-like compounds category is 0.0001 grams (see Example 19).

NA vs. a Numeric Value (e.g., Zero). Enter a numeric value if the facility transfers a TRI-listed chemical (including in wastes) to a publicly owned treatment works (POTW) facility or to other off-site locations. If the aggregate amount transferred was equal to or less than 0.5 pounds, enter 0 (zero) (unless the chemical is classified as a chemical of special concern). Also enter 0 (zero) for transfers of listed mineral acids (e.g., hydrogen fluoride and nitric acid) if they have been neutralized to a pH of 6 or higher prior to being transferred to a POTW; do not check "NA."

If wastewater containing the TRI-listed chemical was not discharged or otherwise transferred to a POTW, check "**NA**" in Section 6.1. If the facility does not ship or transfer wastes containing the reported TRI-listed chemical to other off-site locations, check "**NA**" in Section 6.2. In TRI-MEweb, users may enter as many unique transfers as needed.

6.1 Discharges to Publicly Owned Treatment Works

In Section 6.1, facilities using TRI-MEweb can click "**Add New POTW"** to search for POTWs by location or facility identifiers including EPA Registry ID or Alternate EPA Registry IDs/Program IDs (FRS ID, NPDES ID, or RCRA ID). If the receiving POTW cannot be identified using the search, click "**Enter New POTW**" to manually enter the receiving POTW's name and address.

Facilities should report for each POTW to which the facility discharges or otherwise transfers wastewater containing the reported TRI-listed chemical. The most common transfers of this type will be conveyances of the toxic chemical in facility wastewater through underground sewage pipes. Materials may also be trucked or transferred via other direct methods to a POTW.

If a facility does not discharge or otherwise transfer wastewater containing the reported TRI-listed chemical to a POTW, check "**NA**" in Section 6.1. (See discussion of NA vs. a Numeric Value (e.g., Zero) in the introduction of Section 6).

6.1 Column A: Quantity Transferred to this POTW

Enter the total amount, in pounds, of the reported TRI-listed chemical in the wastewaters transferred to each POTW. Do not enter the total weight of the wastewaters. If the total amount transferred is less than 1,000 pounds, a facility may report a range by entering the appropriate range code (range reporting in Section 6.1.A. does not apply to chemicals of special concern). Use the following reporting range codes:

Code	Reporting Range (in pounds)
A	1-10
B	11-499
C	500-999

If a range code is entered in column A, some TRI data tools will display the midpoint of the range (i.e., 5, 250, or 750 lb).

If a facility discharges or otherwise transfers the TRI-listed chemical in wastewater to an off-site POTW for further waste management, the facility must report POTW waste management activities for each off-site POTW, along with the quantity of the reported TRI-listed chemical associated with each waste management activity. These quantities and their associated waste management activity codes must be reported separately in Section 6.1.

For example, if a facility transferred 100 lb of a chemical to a POTW, of which 30 lb were released to air, 40 lb were disposed of as sludge, and 30 lb were transformed into sludge and incinerated, the facility would report three separate lines using P codes P32, P33, and P38, respectively, with the corresponding quantities and basis of estimate(s).

EPA provides default POTW distribution rate percentages and assumptions for TRI-listed chemicals to help report this data element at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#potw_percentages. If a facility has more accurate and/or more representative information or data on the final disposition of the chemical transferred to the POTW, that information may be used instead. If a reported TRI-listed chemical is sent to an off-site POTW for sequential activities, report the final waste management disposition of the chemical.

6.1 Column B: Basis of Estimate

Facilities must identify the basis of estimate for the quantities of the reported TRI-listed chemical in the wastewater transferred to each POTW. Select the method by which the largest percentage of the estimate was derived.

C Mass Balance. Estimate is based on mass balance calculations, such as calculation of the amount of the TRI-listed chemical in streams entering and leaving process equipment.

E1 Emission Factor, Published. Estimate is based on published emissions factors, such as those relating release quantity to throughput or equipment type (e.g., air emissions factors). This may include emissions factors in a trade association's publication or AP-42.

E2 Emission Factor, Site-specific. Estimate is based on site-specific emissions factors, such as those relating release quantity to throughput or equipment type (e.g., air emissions factors). This may include emissions factors developed for a specific piece of equipment and that consider climate conditions on-site.

M1 Monitoring, Continuous. Estimate is based on continuous monitoring data or measurements for the TRI-listed chemical.

M2 Monitoring, Periodic/Random. Estimate is based on periodic or random monitoring data or measurements for the TRI-listed chemical.

O Other. Estimate is based on other approaches such as engineering calculations (e.g., estimating volatilization using published mathematical formulas) or best engineering judgment. This includes applying estimated removal efficiency to a waste stream, even if the composition of the stream before treatment was fully identified through monitoring data.

6.1 Column C: Disposal/Treatment

Enter one of the below P codes to identify the type of disposal or treatment method used by the POTW for the reported TRI-listed chemical. Report separate P codes and transfer quantities for a single location when distinct quantities of the reported TRI-listed chemical are subject to different waste management activities. Use the P code that best represents the ultimate waste management disposition of the chemical.

Metals and Metal Category Compounds

The transfer and release quantities reported for a metal category compound are the total amount of the parent metal transferred or released, not the quantities of the entire metal category compound. The parent metal cannot be treated because it cannot be destroyed. Thus, transfers of metals and metal category compounds for further waste management should be reported as a disposal. The applicable P codes for transfers of metals and metal category compounds in wastewater to a POTW for disposal include P30, P31, P32, P33, P34, P35, and P36.

Applicable codes for Part II, Section 6.1, column C are:

Disposal Codes:

P30 Discharged to Water Stream
P31 Discharged to Other Activities
P32 Released to Air
P33 Sludge to Disposal
P34 Metals and Metal Compounds Only – Sludge to Incineration
P35 Sludge to Agricultural Applications
P36 Other or Unknown Disposal

Treatment Codes:

P37 Other or Unknown Treatment
P38 Sludge to Incineration
P39 Experimental and Estimated Treatment Data (TRI provided)

Facilities should provide the ultimate waste management disposition of toxic chemicals at POTWs. For example, if the toxic chemical is:

- in the POTW's effluent and is discharged to surface waters/water stream – use P30
- discharged to other activities such as watering golf courses, agricultural land, etc. – use P31
- released to air – use P32
- in the POTW's sludge and disposed via landfill disposal or land application – use P33
- incinerated – use P38 (P34 for metals and metal compounds)
- disposed via agricultural applications or other activities – use P35

If facilities do not have specific information about the fate of chemicals transferred to a POTW, use P36 and/or P37. If using a treatment rate provided by TRI, use P39. (Default POTW distribution percentages and assumptions for toxic chemicals sent to POTWs that are based on data compiled by EPA are provided at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#potw_percentages). P39 is also used for chemicals for which default POTW distribution percentages are not provided by TRI, when the default assumption is used that 100% of the chemical sent to the POTW is treated for destruction (except for metals and PFAS, for which the default assumption is that 100% of the chemical is released, in which cases use P36 for metals and P30 for PFAS). If the facility has better information on the final waste management disposition of the chemical readily available, use that information instead.

TRI-MEweb completes this section when the facility lacks data on the ultimate waste management disposition of a chemical transferred to a POTW by applying default distribution percentages and assumptions to chemical quantities transferred to a POTW.

6.2 Transfers to Other Off-Site Locations

In Section 6.2, facilities using TRI-MEweb can click "**Add a New Location**" to search by location or RCRA ID for off-site transfer locations to which the facility ships or transfers wastes containing the reported TRI-listed chemical for the purposes of disposal, treatment, energy recovery, or recycling. If the receiving off-site location cannot be identified using the search or is a non-U.S. transfer, click "**Enter New Location**" to manually enter the receiving off-site location's name and address. Enter the address of the actual physical location of the receiving off-site location (i.e., not a PO Box). Also indicate if the receiving location is under control of the reporting facility or parent company.

In general, a RCRA ID Number (also called an EPA Identification Number) will commonly be found on the Uniform Hazardous Waste Manifest, which RCRA regulations require for transferring hazardous wastes. An off-site transfer of non-hazardous waste containing a TRI chemical may be received by a facility with a RCRA ID. If the receiving facility's RCRA ID is known, even if it is not associated with the waste transfer being initiated, it should be provided in Section 6.2. The purpose of the RCRA ID number is for identification of the off-site transfer facility in addition to indicating a hazardous waste transfer. If wastes containing a TRI-listed chemical were shipped or transferred and the off-site location does not have an EPA Identification Number, enter "**NA**" for the off-site location RCRA ID Number.

Specifically for other off-site transfers, facilities must also report the type of disposal, treatment, energy recovery, or recycling methods used by the off-site location for the reported TRI-listed chemical (see Section 6.2 Column C). If appropriate, report multiple activities for each off-site location. For example, if a facility sends a reported TRI-listed chemical in a single waste stream to an off-site location where some of the chemical is recycled while the remainder of the quantity transferred is treated, the facility must report separate waste treatment and recycling activity codes, along with the quantity associated with each waste management activity.

If a facility transfers a TRI-listed chemical to an off-site location and that off-site location performs more than four activities on that chemical, multiple transfers may be listed by clicking "**+ Add Transfer.**"

If a facility does not ship or transfer wastes containing the TRI-listed chemical to other off-site locations, check "**Not Applicable**" in Section 6.2, "Transfers to Other Off-Site Locations."

If a facility ships or transfers the reported TRI-listed chemical in wastes to another country, check "**Not Applicable**" for the RCRA ID field. Select the non-U.S. transfer location checkbox when adding a new off-site transfer site located outside the borders of the United States in Section 6.2. Enter the location information for the non-U.S. facility including: location name, address, city, province, country, and postal code.

6.2[ ] Column A: Total Transfers

For each off-site location, enter the total amount, in pounds (in grams for dioxin and dioxin-like compounds), of the TRI-listed chemical contained in the waste transferred to that location. Do not enter the total quantities of the waste containing the chemical.

If the total amount transferred is less than 1,000 pounds, report a range by selecting the appropriate range code (range reporting in Section 6.2 does not apply to chemicals of special concern). The reporting range codes are:

Code	Reporting Range (in pounds)
A	1-10
B	11-499
C	500-999

If a range code is used in column A, some TRI data tools available to the public will display the midpoint of the range (i.e., 5, 250, or 750 lbs).

If a facility transfers the TRI-listed chemical in wastes to an off-site facility for distinct and multiple purposes, report those activities for each off-site location separately, along with the quantity of the reported TRI-listed chemical associated with each waste management activity. For example, a facility transfers a total of 15,000 pounds of toluene to an off-site location that uses 5,000 pounds for energy recovery, enters 7,500 pounds into a recovery process, and disposes of the remaining 2,500 pounds. Report quantities and the associated waste management activity codes separately in Section 6.2. (See Example 23 for a hypothetical Section 6.2 completed for two off-site locations, one of which receives the transfer of 15,000 pounds of toluene as detailed.)

If a reported TRI-listed chemical is sent to an off-site facility for sequential activities, report the final waste management disposition of the chemical.

Summary of Residue Quantities From Pilot-Scale Experimental Study
(weight percent of drum capacity)

Unloading Method		Value	Material			
			Kerosene[a]	Water[b]	Motor Oil[c]	Surfactant Solution[d]
Pumping	Steel drum	Range Mean	1.93 - 3.08 2.48	1.84 - 2.61 2.29	1.97 - 2.23 2.06	3.06 3.06
Pumping	Plastic drum	Range Mean	1.69 - 4.08 2.61	2.54 - 4.67 3.28	1.70 - 3.48 2.30	Not Available
Pouring	Bung-top steel drum	Range Mean	0.244 - 0.472 0.404	0.266 - 0.458 0.403	0.677 - 0.787 0.737	0.485 0.485
Pouring	Open-top steel drum	Range Mean	0.032 - 0.080 0.054	0.026 - 0.039 0.034	0.328 - 0.368 0.350	0.089 0.089
Gravity Drain	Slope-bottom steel tank	Range Mean	0.020 - 0.039 0.033	0.016 - 0.024 0.019	0.100 - 0.121 0.111	0.048 0.048
Gravity Drain	Dish-bottom steel tank	Range Mean	0.031 - 0.042 0.038	0.033 - 0.034 0.034	0.133 - 0.191 0.161	0.058 0.058

Gravity Drain	Dish-bottom glass-lined tank	Range Mean	0.024 - 0.049 0.040	0.020 - 0.040 0.033	0.112 - 0.134 0.127	0.040 0.040

Source: From "Releases During Cleaning of Equipment." Prepared by PEI Associates, Inc., for the U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, Washington DC, Contract No. 68-02-4248. June 30, 1988.
Note: The values listed in this table should only be applied to similar vessel types, unloading methods, and bulk fluid materials. At viscosities greater than 200 centipoise, the residue quantities can rise dramatically and the information on this table is not applicable.
[a] For kerosene, viscosity = 5 centipoise, surface tension = 29.3 dynes/cm^2
[b] For water, viscosity = 4 centipoise, surface tension = 77.3 dynes/cm^2
[c] For motor oil, viscosity = 94 centipoise, surface tension = 34.5 dynes/cm^2
[d] For surfactant solution, viscosity = 3 centipoise, surface tension = 31.4 dynes/cm^2

Example 21: Container Residue

A facility has determined that a Form R for a TRI-listed chemical must be submitted. The facility purchases and uses one-thousand 55-gallon steel drums that contain a 10% solution of the chemical. Further, it is assumed that the physical properties of the solution are similar to water. The solution is pumped from the drums directly into a mixing vessel and the "empty" drums are triple-rinsed with water. The rinse water is indirectly discharged to a POTW, and the cleaned drums are sent to a drum reclaimer.

In this example, it can be assumed that all residual solution in the drums was transferred to the rinse water. Therefore, the quantity transferred to the drum reclaimer should be reported as "zero." The annual quantity of residual solution transferred to the rinse water can be estimated by multiplying the mean weight percent of residual solution remaining in water from pumping a steel drum (2.29% from the preceding table, "Summary of Residue Quantities From Pilot-Scale Experimental Study") by the total annual weight of solution in the drum (density of solution multiplied by drum volume). If the density is not known, it may be appropriate to use the density of water (8.34 pounds per gallon):

(2.29%) × (8.34 pounds/gallon) × (55 gallons/drum) × (1,000 drums) = 10,504 pounds of solution

The concentration of the TRI-listed chemical in the solution is only 10%.

(10,504 pounds solution) × (10%) = 1,050 pounds

Therefore, 1,050 pounds of the chemical are transferred to the POTW.

6.2[ ] Column B: Basis of Estimate

Facilities must identify the basis of estimate for the quantities of the reported TRI-listed chemical in waste transferred to each off-site location. Select one of the following codes that applies to the method by which the largest percentage of the estimate was derived.

C Mass Balance. Estimate is based on mass balance calculations, such as calculation of the amount of the TRI-listed chemical in streams entering and leaving process equipment.

E1 Emission Factor, Published. Estimate is based on published emissions factors, such as those relating release quantity to throughput or equipment type (e.g., air emissions factors). This may include emissions factors in a trade association's publication or AP-42.

E2 Emission Factor, Site-specific. Estimate is based on site-specific emissions factors, such as those relating release quantity to throughput or equipment type (e.g., air emissions factors).

M1 Monitoring, Continuous. Estimate is based on continuous monitoring data or measurements for the TRI-listed chemical.

M2 Monitoring, Periodic/Random. Estimate is based on periodic or random monitoring data or measurements for the TRI-listed chemical.

O Other. Estimate is based on other approaches such as engineering calculations (e.g., estimating volatilization using published mathematical formulas) or best engineering judgment. This would include applying an estimated removal efficiency to a waste stream, even if the composition of the stream before treatment was fully identified through monitoring data.

6.2[ ] Column C: Type of Waste Management: Disposal/Treatment/Energy Recovery/ Recycling

Select one of the following M codes to identify the type of disposal, treatment, energy recovery, or recycling methods used by the off-site location for the reported TRI-listed chemical. Use separate transfers and codes for a single location when

distinct quantities of the reported TRI-listed chemical are subject to different waste management activities, including disposal, treatment, energy recovery, or recycling. Use the code that represents the ultimate waste management disposition of the chemical.

Reuse vs. Recycling

If the TRI-listed chemical is sent off-site for further direct reuse (e.g., a chemical in used solvent that another facility will use as a lubricant) without any reclamation or recovery step prior to that reuse, the chemical is considered reused rather than recycled and is not reported in Section 6.2 or Section 8. If the chemical waste is reused off-site, consider providing optional details in Section 8.11 under general environmental management.

If waste containing the TRI-listed chemical is sent off-site for recovery at the receiving facility before reuse at the receiving facility or elsewhere in commerce, the chemical is considered recycled and is reported as off-site recycling in Section 6.2 and Section 8. Recovery would not include simple phase changing of the chemical before reuse (e.g., simple remelting of scrap metal). Recovery would include changing the relative amounts of the chemicals in an alloy (which may occur when mixed scrap metal is melted together). Examples of recovery processes include distillation, filtration, and mechanical or physical separation.

Incineration vs. Energy Recovery

Facilities must distinguish between incineration, which is waste treatment, and legitimate energy recovery. To claim that a reported TRI-listed chemical sent off-site is used for the purposes of energy recovery and not for treatment for destruction, the chemical must have a significant heating value and be combusted in an energy recovery unit such as an industrial boiler, furnace, or kiln. If the reported chemical is in a waste that is combusted in an energy recovery unit, but the chemical does not have a significant heating value (e.g., chlorofluorocarbons (CFCs)) use code M54, Incineration/Insignificant Fuel Value, to indicate that the chemical was incinerated in an energy recovery unit but does not contribute to the heating value of the waste.

Metals and Metal Category Compounds

Metals and metal category compounds are managed in waste either by being released (including disposed of) or by being recycled. The release and other waste management information reported for metal category compounds is the total amount of the parent metal released or recycled, not the entire metal compound category. The metal has no heat value, so it cannot be combusted for energy recovery and cannot be treated because it cannot be destroyed. Thus, transfers of metals and metal category compounds for further waste management should be reported as either transfers for recycling or transfers for disposal. The applicable waste management codes for transfers of metals and metal category compounds for recycling are M24 (metals recovery), M93 (waste broker – recycling), and M26 (other reuse/recovery). Applicable codes for transfers for disposal include M10, M41, M62, M64, M65, M66, M67, M73, M79, M81, M82, M90, M94, and M99. These codes are for off-site transfers for further waste management in which the waste stream may be treated but the metal contained in the waste stream is not treated and is ultimately released. For example, M41 is for a metal or metal category compound that is stabilized in preparation for disposal.

Applicable codes for Part II, Section 6.2, Column C are:

<u>Disposal</u>

M10	Storage Only
M41	Solidification/Stabilization - Metals and Metal Category Compounds only
M62	Wastewater Treatment (Excluding POTW) - Metals and Metal Category Compounds only
M64	Other Landfills
M65	RCRA Subtitle C Landfills
M66	RCRA Subtitle C Surface Impoundments
M67	Other Surface Impoundments
M73	Land Treatment
M79	Other Land Disposal
M81	Underground Injection to Class I Wells
M82	Underground Injection to Class II-V Wells
M90	Other Off-Site Management

M94 Transfer to Waste Broker - Disposal
M99 Management Method Unknown

Treatment
M40 Solidification/Stabilization
M50 Incineration/Thermal Treatment
M54 Incineration/Insignificant Fuel Value
M61 Wastewater Treatment (Excluding POTW)
M69 Other Waste Treatment
M95 Transfer to Waste Broker - Waste Treatment

Energy Recovery
M56 Energy Recovery
M92 Transfer to Waste Broker - Energy Recovery

Recycling
M20 Solvents/Organics Recovery
M24 Metals Recovery – Metals and Metal Category Compounds only
M26 Other Reuse or Recovery
M28 Acid Regeneration
M93 Transfer to Waste Broker - Recycling

Example 22: Reporting Metals and Metal Category Compounds Sent Off-Site

A facility manufactures a product containing elemental copper, exceeding the processing threshold for copper. Various metal fabrication operations for the process produce a wastewater stream that contains some residual copper and off-specification copper material.

- Transfer to POTW: The wastewater is collected and sent directly to a POTW. Periodic monitoring data show that 500 pounds of copper was transferred to the POTW in the reporting year. The POTW eventually releases the chemicals to a stream. The facility must report 500 pounds in Sections 6.1 (P30) and 8.1d for transfers to a POTW.
- Transfer to other off-site locations: The off-specification products (containing copper) are collected and sent off-site to a RCRA Subtitle C landfill. Sampling analyses of the product combined with hazardous waste manifests indicate that 1,200 pounds of copper in the off-spec product were sent to the off-site landfill. The facility reports 1,200 pounds in Sections 6.2 (waste code M65 (RCRA Subtitle C Landfill)) and 8.1c for transfers for disposal.

For TRI-listed chemicals that are not metals or metal category compounds, the quantity sent for treatment at POTWs and to other off-site treatment locations must be reported in Section 8.7 (Quantity Treated Off-Site). However, if a facility knows that some or all of the chemical is not treated for destruction at the off-site location, report that quantity in Section 8.1.

Example 23: Reporting Chemicals Sent Off-site for Waste Management

A facility transfers chemical waste to two off-site locations. 15,000 pounds of toluene are sent to Acme Waste Services, of which 5,000 pounds will be combusted for the purposes of energy recovery (code M56), 7,500 pounds will enter into a recovery process (code M20), and 2,500 pounds will be disposed (code M65). The facility also transfers 12,500 pounds of toluene that is part of a waste to Combustion, Inc., where it is combusted for energy recovery in an industrial furnace (code M54).

The top image represents the first transfer as reported in Part II, Section 6.2 of the TRI Form R.

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS NA ☐								
6.2. 1 Off-Site EPA Identification Number (RCRA ID No.)	COD56616246							
Off-Site Location Name:	Acme Waste Services							
Off-Site Address:	5 Market Street							
City	Anywhere	County	Hill	State	CO	ZIP	80461	Country (non-US)
Is this location under control of reporting facility or parent company? ☐ Yes ☑ No								

SECTION 6.2. TRANSFERS TO OTHER OFF-SITE LOCATION (CONTINUED)		
A. Total Transfer (pounds/year*) (Enter a range code** or estimate)	**B. Basis of Estimate** (Enter code)	**C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery** (Enter code)
1. 5,000	1. O	1. M 56
2. 7,500	2. C	2. M 20
3. 2,500	3. O	3. M 65

The bottom image represents the second transfer as reported in Part II, Section 6.2 of the TRI Form R.

6.2 2 Off-Site EPA Identification Number (RCRA ID No.)	COD16772543							
Off-Site Location Name:	Combustion, Inc.							
Off-Site Address:	25 Facility Road							
City	Dumfry	County	Burns	State	CO	ZIP	80500	Country (non-US)
Is this location under control of reporting facility or parent company? ☐ Yes ☑ No								

A. Total Transfer (pounds/year*) (Enter a range code** or estimate)	**B. Basis of Estimate** (Enter code)	**C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery** (Enter code)
1. 12,500	1. O	1. M 54
2. NA	2.	2. M
3.	3.	3. M

Section 7. On-Site Waste Treatment, Energy Recovery, and Recycling Methods (Form R)

Report in this section the methods of waste treatment, energy recovery, and recycling applied on-site to the reported TRI-listed chemical in wastes. Three separate sections are provided for reporting such activities.

Section 7A: On-Site Waste Treatment Methods and Efficiency

Most of the chemical-specific information required by EPCRA Section 313 that is reported on Form R is specific to the TRI-listed chemical rather than the waste stream containing the chemical. However, EPCRA Section 313 does require reporting of waste treatment methods applied on-site to waste streams that contain the TRI-listed chemical. This information is reportable whether the facility actively applies treatment or the waste stream is treated passively. For example, methods include pollution control equipment used to remove TRI-listed chemicals from waste streams as well as those used to destroy TRI-listed chemicals in waste streams. This information is collected in Section 7A of Form R.

In Section 7A, provide the following information if waste streams containing the reported TRI-listed chemical are treated on-site, regardless of whether the TRI-listed chemical is also treated or removed during that process:

(a) The general waste stream types containing the chemical being reported;
(b) The waste treatment method(s) or sequence used on all waste streams containing the chemical; and
(c) The efficiency of each waste treatment method or waste treatment sequence in destroying or removing the chemical.

When entering on-site treatment data in TRI-MEweb, use a separate waste treatment profile in Section 7A for each general waste stream type. Enter a name for the profile and provide details including the general waste stream type, all waste treatment methods associated with that stream entered in sequence, and the waste treatment efficiency code for the profile. Enter any additional waste treatment profiles as appropriate. Each waste treatment profile generated for a facility is available to be used for other Forms R from the same facility for the same reporting year. Report only information about treatment of waste streams at the facility, not information about off-site waste treatment. The quantity of the TRI chemical treated for destruction on-site for the current reporting year is entered only in Section 8.6. Report any quantities of the TRI-listed chemical simply removed from the waste stream, rather than destroyed, based on the final disposition of the chemical.

Facilities may provide optional information to describe the on-site waste treatment processes. Any information reported will display in Section 8.11.

If a facility does not perform on-site treatment of waste streams containing the reported TRI-listed chemical, check "**Not Applicable**" for Section 7A.

7A Column a: General Waste Stream

For each waste treatment method, indicate the type of waste stream containing the TRI-listed chemical that is treated. Select the letter code corresponding to the general waste stream type:

Waste Stream Type

A	Gaseous (gases, vapors, airborne particulates)
W	Wastewater (aqueous waste)
L	Liquid waste streams (non-aqueous waste)
S	Solid waste streams (including sludges and slurries)

If a waste is a combination of water and organic liquid and the organic content is less than 50%, report it as a wastewater (W). Report slurries and sludges containing water as solid waste if they contain appreciable amounts of dissolved solids, or solids that may settle, such that the viscosity or density of the waste is considerably different from that of process wastewater.

7A Column b: Waste Treatment Method(s) Sequence

Select the appropriate waste treatment code for each on-site waste treatment method used on a

waste stream containing the TRI-listed chemical, regardless of whether the waste treatment method removes the chemical being reported. Waste treatment methods must be reported for each type of waste stream being treated (i.e., gaseous waste streams, aqueous waste streams, liquid non-aqueous waste streams, and solids). Except for the air emission treatment codes, the waste treatment codes are not restricted to any medium.

Waste streams containing the TRI-listed chemical may have a single source or may be aggregates of many sources. For example, process water from several pieces of equipment at a facility may be combined prior to waste treatment. Report waste treatment methods that apply to both aggregate waste streams and to individual waste streams. If a facility treats various wastewater streams containing the TRI-listed chemical in different ways, the different waste treatment methods must be listed separately.

If a facility has several pieces of equipment performing a similar service in a waste treatment sequence, the reporting for such equipment may be combined. For example, if four scrubber units treat waste streams of similar character (e.g., sulfuric acid mist emissions), have similar influent concentrations, and have similar removal efficiencies, one code may be used. If, however, any of these parameters differs from one unit to the next, each scrubber should be listed separately.

Applicable codes for Part II, Section 7A, column B are:

Air Emissions Treatment

A01 Flare
A02 Condenser
A03 Scrubber
A04 Absorber
A05 Electrostatic Precipitator
A06 Mechanical Separation
A07 Other Air Emission Treatment

Chemical Treatment

H040 Incineration--thermal destruction other than use as a fuel
H071 Chemical reduction with or without precipitation
H073 Cyanide destruction with or without precipitation
H075 Chemical oxidation
H076 Wet air oxidation
H077 Other chemical precipitation with or without pre-treatment

Biological Treatment

H081 Biological treatment with or without precipitation

Physical Treatment

H082 Adsorption
H083 Air or steam stripping
H101 Sludge treatment and/or dewatering
H103 Absorption
H111 Stabilization or chemical fixation prior to disposal
H112 Macro-encapsulation prior to disposal
H121 Neutralization
H122 Evaporation
H123 Settling or clarification
H124 Phase separation
H129 Other treatment

Example 24: Calculating Releases and Other Waste Management Quantities

A facility disposes of 14,000 pounds of lead chromate ($PbCrO_4 \times PbO$) in an on-site landfill and transfers 16,000 pounds of lead selenite ($PbSeO_4$) to an off-site land disposal facility. The facility would submit three separate reports on the following: lead compounds, selenium compounds, and chromium compounds. The quantities reported, however, would be the pounds of "parent" metal being released on-site or transferred off-site for further waste management. All quantities are based on mass balance calculations (See Section 5, Column B, for information on Basis of Estimate and Section 6.2, Column C, for waste management codes and information on transfers of TRI-listed chemicals in wastes). The facility would calculate releases of lead, chromium, and selenium by first determining the percentage by weight of these metals in the materials used as follows:

Lead Chromate ($PbCrO_4 \times PbO$)	Molecular weight = 546.37
Lead (2 Pb atoms)	Atomic weight = 207.2 × 2 = 414.4
Chromium (1 Cr atom)	Atomic weight = 51.996
Lead chromate is therefore (percent by weight):	
	(414.4/546.37) = 75.85% lead
	(51.996/546.37) = 9.52% chromium
Lead Selenite ($PbSeO_4$)	Molecular weight = 350.17
Lead (1 Pb atom)	Atomic weight = 207.2
Selenium (1 Se atom)	Atomic weight = 78.96
Lead selenite is therefore (percent by weight):	
	(207.2/350.17) = 59.17% lead
	(78.96/350.17) = 22.55% selenium

The total pounds of lead, chromium, and selenium disposed of on- or off-site from the facility are as follows:

Lead	
Disposal on-site:	0.7585 × 14,000 = 10,619 pounds from lead chromate
Transfer off-site for disposal:	0.5917 × 16,000 = 9,467 pounds from lead selenite
Chromium	
Disposal on-site:	0.0952 × 14,000 = 1,333 pounds from lead chromate
Selenium	
Transfer off-site for disposal:	0.2255 × 16,000 = 3,608 pounds from lead selenite

7A Column C: Waste Treatment Efficiency Estimate

Select the range code, indicating the percentage of the TRI-listed chemical removed from the waste stream through destruction, biological degradation, chemical conversion, or physical removal. The waste treatment efficiency represents the percentage of the TRI-listed chemical destroyed or removed (based on amount or mass), not merely changes in volume or concentration of the TRI-listed chemical in the waste stream. The waste treatment efficiency does not refer to the general efficiency of the treatment method for any waste stream. For some waste treatment methods, the percent removal will represent removal by several mechanisms, as in an aeration basin, where a TRI-listed chemical may evaporate, biodegrade, or be physically removed from the sludge.

Calculate percent removal as follows:

Equation 4

$$\frac{(I - E)}{I} \times 100\%$$

where:

I = amount of the TRI-listed chemical in the influent waste stream (entering the waste treatment step or sequence) and

E = amount of the TRI-listed chemical in the effluent waste stream (exiting the waste treatment step or sequence).

Calculate the amount of the TRI-listed chemical in the influent waste stream by multiplying the concentration (by weight) of the TRI-listed chemical in the waste stream by the total amount or weight of the waste stream. In most cases, the percent removal compares the treated effluent to the influent for the particular type of waste stream. For solidification of wastewater, the waste treatment efficiency can be reported as code E1 (greater than 99.9999%) if no volatile TRI-listed chemicals were removed with the water or evaporated into the air. Percent removal does not apply to incineration because the waste stream, such as wastewater or liquids, may not exist in a comparable form after waste treatment and the purpose of incineration as a waste treatment is to destroy the TRI-listed chemical by converting it to carbon dioxide and water or other byproducts. In cases in which the TRI-listed chemical is incinerated, the percent efficiency must be based on the amount of the TRI-listed chemical destroyed or combusted, except for metals or metal category compounds. In cases in which a metal or metal category compound is incinerated, the efficiency is reported as code E6 (equal to or greater than 0%, but less than or equal to 50%).

Similarly, an efficiency of zero must be reported for any waste treatment method(s) that do not destroy, chemically convert, or physically remove the TRI-listed chemical from the waste stream.

For metal category compounds, the calculation of the reportable concentration and waste treatment efficiency must be based on the weight of the parent metal, not on the weight of the metal compound. Metals are not destroyed, only physically removed or chemically converted from one form into another. The waste treatment efficiency reported must represent only physical removal of the parent metal from the waste stream (except for incineration), not the percent chemical conversion of the metal compound. If a listed waste treatment method converts but does not remove a metal (e.g., chromium reduction), the method must be reported with a waste treatment efficiency of code E6 (equal to or greater than 0%, but less than or equal to 50%).

TRI-listed chemicals that are strong mineral acids neutralized to a pH of 6 or above are considered treated at 100% efficiency.

When calculating waste treatment efficiency, EPCRA Section 313(g)(2) requires a facility to use readily available data (including monitoring data) collected pursuant to other provisions of law, or, where such data are not readily available, "reasonable estimates" of the amounts involved.

Waste Treatment Efficiency Range Codes

E1	greater than 99.9999%
E2	greater than 99.99%, but less than or equal to 99.9999%
E3	greater than 99%, but less than or equal to 99.99%
E4	greater than 95%, but less than or equal to 99%
E5	greater than 50%, but less than or equal to 95%

E6 equal to or greater than 0%, but less than or equal to 50%

Section 7B: On-Site Energy Recovery Processes

In Section 7B, indicate the on-site energy recovery methods used on the reported TRI-listed chemical.

EPA considers a TRI-listed chemical to be combusted for energy recovery if the toxic chemical has a significant heat value and is combusted in an energy recovery device. If a reported TRI-listed chemical is incinerated on-site but does not contribute energy to the process (e.g., chlorofluorocarbons (CFCs)), it must be considered waste treated on-site and reported in Section 8.6. Metals and metal category compounds cannot be combusted for energy recovery and should not be reported in this section. Do not include the combustion of fuel oils, such as fuel oil #6, in this section. Energy recovery may take place only in an industrial kiln, furnace, or boiler.

NA vs. a Numerical Value (e.g., Zero). If the facility does not perform on-site energy recovery for a waste stream that contains or contained the TRI-listed chemical, check "**Not Applicable**" box at the top of Section 7B. If a facility performs on-site energy recovery for the waste stream that contains or contained the TRI-listed chemical, enter the appropriate code and quantity used for energy recovery. If this quantity is less than or equal to 0.5 pounds, round to zero (unless the chemical is classified as a chemical of special concern) and enter 0 (zero). (Note: for metals and metal compounds, report "Not Applicable" in Section 7B and Section 8.2.)

Energy Recovery Codes

U01 Industrial Kiln
U02 Industrial Furnace
U03 Industrial Boiler

If a facility uses more than one on-site energy recovery method for the reported TRI-listed chemical, list the methods used in descending order (greatest to least) based on the amount of the TRI-listed chemical entering such methods.

Both routine energy recovery quantities and accidental or non-routine energy recovery associated with, for example, chemical spills or unplanned shutdowns must be included in the estimate of total on-site energy recovery quantity. TRI-MEweb will also simultaneously collect the total quantity used for energy recovery on-site for the chemical (see Section 8.2). Facilities may provide optional information to describe on-site energy recovery processes. Any information reported will display in Section 8.11.

Section 7C: On-Site Recycling Processes

In Section 7C, report the recycling methods used on-site to recover the EPCRA Section 313 chemical.

In summary, recycling is the recovery for reuse of a toxic chemical from a gaseous, aerosol, aqueous, liquid, or solid stream. For more information on recycling, direct reuse, and other related topics, see the Interpretations of Waste Management Activities guidance document available in GuideME at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:waste_management.

EPA considers direct recirculation of a chemical within a process or between processes without any reclamation to be "reuse" rather than "recycling" of the toxic chemical. Quantities directly reused are not reported in Section 7C.

Examples of reuse versus recycling are provided in Example 25.

In this section, select codes to report only the recycling methods in place that are applied to the chemical. Do not list in Section 7C any methods used off-site if the chemical was transferred to another facility to be recycled. Information about off-site recycling must be reported in Part II, Section 6, "Transfers of the Toxic Chemical in Wastes to Off-site Locations."

For on-site recycling methods, report the total quantity of the chemical recycled on-site during the reporting year. Both routine recycling quantities and accidental or non-routine recycling associated with, for example, chemical spills or unplanned shutdowns must be included in the estimate of total on-site recycling quantity. If the chemical is recycled

multiple times during the year, provide the sum of the quantities recycled each time recycling occurs. See Example 28 for how to report recycling quantities. TRI-MEweb will populate Section 8.4 with the quantity reported in Section 7C.

NA vs. a Numerical Value (e.g., Zero). If a facility does not perform recycling on-site for the reported TRI-listed chemical, check "**Not Applicable"** at the top of Section 7C. If a facility performs on-site recycling for the reported TRI-listed chemical, enter the appropriate code for the quantity recycled. If this quantity is less than or equal to 0.5 pounds, round to zero (unless the chemical is classified as a chemical of special concern) and enter 0 (zero).

On-Site Recycling Codes

H10 Metal recovery (by retorting, smelting, or chemical or physical extraction) – Metals and Metal Category Compounds only

H20 Solvent recovery (including distillation, evaporation, fractionation, or extraction)

H39 Other recovery or reclamation for reuse (including acid regeneration or other chemical reaction process)

If a facility uses more than one on-site recycling method for a TRI-listed chemical, enter the codes in the space provided in descending order (greatest to least) based on the volume of the reported TRI-listed chemical recovered by each process.

For multiple on-site recycling activities and associated quantities reported in Section 7C, TRI-MEweb will generate the total quantity recycled on-site for the current reporting year for this chemical (see Section 8.4). Facilities may provide optional information to describe the on-site recycling processes. Any information reported will display in Section 8.11.

Example 25: Examples of Reuse versus Recycling

Scenario 1. Ethylene glycol is used in aqueous solution in a coolant system within a combustion engine. The ethylene glycol solution continuously circulates through the engine while the engine is operating.

- Due to the continuous circulation, there is no recovery step, and the ethylene glycol is considered directly reused and **not** recycled each time the solution circulates through the engine.
- If the spent aqueous solution containing ethylene glycol is drained from the engine, and distillation or some other process is used to remove the ethylene glycol from the spent aqueous solution, and the ethylene glycol is then incorporated to make a new aqueous solution or used for some other purpose, the ethylene glycol has been recycled for TRI reporting purposes.

Scenario 2. *n*-Hexane is used as a solvent by oilseed processing facilities to extract oil and other raw ingredients from soybeans. During this extraction process, *n*-hexane is often recirculated without any recovery steps. Such recirculation constitutes direct reuse and is not recycling for TRI reporting purposes.

- Following completion of the extraction process, *n*-hexane is typically evaporated from the oil/hexane mixture and then condensed to recover *n*-hexane. This *n*-hexane is then returned to the extraction process or used for another purpose. Such recovery for reuse is considered recycling for TRI reporting purposes.

Example 26: On-Site Waste Treatment

A process at the facility generates a wastewater stream containing a TRI-listed chemical (chemical A). A second process generates a wastewater stream containing two TRI-listed chemicals, a metal (chemical B) and a mineral acid (chemical C). The facility exceeded thresholds for all three chemicals.

These two wastewater streams are combined and sent to an on-site wastewater treatment system before being discharged to a POTW. This system consists of an oil/water separator that removes 99% of chemical A; a neutralization tank in which the pH is adjusted to 7.5, thereby destroying 100% of the mineral acid (chemical C); and a settling tank where 95% of the metal (chemical B) is removed from the water (and eventually landfilled off-site).

In the Form R, Section 7A should be completed slightly differently for each of the chemicals. The table below shows how Section 7A should be completed for each chemical.

- Treatment Profile: Specify a profile name that describes the waste stream. Once created, the profile is available for use in other forms during the same reporting year. For this example, "Wastewater" is used.
- General Waste Stream Code: On each Form R, identify the type of general waste stream, which in this case is the code "W - Wastewater (aqueous wastes)."
- Waste Treatment Method(s) Sequence: On each Form R, list the code for each treatment step applied in sequence to the entire waste stream, regardless of whether the operation affects the chemical for which the Form R is being completed. For instance, all three Form Rs should show three entries: "H124 - Phase separation," "H121 – Neutralization," and "H123 - Settling or clarification." The treatment sequence is not chemical specific and applies to the entire waste stream being treated.
- Waste Treatment Efficiency %: Select the efficiency range that applies to the entire system in destroying and/or removing the chemical for which Form R is being completed. Enter E4 when filing for chemical A, E5 for chemical B, and E1 for chemical C.

Form R	Treatment Profile	General Waste Stream Code	Waste Treatment Method(s) Sequence	Waste Treatment Efficiency %
Chemical A		W	1. H124	E4
			2. H121	
			3. H123	

Chemical B		W	1. H124	E5
			2. H121	
			3. H123	
Chemical C		W	1. H124	E1
			2. H121	
			3. H123	

The *quantity* removed and/or destroyed is not reported in Section 7, and the efficiency reported in Section 7A.1c refers to the amount of TRI-listed chemical destroyed *and/or removed* from the applicable waste stream. The amount destroyed should be reported in Section 8.6 (quantity treated on-site). For example, when completing the Form R for chemical B, report "NA" in Section 8.6 because the metal has been removed from the wastewater stream but not actually destroyed. The quantity of chemical B ultimately landfilled off-site should be reported in Sections 6.2 and 8.1c. However, when completing the Form R for chemical C, report the entire quantity in Section 8.6 because raising the pH to 7.5 will completely destroy the mineral acid.

Example 27: Reporting On-Site Energy Recovery

A waste stream generated by the facility contains, among other chemicals, toluene and Freon 113 (CFC-113). Threshold quantities are exceeded for both chemicals. The facility would, therefore, submit two separate Form R reports. This waste stream is sent to an on-site industrial furnace that uses the heat generated in a thermal hydrocarbon cracking process at the facility. Because toluene has a significant heat value (17,440 BTU/pound) and the energy is recovered in an industrial furnace, the code "U02 - Industrial Furnace" would be selected for the energy recovery method in Section 7B for the Form R submitted for toluene.

As Freon 113 (CFC-113) does not contribute any value for energy recovery purposes, however, the combustion of Freon 113 (CFC-113) in the industrial furnace is considered waste treatment, not energy recovery. The facility would report Freon 113 (CFC-113) as entering a waste treatment step (i.e., incineration) in Section 7A, column B. In Section 7B, the facility should report "NA."

Example 28: Reporting On-Site Recycling

A surface coating facility uses toluene, a TRI-listed chemical, as a solvent to clean paint guns. Once used, the toluene is recycled in a distillation unit that heats and separates toluene from solid paint waste. Between the efficiency of the distillation unit and evaporative losses, the facility recovers 80% of the toluene each time it is distilled, and it can be recycled up to four times before it becomes unusable.

During the reporting year, the facility used 20,000 pounds of virgin toluene. To determine the quantity of toluene recycled on-site during the reporting year, the facility considers the quantity of toluene each time it was recycled and reports the aggregate quantity.

The quantity of toluene recycled is calculated as the sum of the quantity recycled each of the four times that recycling occurred:

Recycling pass	Quantity of toluene entering the distillation unit	Quantity of toluene recycled at 80% efficiency
First	20,000 lb	20,000 lb × 80% = 16,000 lb
Second	16,000 lb	16,000 lb × 80% = 12,800 lb

Third	12,800 lb	12,800 lb × 80% = 10,240 lb
Fourth	10,240 lb	10,240 lb × 80% = 8,192 lb
Total quantity of toluene recycled = 47,232 lb		

In Section 7C of the Form R, the facility selects "H20 – Solvents/Organics Recovery" and enters 47,232 lb as the "Quantity Recycled On-site." TRI-MEweb will populate the quantity entered (47,232 lb) as the quantity recycled on-site in the current reporting year in Section 8.4. Note that the facility would also report any associated waste stream treatment information in Section 7A and any release or transfer information in Section(s) 5 and/or 6.

Section 8. Source Reduction and Waste Management (Form R)

This section includes the data elements mandated by Section 6607 of the Pollution Prevention Act of 1990 (PPA). The PPA calls for pollution to be prevented or reduced at the source whenever feasible and released to the environment only as a last resort, as shown in Figure 7.

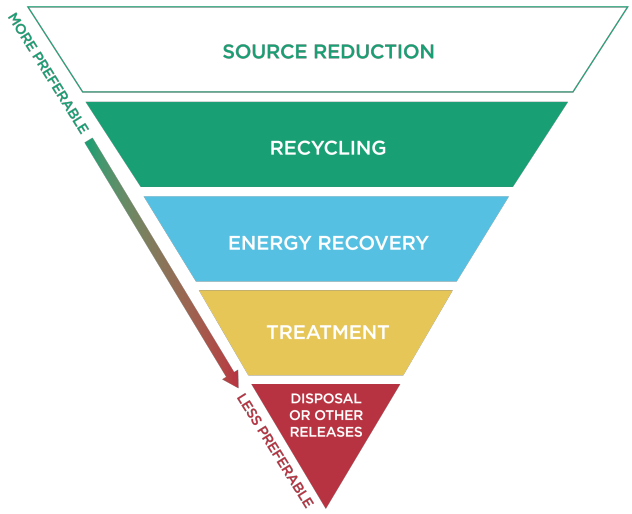


Figure 7. Waste Management Hierarchy

TRI collects information to track industry progress in reducing waste generation and moving toward safer waste management alternatives. Many facilities act to prevent pollution and reduce the amount of toxic chemicals entering the environment, and report their actions as required to TRI. As a result, TRI helps identify effective environmental practices and highlight pollution prevention successes.

Facilities must complete Sections 8.1 through 8.9 for each TRI-listed chemical they report. Complete Section 8.10 only if a source reduction activity was newly implemented specifically (in whole or in part) for the reported chemical. If applicable, in Section 8.10, provide information about source reduction activities to reduce or prevent the generation of waste, as well as reduce quantities of the TRI-listed chemicals managed as waste. Section 8.11 allows facilities to submit additional optional information at any time on source reduction or waste management methods, including recycling, as well as pollution control measures related to TRI-listed chemicals.

Sections 8.1 through 8.7 require reporting of production-related waste management quantities for the current reporting year, the prior year, and quantities anticipated (future estimates) in both the first and second years following the reporting year. Sections 8.2, 8.4, and 8.6 (related to on-site recycling, energy recovery, and treatment, respectively) also allow for reporting of non-production waste management quantities.

TRI-MEweb automatically populates current reporting year (column B) quantities based on the amounts reported in Sections 5, 6, and 7. Facilities should review the aggregated quantities for accuracy and edit values as necessary.

For prior year (column A), TRI-MEweb prepopulates the column if a facility reported the previous year. If better information has become available, revise the prior year report. For future year (columns C and D) estimates, provide reasonable future quantity estimates using a logical basis.

For all quantities reported in Section 8, provide estimates in pounds (or, for the dioxin and dioxin-like compounds category, in grams) for the reported chemical itself. Quantities should not include the weight of water, soil, or other waste constituents. When reporting metal category compounds, only report the amount of the metal content of the compound.

Accuracy of Estimated Quantities. Enter the values in Section 8 in pounds (or, for the dioxin and dioxin-like compounds category, grams). For TRI-listed chemicals not classified as chemicals of special concern, enter the values as whole numbers. For chemicals of special concern (except the dioxin and dioxin-like compounds category), report release and other waste management quantities greater than 0.1 pounds provided that the accuracy of the underlying data on which the estimate is based supports this level of precision.

For the dioxin and dioxin-like compounds category, report at a level of precision supported by the accuracy of the underlying data and the estimation techniques on which the estimate is based. The

smallest quantity that needs to be reported on the Form R for the dioxin and dioxin-like compounds category is 0.0001 grams (see Example 19). Despite the numeric precision used when determining reporting eligibility thresholds, facilities should report on Form R to the level of accuracy those data support, up to seven digits to the right of the decimal.

NA vs. a Numeric Value (e.g., Zero). TRI-MEweb automatically populates current reporting year quantities based on amounts reported in Sections 5, 6, and 7 of the Form R. If a facility entered a quantity for any relevant sections corresponding to the aggregated quantities, a numeric value will appear in Section 8, representing any quantities the facility released, treated, combusted for energy recovery, or recycled during the reporting year.

Rounding to 0 (zero) is possible under the following scenarios. The accuracy of the underlying data on which the estimate is based must support the specified level of precision described below in order to round to zero.

- If the aggregate quantity of the chemical was equal to or less than 0.5 pounds for a particular waste management method, 0 (zero) (unless the chemical is a chemical of special concern) may be used in the relevant section.
- In the case of chemicals of special concern (excluding the dioxin and dioxin-like chemicals category), if the aggregate quantity of the toxic chemical is equal to or less than 0.1 pounds for a particular waste management method, 0 (zero) may be used in the relevant section.
- For the dioxin and dioxin-like chemicals category, if the aggregate quantity is equal to or less than 0.0001 grams for a particular waste management method, 0 (zero) may be used in the relevant section.

If there is no on-site or off-site release or disposal, treatment, combustion for energy recovery, or recycling of the waste stream containing the TRI-listed chemical, "**NA**" may display in the relevant section. For metals and metal category compounds, "**NA**" is typical in Sections 8.2, 8.3, 8.6, and 8.7, as treatment and combustion for energy recovery generally are not applicable waste management methods for metals and metal compounds. For Section 8.1b, other on-site disposal or releases, "**NA**" generally is not appropriate, recognizing the potential for spills, leaks, or fugitive emissions of the TRI-listed chemical.

In Section 8.8, select "**Yes**" or "**No**" in TRI-MEweb as appropriate to reflect the occurrence of remedial actions; catastrophic events such as earthquakes, fires, or floods; or one-time events not associated with normal or routine production processes for that toxic chemical. If a catastrophic event occurred at the facility but no releases occurred, enter 0 (zero) in Section 8.8.

When estimating prior year and future year estimates, consider the NA and numeric value guidance provided.

Relationship to Other Laws. The reporting categories for quantities recycled, used for energy recovery, treated, and disposed of apply to completing Section 8 of Form R as well as to the rest of Form R. These categories are to be used only for TRI reporting. They are not intended for use in determining, under the Resource Conservation and Recovery Act (RCRA) Subtitle C regulations, whether a secondary material is a waste when recycled. These categories also do not apply to the information that may be submitted in the Biennial Report required under RCRA. In addition, these categories do not imply any future redefinition of RCRA terms and do not affect EPA's RCRA authority or authority under any other statute EPA administers.

Differences in terminology and reporting requirements for TRI-listed chemicals and for hazardous wastes regulated under RCRA occur because EPCRA and the PPA focus on specific chemicals, while the RCRA regulations and the Biennial Report focus on waste streams that may include more than one chemical. For example, assume that a RCRA hazardous waste containing a TRI-listed chemical is recycled to recover certain constituents of that waste but not the TRI-listed chemical. The TRI-listed chemical simply passes

through the recycling process and remains in the residual from the recycling process, which is disposed of. While the waste may be considered recycled under RCRA, for TRI purposes, the TRI-listed chemical constituent would be considered disposed of (as part of the residual from the recycling process).

A TRI-listed chemical by itself or in a mixture that is a waste under RCRA must be reported in Sections 8.1 through 8.8.

Sections 8.1 – 8.7: Production-Related Waste Managed[1]

Column A: Prior Year. Quantities for Sections 8.1 through 8.7 must be reported for the year immediately preceding the reporting year in column A. For example, for reporting forms due July 1, 2026 (reporting year 2025), the prior reporting year is 2024. Information available at the facility that may be used to estimate the prior year's quantities include the prior year's Form R submission; supporting documentation; and recycling, energy recovery, treatment, or disposal operating logs or invoices. When reporting prior year estimates, facilities are not required to use quantities reported on the previous year's form if better information is available. TRI-MEweb prepopulates this column on the TRI form if the facility reported the previous year. If the facility wants to change data that was certified and submitted to EPA for the prior year, the prior year's reporting form must be revised and submitted. Facilities are not allowed to make prior year changes in the current year form. Only new reporting facilities or those with a lapse in reporting may enter quantities within the prior year column.

Column B: Current Reporting Year. Quantities for Sections 8.1 through 8.7 must be reported for the current reporting year in column B. TRI-MEweb automatically populates the current reporting year quantities based on the amounts reported in Sections 5, 6, and 7 of the Form R. Review the aggregated quantities for accuracy and edit values in the worksheet if necessary.

Columns C and D: Next two reporting years. Quantities for Sections 8.1 through 8.7 must be estimated for the following two years. EPA expects reasonable future quantity estimates using a logical basis. Information available at the facility to estimate quantities of the chemical expected during these years include but are not limited to planned source reduction activities, market projections, expected contracts, anticipated new product lines, company growth projections, and production capacity figures. See Example 29 for more guidance.

Example 29: Reporting Future Estimates

A pharmaceutical manufacturing facility uses a TRI-listed chemical in the manufacture of a prescription drug. During the reporting year (2025), the company received approval from the Food and Drug Administration to begin marketing their product as an over-the-counter drug beginning in 2026. This approval is publicly known and does not constitute confidential business information (CBI). As a result of this expanded market, the company estimates that sales and subsequent production of this drug will increase their use of the reported TRI-listed chemical by 30% per year for the two years following the reporting year. The facility treats the TRI-listed chemical on-site, and the quantity treated is directly proportional to production activity. The facility thus estimates the total quantity of the reported TRI-listed chemical treated for the following year (2026) by adding 30% to the amount in column B (the amount for the current reporting year). The second following year (2027) figure can be calculated by adding an additional 30% to the amount reported in column C (the amount for the following year (2027) projection).

[1] Sections 8.2, 8.4, and 8.6 also allow for reporting of non-production waste management quantities.

Quantities Reportable in Sections 8.1 - 8.7

Section 8 of Form R uses data collected from Sections 5 through 7. For this reason, complete Section 8 last. The relationship between Sections 5, 6, 7, and 8.8 to Sections 8.1, 8.3, 8.5, and 8.7 is summarized in the table below and explicitly described in equation form in the text. For column B (current year), TRI-MEweb uses these equations to complete these sections automatically.

Note on Equations. Where an equation includes a value followed by a parenthetical, the equation refers only to the portion of that value described by the parenthetical. For example, "Section 6.2 (off-site recycling)" refers to the portion of the value for Section 6.2 that is recycled off-site, while "Section 6.2 (off-site treatment)" refers to the portion of the value for Section 6.2 that is treated off-site.

Relationship between Form R Sections 8.1-8.7 and Sections 5, 6, and 7

Category	Section 8 Subsection	Corresponding Section 5, 6, or 7 Subsection
Disposal and Other Releases	**Section 8.1a** Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	Production-related on-site disposal to: • **Section 5.4.1** (on-site Class I wells) • **Section 5.5.1A** (on-site RCRA Subtitle C landfills) • **Section 5.5.1B** (on-site other landfills)
	Section 8.1b Total other on-site disposal or other releases	Production-related on-site releases and disposal to: • **Section 5.1** (Fugitive emissions) • **Section 5.2** (Stack or point emissions) • **Section 5.3** (Discharges to water bodies) • **Section 5.4.2** (Class II-V wells**)** • **Section 5.5.2** (Land treatment) • **Section 5.5.3A** (Subtitle C surface impoundments) • **Section 5.5.3B** (Other surface impoundments) • **Section 5.5.4** (Other disposal)
	Section 8.1c Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	Production-related off-site transfers to: • **Section 6.1** (quantities associated with P codes P33 and P34) • **Section 6.2** (quantities associated with M codes M64, M65, and M81)
	Section 8.1d Total other off-site disposal or other releases	Production-related transfers to: • **Section 6.1** (quantities associated with P codes P30, P31, P32, P35, and P36) • **Section 6.2** (quantities associated with M codes M10, M41, M62, M66, M67, M73, M79, M82, M90, M94, and M99)
Energy Recovery	**Section 8.2** Quantity used for energy recovery on-site	On-site energy recovery: • **Section 7B** (total energy recovery quantity associated with U01, U02, and U03)
	Section 8.3 Quantity used for energy recovery off-site	Production-related off-site transfers to: • **Section 6.2** (quantities associated with M codes M56 and M92)
Recycling	**Section 8.4** Quantity recycled on-site	On-site recycling: • **Section 7C** (total recycling quantity associated with H10, H20, and H39)
	Section 8.5 Quantity recycled off-site	Production-related off-site transfers to: • **Section 6.2** (quantities associated with M codes M20, M24, M26, M28, and M93)

Treatment	**Section 8.6** Quantity treated on-site	On-site waste treatment: • **Section 7A** (waste treatment methods and efficiencies for the purposes of destruction). Note Section 7A may include treatment methods not associated with destruction. Total quantity treated for destruction is reported in Section 8.6
	Section 8.7 Quantity treated off-site	Production-related off-site transfers to: • **Section 6.1** (quantities associated with P codes P37, P38, and P39) • **Section 6.2** (quantities associated with M codes M40, M50, M54, M61, M69, and M95)

8.1 On- and Off-Site Disposal and Other Releases

In Section 8.1, facilities report disposal and other releases. TRI-MEweb automatically calculates Section 8.1 quantities based on production-related on-site disposal and other releases reported in Section 5 and off-site disposal and other releases reported in Section 6 but excludes quantities due to remedial actions; catastrophic events; or non-production-related, one-time events reported in Sections 5 and 6 (see the discussion on Section 8.8). EPCRA Section 329(8) defines "release" as "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles)."

Metals and metal category compounds reported in Section 6.2 as sent off-site for stabilization/ solidification (M41) or wastewater treatment (excluding POTWs) (M62) and/or in Section 6.1 – transfers to POTWs should be reported in Section 8.1. TRI-MEweb automatically calculates chemical-specific aggregations.

Beginning in the 2003 reporting year, Section 8.1 was divided into four subsections (8.1a, 8.1b, 8.1c, and 8.1d). Refer to the following equations that show the relationship between Sections 5, 6, 8.8, and 8.1a through 8.1d.

Sections 8.1a and 8.1b. TRI-listed chemicals disposed of or otherwise released on-site are reported in 8.1a or 8.1b as appropriate. TRI-listed chemicals sent off-site and then disposed of or otherwise released are reported in 8.1c or 8.1d.

Equation 5

Section 8.1a (Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills) = Section 5.4.1 + Section 5.5.1A + Section 5.5.1B – Section 8.8 (on-site disposal to landfills or underground injection control (UIC) Class I Wells, not related to production)

Equation 6

Section 8.1b (Total other on-site disposal or other releases) = Section 5.1 + Section 5.2 + Section 5.3 + Section 5.4.2 + Section 5.5.2 + Section 5.5.3A + Section 5.5.3B + Section 5.5.4 – Section 8.8 (on-site disposal or other releases, other than disposal to landfills or UIC Class I Wells, not related to production)

Sections 8.1c and 8.1d. TRI-listed chemicals transferred off-site to POTWs or other off-site locations and then disposed of or otherwise released should be reported in 8.1c or 8.1d. For example, quantities of a chemical sent to a landfill, or sent to a POTW and subsequently sent to a landfill are reported in Section 8.1c, while quantities of a chemical sent to a surface impoundment or sent to a POTW and subsequently released to a water body are reported in Section 8.1d. Metals and metal category compounds sent to POTWs are reported in 8.1c or 8.1d and generally should not be reported as treated for destruction in Section 8.7.

Equation 7

Section 8.1c (Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills) = Section 6.1 (quantities associated with P codes P33 and P34) + Section 6.2 (quantities associated with M codes M64, M65, and M81) – Section 8.8 (off-site disposal to landfills or UIC Class I Wells, not related to production)

Equation 8

Section 8.1d (Total other off-site disposal or other releases) = Section 6.1 (quantities associated with P codes P30, P31, P32, P35, and P36) + Section 6.2 (quantities associated with M codes M10, M41, M62, M66, M67, M73, M79, M82, M90, M94, and M99) – Section 8.8 (off-site disposal or other releases, other than disposal to landfills or UIC Class I Wells, not related to production)

Some chemicals in addition to metals and metal category compounds might not be treated for destruction at a POTW. If some or all of a chemical is not treated for destruction at the POTW, report that quantity in Section 8.1c or 8.1d (as indicated in the equations above) instead of Section 8.7 (which is the quantity treated off-site). In such cases, report using up to two decimal places.

Default POTW distribution percentages and assumptions for TRI chemicals sent to POTWs, which are based on experimental and estimated data, are provided at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#potw_percentages. TRI-MEweb

uses these assumptions to calculate chemical-specific aggregations.

Sections 8.2 and 8.3: Energy Recovery

In Sections 8.2 and 8.3, report a TRI-listed chemical or a mixture containing a TRI-listed chemical used for energy recovery on-site or sent off-site for energy recovery, unless it is a commercially available fuel (e.g., fuel oil no. 6). TRI-MEweb automatically calculates Section 8.3 quantities based on production-related energy recovery reported in Section 7 (on-site) or Section 6 (off-site). For TRI reporting purposes, on-site and off-site energy recovery is the combustion of a waste stream containing a TRI-listed chemical when:

(a) The combustion unit is integrated into an energy recovery system (i.e., industrial furnaces, kilns, and boilers); and

(b) The TRI-listed chemical is combustible and has a significant heating value (e.g., 5,000 BTU/lb.)

Metals and metal category compounds cannot be combusted for energy recovery. For metals and metal category compounds, enter NA in Sections 8.2 and 8.3.

Quantities used for energy recovery off-site that are reported in Section 8.8 are excluded from Section 8.3.

Equation 9

Section 8.2 (Energy recovery on-site) = All quantities used for on-site energy recovery associated with methods reported in Section 7B (on-site energy recovery processes)

Section 8.2 is not related to Sections 5 or 6.

Equation 10

Section 8.3 (Energy recovery off-site) = Section 6.2 (quantities associated with M codes M56 and M92) – Section 8.8 (off-site energy recovery, not related to production)

Sections 8.4 and 8.5: Recycling

In Sections 8.4 and 8.5, report a TRI-listed chemical in a waste that is recycled on-site or sent off-site for recycling. TRI-MEweb automatically generates Section 8.5 quantities based on production-related recycling reported in Section 7 (on-site) or Section 6 (off-site). For quantities recycled off-site that are reported in Section 8.8, TRI-MEweb excludes these from Section 8.5.

In summary, recycling is the recovery for reuse of a chemical from a gaseous, aerosol, aqueous, liquid, or solid stream. For TRI reporting purposes, on-site recycling involves on-site recovery of the TRI-listed chemical, and off-site recycling involves recovery at the receiving facility before reuse at either facility or elsewhere in commerce. If recycling occurs, facilities must report the total quantity of the chemical recycled during the reporting year.

For TRI reporting purposes, EPA considers the direct recirculation of a toxic chemical within a process or between processes without any reclamation to be "reuse" of the toxic chemical rather than "recycling." For more information on recycling, direct reuse, and other related topics, see the Interpretations of Waste Management Activities guidance document available in GuideME at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd-title:::::title:waste_management.

If a facility reclaims a chemical on-site and reuses it, it is considered recycling for TRI reporting purposes and the facility must include the quantity of the chemical that is recycled on-site each time it is recycled in the total quantity reported as recycled for the year.

Equation 11

Section 8.4 (Recycling on-site) = All quantities used for on-site recycling associated with methods reported in Section 7C (on-site recycling processes)

Section 8.4 is not related to Sections 5 or 6.

Equation 12

Section 8.5 (Recycling off-site) = Section 6.2 (quantities associated with M codes M20, M24, M28, and M93) - Section 8.8 (off-site recycling, not related to production)

Sections 8.6 and 8.7: Treatment

In Sections 8.6 and 8.7, report a TRI-listed chemical or a waste containing a TRI-listed chemical that is treated for destruction on-site or is sent to a POTW or other off-site location for treatment for destruction. TRI-MEweb automatically calculates 8.7 quantities based on production-related treatment

reported in Section 6 (off-site). Enter the quantity of the TRI-listed chemical treated for destruction and actually destroyed on-site in Section 8.6; TRI-MEweb does not generate this quantity. Note that not all on-site waste treatment methods reported in Section 7A necessarily lead to treatment or destruction of the TRI chemical. Chemicals removed from a waste stream but not destroyed should not be reported in this section. Most metal and metal category compounds are not reported in this section because they cannot be destroyed (see the Form R and Form A Certification Statement Reporting Codes and Instructions for Reporting Metals guidance document). Quantities treated off-site that are reported in Section 8.8 are excluded from Section 8.7.

Equation 13

Section 8.6 (Treatment on-site) = All quantities treated for destruction on-site associated with corresponding methods reported in Section 7A (on-site waste treatment methods and efficiency)

Section 8.6 is not related to Sections 5 or 6.

Equation 14

Section 8.7 (Treatment off-site) = Section 6.1 (quantities associated with P codes P37, P38, and P39) + Section 6.2 (quantities associated with M codes M40, M50, M61, M69, and M95) – Section 8.8 (off-site treatment, not related to production)

Some TRI-listed chemicals, in addition to metals and metal category compounds, might not be treated for destruction at a POTW. If some or all of a chemical is not treated for destruction at the POTW, report that quantity in Section 8.1c or 8.1d instead of Section 8.7. Facilities should use their best readily available information to determine the final waste management disposition of the TRI-listed chemical sent to the POTW, then distribute the amount reported in Section 6.1 among Sections 8.1c, 8.1d, and 8.7, as appropriate. Default POTW distribution percentages and assumptions for TRI-listed chemicals sent to POTWs, which are based on experimental and estimated data, can be found at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:rfi-home#potw_percentages.

Example 30: Avoiding Double-Counting Quantities in Sections 8.1 through 8.7

Five thousand pounds of a TRI-listed chemical enters a treatment operation. Three thousand pounds of the chemical exits the treatment operation then enters a recycling operation. Five hundred pounds of the chemical are in residues from the recycling operation that are sent off-site to a landfill for disposal. These quantities would be reported as follows in Section 8:

Section 8.1c: 500 pounds disposed of

Section 8.4: 2,500 pounds recycled

Section 8.6: 2,000 pounds treated (5,000 that initially entered - 3,000 that subsequently entered recycling)

To report that 5,000 pounds were treated, 3,000 pounds were recycled, and 500 pounds were sent off-site for disposal would result in overcounting the quantities of the chemical recycled, treated, and disposed of.

8.8 Non-Production-Related Waste Managed

In Section 8.8, enter the quantity of the TRI-listed chemical disposed of or released directly into each environmental medium on-site or sent off-site for recycling, energy recovery, treatment, or disposal during the reporting year due to any of the following events:

(1) remedial actions;
(2) catastrophic events such as earthquakes, fires, or floods; or
(3) other one-time events not associated with normal or routine production processes.

These quantities should not be included in Sections 8.1, 8.3, 8.5, or 8.7.

Starting in 2025, non-production-related waste quantities are reported on the Form R by media: air, water, land, or off-site transfer. TRI-MEweb uses an existing worksheet to populate these new data elements, using information entered in Sections 5

and n6 of the Form R to calculate totals for each environmental medium.

Section 8.8a. Enter the total non-production-related quantity of the TRI-listed chemical disposed of or released to the air on-site (corresponding to sections 5.1 and 5.2).

Section 8.8b. Enter the total non-production-related quantity of the TRI-listed chemical disposed of or released to the water on-site (corresponding to section 5.3).

Section 8.8c. Enter the total non-production-related quantity of the TRI-listed chemical disposed of or released to the land on-site (corresponding to sections 5.4 and 5.5).

Section 8.8d. Enter the total non-production-related quantity of the TRI-listed chemical sent off-site for recycling, energy recovery, treatment, or disposal (corresponding to sections 6.1 and 6.2).

The purpose of this section is to separate quantities recycled, used for energy recovery, treated, or released (including disposals) that are associated with normal or routine production operations from those that are not. While all quantities released, recycled, combusted for energy recovery, or treated may ultimately be preventable, this section separates the quantities that are more likely to be reduced or eliminated by process-oriented source reduction activities from those releases that are largely unpredictable and less amenable to such source reduction activities. For example, spills that occur as a routine part of production operations and could be reduced or eliminated by improved handling, loading, or unloading procedures are included in the quantities reported in Sections 8.1, 8.3, 8.5, and 8.7 as appropriate. A total loss of containment resulting from a tank rupture caused by a tornado would be included in the quantities reported in Section 8.8.

Similarly, the amount of a TRI-listed chemical cleaned up from spills resulting from normal operations during the reporting year would not be included in Section 8.8. However, the quantity of the reported TRI-listed chemical disposed of from a remedial action (e.g., RCRA corrective action) to clean up the environmental contamination resulting from past practices should be reported in Section 8.8 because they cannot currently be addressed by source reduction methods. A remedial action for purposes of Section 8.8 is a waste cleanup (including RCRA and CERCLA operations) within the facility boundary. Most remedial activities involve collecting and treating contaminated material.

Facilities should incorporate releases caused by catastrophic events into the quantities reported in Section 8.8. Such releases may be caused by natural disasters (e.g., hurricanes and earthquakes), large-scale accidents (e.g., fires and explosions), or other one-time events not associated with production (e.g., terrorist bombing). These amounts are generally unanticipated and cannot be addressed by routine, process-oriented accident prevention techniques. Check documentation for calculating estimates made for Part II, Section 5, "Quantity of the Toxic Chemical Entering Each Environmental Medium On-site," to help identify environmental release amounts. Emergency notifications under CERCLA and EPCRA as well as accident histories required under the Clean Air Act may provide useful information. Facility incident reports and maintenance records can also be used to identify one-time or catastrophic events.

Note: While the information reported in Section 8.8 represents only remedial, catastrophic, or other one-time events not associated with production processes, Section 5 of Form R (on-site disposal and other releases to the environment) and Section 6 (off-site transfers for further waste management) must include all on-site disposal and other releases and transfers for disposal as appropriate, regardless of whether they arise from catastrophic, remedial, or routine process operations.

Avoid Double-Counting Non-Production-Related Waste

Do not count non-production-related waste quantities more than once in Section 8.8 and Sections 8.1, 8.3, 8.5, and 8.7. Quantities reported in each of those sections should be mutually exclusive. In TRI-MEweb, any amounts designated as non-production-related waste (Section 8.8) will be automatically excluded from production-related waste managed (Sections 8.1, 8.3, 8.5, and 8.7).

Example 31: Non-Production-Related Waste Managed

A chemical manufacturer produces a TRI-listed chemical in a reactor that operates at low pressure. The reactants and the TRI-listed chemical product are piped in and out of the reactor at monitored and controlled temperatures. During normal operations, small amounts of fugitive emissions occur from the valves and flanges in the pipelines.

Due to a malfunction in the control panel (which is state-of-the-art and undergoes routine inspection and maintenance), the temperature and pressure in the reactor increase, the reactor ruptures, and the TRI-listed chemical is released. Because the malfunction could not be anticipated and therefore could not be reasonably addressed by specific source reduction activities, the amount released is included in Section 8.8. In this case, much of the TRI-listed chemical is released as a liquid and pools on the ground.

It is estimated that:

- 1,000 pounds of the TRI-listed chemical pooled on the ground and was subsequently collected and sent off-site for treatment.
- Another 200 pounds of the TRI-listed chemical vaporized directly to the air from the rupture.

A total of 1,200 pounds were reported in Section 8.8: the 1,000 pounds that pooled on the ground (and was subsequently sent off-site), plus the 200 pounds that vaporized into the air.

The quantity sent off-site (1,000 pounds) must also be reported in Section 6 (but not in Section 8.7), and the quantity that vaporized (200 pounds) must be reported as a fugitive emission in Section 5 (but not in Section 8.1b).

8.9 Production Ratio or Activity Ratio

For Section 8.9, provide either a production or activity ratio and indicate the type of ratio reported using the checkboxes provided. An "**NA**" checkbox is available for unique circumstances (e.g., new production lines) when a production ratio or activity ratio is not applicable. The production or activity ratio allows year-to-year changes in release and other waste management quantities to be viewed within the context of production. For example, the production ratio lets data users know whether a facility's releases per unit of output have increased or decreased.

What Variable is Used to Calculate the Production or Activity Ratio?

To calculate a production or activity ratio, first select the variable(s) on which the ratio will be based. In all cases, the production or activity ratio must be based on the variable(s) that best reflect the output or outcome of the process(es) in which the TRI-listed chemical is involved. Examples of production or activity variables selected by various industries can be found in Example 32. Instructions for calculating a production or activity ratio based on either a single variable or multiple variables are below.

Production Ratio

A production ratio is a ratio of reporting year production to prior year production. Calculate a production ratio when the chemical is involved in production processes. The equation for production ratio is as follows:

Equation 15

$$\text{Production Ratio} = \frac{[\text{Production Variable}]_{\text{Current Year}}}{[\text{Production Variable}]_{\text{Prior Year}}}$$

A production ratio may be based on production levels for either the facility's end product or on the intermediate product of the process in which the chemical is manufactured, processed, or otherwise used. If a TRI-listed chemical is used in the production of refrigerators, for example, the production ratio is based on the number of refrigerators produced. This is shown in Example 33 and in the sample equation below:

$$\text{Example P.R.} = \frac{\#\text{ of Refrigerators Produced}_{\text{Current Year}}}{\#\text{ of Refrigerators Produced}_{\text{Prior Year}}}$$

If the TRI-listed chemical is itself the final product, the production ratio would be based on the amount of the chemical manufactured. Generally, however, the production ratio would be based on a variable other than the quantity of the TRI-listed chemical manufactured, processed, or otherwise used.

Activity Ratio

An activity ratio is also a ratio of current year to prior year values but is reported when a chemical is involved in an activity not directly related to production or production levels. An activity ratio is appropriate if a chemical is used in an auxiliary activity such as cleaning or pollution control, for example, and is calculated as follows:

Equation 16

$$\text{Activity Ratio} = \frac{[\text{Activity Variable}]_{\text{Current Year}}}{[\text{Activity Variable}]_{\text{Prior Year}}}$$

In all cases, the variable used to calculate an activity ratio should represent the intended outcome of the activity in which the chemical is used or produced, not the inputs or throughputs for the activity. If the TRI-listed chemical is used to clean molds, for example, the activity ratio could be based on the number of cleanings or the number of molds cleaned. It would not be based on the usage of the TRI-listed chemical or the total volume of cleaning solution used. This is shown in Example 34 and in the sample equation below:

$$\text{Example A.R.} = \frac{\#\text{ of Molds Cleaned}_{\text{Current Year}}}{\#\text{ of Molds Cleaned}_{\text{Prior Year}}}$$

Production or Activity Ratios Based on Multiple Variables

In some cases, a facility may use the same TRI-listed chemical in more than one process. If no single variable adequately reflects the output or outcome of the process(es) in which the TRI-listed chemical is involved, a production or activity ratio can be calculated by weighting the different production or activity variables for the different processes in which the chemical is involved. The procedure for this calculation is described in Example 35.

If the reported value is based on both production and activity variables, report the final value as a "production ratio" if the production ratio(s) is weighted more heavily than the activity ratio(s) in the calculations (and as an "activity ratio" if the opposite is true).

Reporting Tips:

- TRI-MEweb includes a production or activity ratio wizard to help calculate ratios.
- The ratio must be reported to the nearest tenths or hundredths place (i.e., one or two digits to the right of the decimal point) for all TRI-listed chemicals, including chemicals of special concern. A 0 (zero) is not an acceptable response unless the calculated value is less than 0.005, which can be rounded to 0 (zero).
- If the manufacture, processing, or otherwise use of the reported TRI-listed chemical began during the current reporting year, select "**NA**" as the production or activity ratio. See Example 36 for a situation in which "**NA**" is the appropriate selection. Otherwise, facilities must enter a value even if the facility did not exceed a reporting threshold for the chemical in the previous reporting year.
- The ratio is not to be reported as a percent change between years (i.e., for a 10% increase, report the ratio 1.10, not 10% or 10). A production ratio of 1 indicates no change in production from the prior year.
- If the facility reports more than one TRI-listed chemical, the production or activity ratio may vary for different chemicals if the chemicals are used in different processes with different outputs.
- Details regarding the method used to calculate the Production or Activity Ratio can be included in Section 9.1, "Additional Information." This information provides context for the production or activity ratio and may help TRI data users better understand changes in releases or other waste management quantities. In Example 33, the facility could report, "Used the number of refrigerators painted as the production variable, because our facility uses toluene to paint refrigerators" to provide more information in Section 9.1.

Example 32: Selecting a Production or Activity Variable

The table below provides examples of production or activity variables used by facilities in various industries to calculate a production ratio or activity ratio.

Industry	Sample Production / Activity
Agriculture, Construction, and Mining Machinery Manufacturing	Drill rigs produced
Cement and Concrete Product Manufacturing	Tons of clinker produced
Clay Product and Refractory Manufacturing	Tons of brick manufactured
Chemical and Allied Products Merchant Wholesalers	Total gallons of glycol ethers packaged
Coal Mining	Mine production in tons of coal
Fossil Fuel Electric Power Generation	Number of megawatt-hours of electricity produced
National Security and International Affairs	Man-days of training per year
Nitrogenous Fertilizer Manufacturing	Ammonium thiosulfate product produced (in tons)
Plastics Product Manufacturing	Pounds extruded
Synthetic Dye and Pigment Manufacturing	Number of color changeovers
Waste Treatment and Disposal	Tons of waste landfilled on-site
Petroleum Refineries	Gallons of gasoline repackaged

Example 33: Determining a Production Ratio

A facility's only use of toluene is as a paint carrier for a painting operation. The facility painted 12,000 refrigerators in the current reporting year and 10,000 refrigerators the preceding year. The production ratio for toluene in this case is 1.2 ($\frac{12,000}{10,000}$) because refrigerator production levels best reflect the output of the processes in which toluene is used.

A facility manufactures inorganic pigments, including titanium dioxide. Hydrochloric acid (acid aerosols) is produced as a waste byproduct during the production process. An appropriate production ratio for hydrochloric acid (acid aerosols) is the annual titanium dioxide production, not the amount of byproduct generated. If the facility produced 20,000 pounds of titanium dioxide during the reporting year and 26,000 pounds in the preceding year, the production ratio would be 0.77 ($\frac{20,000}{26,000}$).

Example 34: Determining an Activity Ratio

A facility manufactures various colors of organic dyes in a batch process. Between color changes, all equipment must be thoroughly cleaned with solvent containing glycol ethers. During the preceding year, the facility produced 2,000 pounds of yellow dye in the first quarter, 9,000 pounds of green dye the second quarter, 2,000 pounds of red dye the third quarter, and 2,000 pounds of blue dye the fourth quarter. This adds to a total of 15,000 pounds and four color changeovers. The facility produced 10,000 pounds of green dye during the first half of the year and 10,000 pounds of red dye the second half. If the facility uses glycol ethers in this cleaning process only, an activity ratio of 0.5 (based on two color changeovers for the

reporting year divided by four changeovers for the preceding year) is more appropriate than a production ratio of 1.33 (based on 20,000 pounds of dye produced in the current year divided by 15,000 pounds in the preceding year). In this case, an activity ratio is more appropriate than a production ratio because the process in which the glycol ethers are used is not directly related to production or to production levels.

A facility that manufactures thermoplastic composite parts for aircraft uses toluene as a wipe solvent to clean molds. The solvent is stored in 55-gallon drums and is transferred to 1-gallon dispensers. The molds are cleaned on an as-needed basis that is not necessarily a function of the parts production rate. Operators cleaned 5,200 molds during the reporting year and 2,000 molds the previous year. An activity ratio of 2.6 ($\frac{5,200}{2,000}$) represents the outcome of the activities involving toluene usage in the facility.

A facility manufactures surgical instruments and cleans the metal parts with 1,1,1-trichloromethane in a vapor degreaser. The degreasing unit is operated in a batch mode, and the metal parts are cleaned according to an irregular schedule. The activity ratio can be based upon the total time the metal parts are in the degreasing operation. If the degreasing unit operated 3,900 hours during the reporting year and 3,000 hours the prior year, the activity ratio is 1.3 ($\frac{3,900}{3,000}$).

Example 35: Determining the Production Ratio Based on a Weighted Average

At many facilities, a TRI-listed chemical is used in more than one production process. In these cases, estimate a production ratio or activity ratio by weighting the production ratio for each process based on the respective contribution of each process to the quantity of the TRI-listed chemical managed as waste (recycled, used for energy recovery, treated, or disposed of).

A facility paints bicycles with paint containing toluene. 16,000 bicycles were produced in the reporting year, and 14,500 were produced in the prior year. No significant design modifications changed the total surface area to be painted for each bicycle. The production ratio for bicycles is 1.1 (16,000/14,500). The facility estimates 12,500 pounds of toluene was managed as waste (recycled, used for energy recovery, treated, disposed of, or released) because of the bicycle production processes.

The facility also uses toluene as a solvent in a glue to make components and add-on equipment for the bicycles. 13,000 components were manufactured in the reporting year as compared to 15,000 during the prior year. The production ratio for the components using toluene is 0.87 (13,000/15,000). The facility estimates 1,000 pounds of toluene was managed as waste resulting from components production. The reported production ratio can be calculated by weighting the ratios for the different variables based on the relative contribution each has to the total quantity of toluene managed as waste during the reporting year (13,500 pounds). The production ratio is calculated as follows:

Production ratio = $1.1 \times \frac{12,500}{13,500} + 0.87 \times \frac{1,000}{13,500} = 1.08$

Example 36: "NA" is Entered Instead of a Production Ratio or Activity Ratio

A facility began producing semiconductor chips during the reporting year. Perchloroethylene is used as a cleaning solvent for this operation, and this is the only use of the TRI-listed chemical in the facility. The facility would select "**NA**" in Section 8.9 because there is no basis of comparison in the prior year for the

purposes of developing the activity ratio. The facility may use the comment text box to explain changes in production and why information is not available.

8.10 Did the Facility Engage in Any Newly Implemented Source Reduction Activities for This Chemical During the Reporting Year?

Section 8.10 must be completed if a source reduction activity involving the reported TRI-listed chemical was newly implemented at a facility. A source reduction activity is considered newly implemented if it went into effect, in whole or in part, during this reporting year. Some activities may be multi-faceted or multi-phased and impact different facility processes or span across multiple years. For those activities, report on the discrete projects that went into effect entirely or in part during the reporting year. Accordingly, in successive reporting years, report on later facets or phases of the activity. Refer to Examples 37 and 38 for additional guidance.

What Is Source Reduction?

Source reduction, as defined by the PPA, means any practice that:

- Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, energy recovery, treatment, or disposal
- Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants

The term "source reduction" does not include any practice that alters the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity that itself is not integral to and necessary for the production of a product or the providing of a service. For example, source reduction does not include installation of pollution control devices or efficiency improvements to capture waste generated.

Source reduction activities include substitution of raw materials; reformulation or redesign of products; equipment or technology modifications; process or procedure modifications; and improvements in inventory control, housekeeping, maintenance, or training. Newly implemented source reduction activities include activities that were implemented, in whole or in part, during the reporting year (e.g., improved loading procedures and substituting to a non-TRI chemical).

How Does Source Reduction Relate to the Quantities Reported in Sections 8.1-8.8?

Source reduction activities reduce the amount of the TRI-listed chemical disposed of or otherwise released (reported in Section 8.1), used for energy recovery (reported in Sections 8.2-8.3), recycled (reported in Sections 8.4-8.5), or treated (reported in Sections 8.6-8.7). Recycling, energy recovery, and treatment are not themselves considered source reduction activities because these practices occur *after* the chemical has entered a waste stream.

The focus of these sections includes only those activities applied to prevent or reduce routine or reasonably-anticipated releases or other quantities of the TRI-listed chemical managed as waste. Thus, do not report in this section any activities taken to reduce or eliminate the non-production-related quantities (e.g., quantities associated with remedial or catastrophic events) reported in Section 8.8.

Why is Reporting on Source Reduction Activities Required?

The PPA established the national policy "that pollution should be prevented or reduced at the source whenever feasible...". Additionally, the PPA requires that facilities report newly implemented source reduction activities to the TRI. Reporting on source reduction activities provides important information for assessing progress toward the PPA's goal.

To promote the adoption of pollution prevention practices, EPA has increased the prominence and accessibility of the pollution prevention information reported in Sections 8.10 and 8.11 of the Form R. For example, reported source reduction activities are viewable in the TRI Pollution Prevention (P2) Search Tool at https://enviro.epa.gov/facts/tri/p2.html. Additionally, companies that have implemented source reduction practices may be featured in the

annual TRI National Analysis. To learn more, visit https://www.epa.gov/tri/p2.

How Do I Report Source Reduction Activities and Methods?

In Section 8.10, report any implemented source reduction activities (as defined above) and the methods used to identify such activities.

New Source Reduction Activities

If the facility implemented a new source reduction activity for the reported TRI-listed chemical during the reporting year, report the activity or activities that were implemented by selecting the most relevant activity code(s) from the dropdown list in TRI-MEweb. The activity codes (S codes) are grouped in five source reduction categories.

8.10 Source Reduction Activity Codes

Source reduction category descriptions along with corresponding activity codes are listed below. Refer to the descriptions to aid with selection of the category and code that best describe the source reduction activity implemented at the facility to prevent the generation or reduce the use of the reported TRI-listed chemical. See the section above on *What Is Source Reduction?,* which describes activities that are and are not considered as source reduction for TRI reporting purposes. In recent years, many facilities have implemented green chemistry and green engineering practices to prevent pollution. To represent these practices more closely, 10 green chemistry/green engineering source reduction codes (S01, S02, S03, S04, S05, S11, S21, S22, S23, and S43) are included in the list of codes. Scenarios of how to report source reduction activities are provided in Example 39.

Material Substitutions and Modifications refer to changing input purity or dimensions, or replacing a raw material, feedstock, reagent, or other substance with environmentally preferable alternatives.

S01 Substituted a fuel
S02 Substituted an organic solvent
S03 Substituted raw materials, feedstock, or reactant chemical
S04 Substituted manufacturing aid, processing aid, or other ancillary chemical
S05 Modified content, grade, or purity of a chemical input
S06 Other material modifications made

Product Modifications refer to changing the end product through design, composition, formulation, or packaging changes, as well as full final product replacements that reduce the generation of waste.

S11 Reformulated or developed new product line
S12 Altered dimensions, components, or final design of product
S13 Modified product packaging
S14 Other product modifications made

Process and Equipment Modifications refer to improvements to industrial processes and/or associated equipment including implementation of new processes that produce less waste, direct reuse of chemicals, or technological changes impacting synthesis, formulation, fabrication, and assembly, and surface treatment such as cleaning, degreasing, surface preparation, and finishing.

S21 Optimized process conditions to increase efficiency
S22 Instituted recirculation within a process
S23 Implemented new technology, technique, or process
S24 Modified or updated equipment or layout
S25 Other process modifications made

Inventory and Material Management refers to improvements in procurement, inventory tracking, preventative monitoring, and storage and handling of chemicals and materials as they move through a

facility to optimize their use and prevent spills and leaks during operation.

S31 Instituted better labeling, testing, or other inventory management practices
S32 Changed size or type of containers procured
S33 Improved containment or material handling operations
S34 Improved monitoring practices of potential spill or leak sources
S35 Other improvements to inventory and material management

Operating Practices and Training refers to improvements in maintenance, production scheduling, process monitoring, and other practices that enhance operator expertise and housekeeping measures that eliminate or minimize waste.

S41 Improved scheduling, record keeping, or procedures for operations, cleaning, and maintenance
S42 Changed production schedule to minimize equipment and material changeovers
S43 Introduced in-line product quality monitoring or other process analysis system
S44 Other improvements to operating practices and training

Source Reduction Activity Optional Information

For each source reduction activity selected in TRI-MEweb, a text box allows facilities to provide additional details on that source reduction activity. Optional additional information about source reduction provided in these text boxes is displayed in the next section of the Form R (Section 8.11, Optional Pollution Prevention Information) preceded by the S code to which it relates.

Reporting Tips:
The following questions can help a facility provide specific and meaningful additional information.

- Which processes and products were affected?
- Which technologies and materials were used?
- How did release (e.g., air, water, land) or waste management (e.g., recycling, treatment) quantities change?
- What other benefits (e.g., cost savings, energy savings, improved product quality) were attained?
- Why did the facility implement this activity?

If available, share useful URLs for equipment manufacturers, company webpages, or other information sources related to the activity described.

Additional guidance and sample entries can be found at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:p2-reporting-tip-sheet.

8.10 a-c Methods to Identify Source Reduction Activities

Facilities explore source reduction opportunities through a variety of methods. Methods include, for example, the use of materials balance audits, employee recommendation, and vendor assistance to identify source reduction opportunities. For each source reduction activity reported, select the method(s) (T codes) used to identify the source reduction activity.

Method to Identify Source Reduction Activity Codes

T01 Internal pollution prevention opportunity audit(s)
T02 External pollution prevention opportunity audit(s)
T03 Materials balance audits
T04 Participative team management
T05 Employee recommendation (independent of a formal company program)
T06 Employee recommendation (under a formal company program)
T07 State government technical assistance program
T08 Federal government technical assistance program
T09 Trade association/industry technical assistance program
T10 Vendor assistance
T11 Other

To describe how each source reduction practice was identified, a text box allows facilities to enter additional information on the identification method(s) selected. For example, consider describing who provided the idea or assisted with implementation. Optional additional information about methods used to identify the source reduction activity via these text boxes is displayed in the next section of the Form R (Section 8.11, Optional Pollution Prevention Information) preceded by the T code to which it relates.

8.10 d Estimated Annual Reduction of Source Reduction Activities

For each "Source Reduction Activity" reported, facilities have the option to provide an estimate of the resulting or expected reduction in the annual amount of the chemical managed as waste (i.e., released, treated, used for energy recovery, or recycled). The estimated annual reduction is the percent reduction in waste following implementation of the source reduction activity. Report the percent estimated annual reduction using the range codes listed in the dropdown in TRI-MEweb. For example, a 100% reduction indicates that waste is expected to be eliminated (code R1).

Estimated Annual Reduction Range Codes

R1	100% (elimination of the chemical waste)
R2	greater than or equal to 50%, but less than 100%
R3	greater than or equal to 25%, but less than 50%
R4	greater than or equal to 15%, but less than 25%
R5	greater than or equal to 5%, but less than 15%
R6	greater than 0%, but less than 5%

Estimates are to be based on the facility's best readily available information at the time the activity is reported and will not necessarily reflect the actual reduction once implementation of the activity is completed.

The estimated annual reduction only accounts for the impact of the particular source reduction activity and should not consider other factors, such as changes in production. For example, if a facility implements a source reduction activity expected to reduce the waste generated by 50%, the facility reports code R2 (reduction greater than or equal to 50%, but less than 100%). Even if a production increase is anticipated, if the source reduction per unit of product is still 50%, the estimated annual source reduction should be reported as code R2.

No Newly Implemented Source Reduction Activity

If a facility did not implement any new source reduction activity for the reported TRI-listed chemical, check "NA" in Section 8.10.

TRI-MEweb provides facilities have the option of providing Section 8.11 information, in the form of entering barrier codes, in response to selecting the "NA" response in Section 8.10. The list of barrier codes is provided below. For each code, facilities also have the option to provide additional information in a text box. (see Section 8.11 instructions for additional information on barriers to P2). Additionally, TRI-MEweb provides an optional checkbox that will also populate Section 8.11 that a facility may check to indicate that the facility is interested in receiving technical assistance from EPA on pollution prevention activities and provide contact information (note that this information will not be released to the public).

Barrier Codes

B1 Insufficient capital to install new source reduction equipment or implement new source reduction activities/initiatives

B2 Require technical information on pollution prevention techniques applicable to specific production processes

B3 Concern that product quality may decline as a result of source reduction

B4 Source reduction activities were implemented but were unsuccessful

B5 Specific regulatory/permit burdens

B6 Pollution prevention previously implemented - additional reduction does not appear technically or economically feasible

B7 No known substitutes or alternative technologies

B8 A reduction does not appear to be technically feasible

B99 Other

Example 37: Source Reduction

At a facility that manufactures and paints wood furniture, various processes involve TRI-listed chemicals. Below are examples of activities considered for reporting in Section 8.10.

A. *Source Reduction initiated during the reporting year*. By examining the gluing process, the facility discovered that a new drum of glue is opened at the beginning of each shift, whether the old drum is empty or not. By adding a mechanism that prevents the drum from being changed before it is empty, the facility eliminated the need for disposing of unused glue (S33). This activity eliminates the glue waste at its source and is considered source reduction.

B. *Source Reduction implemented over multiple years*. With the assistance of a vendor and through a team assessment of the processes and chemicals used, the facility identified several changes and planned for their implementation over three years. The first year the facility installed internal stop-loss valves and leak detection for finishing processes (S34); the second year they substituted coating materials for a tabletop finish from an acetone to a water-based finish (S03); and the third year they modified their in-line product quality monitoring system (S43). The activities all reduce or eliminate quantities of a chemical entering the waste stream and released into the environment and are considered source reduction. Each should be reported for the year implementation commenced.

C. *An activity that is not considered Source Reduction*. The painting process at the facility generates a solvent waste that is collected and recovered. The recovered solvent is recycled and used to clean the painting equipment. This activity does not reduce the amount of the TRI-listed chemical from entering the waste stream and therefore is not considered source reduction.

Example 38: Reporting Source Reduction Activities

Below are examples for reporting newly implemented source reduction activities. Details are organized by the five source reduction categories.

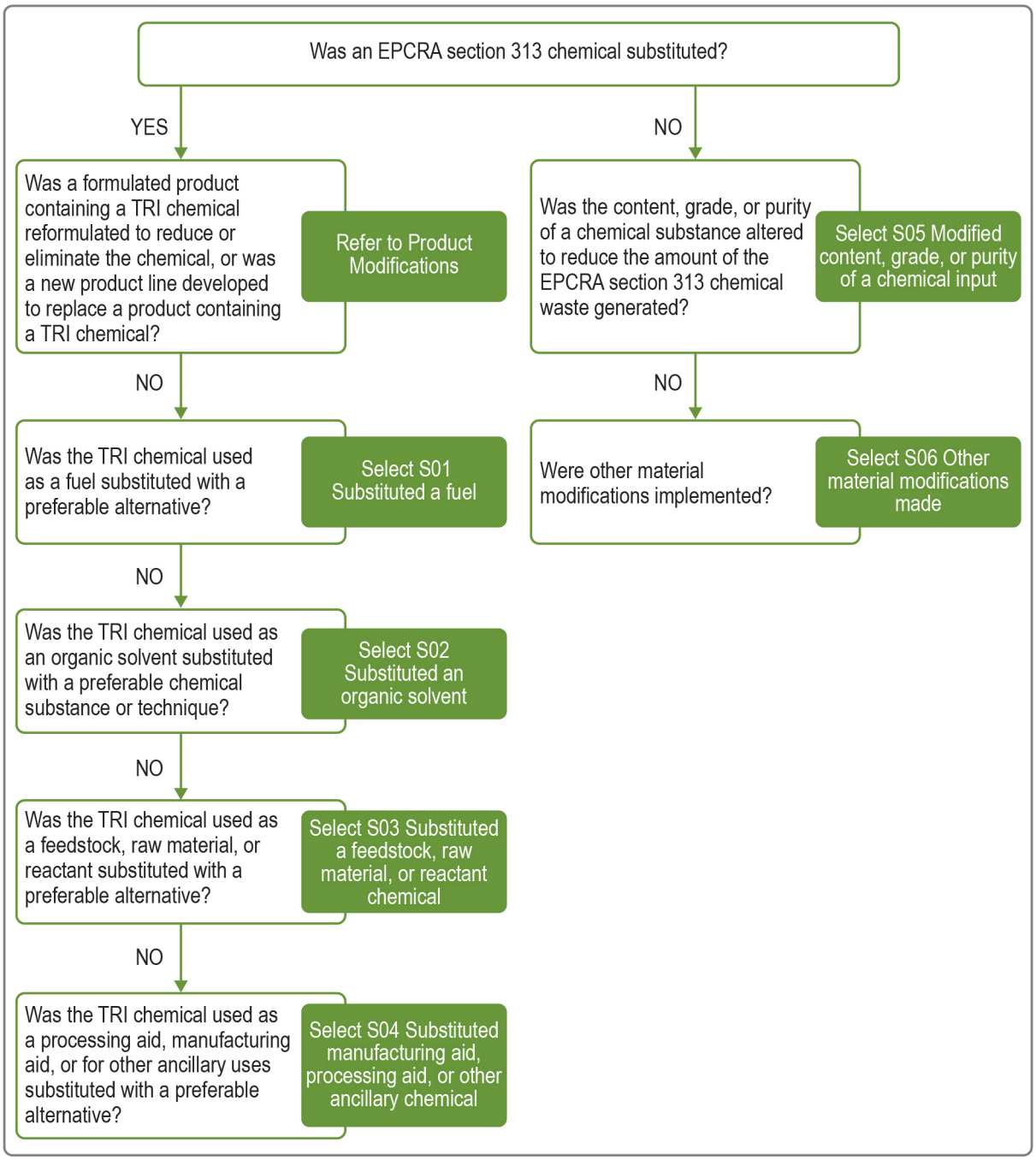
Material Substitutions and Modifications refer to changing input purity or dimensions, or replacing a raw material, feedstock, reagent, or other substance with environmentally preferable alternatives.

Where substitutions require concurrent implementation of new techniques or installation of new equipment, facilities should also report these changes using codes in the *Process and Equipment Modifications* category.

Substitution of a chemical that falls under a TRI chemical category with another chemical in that same category may qualify as source reduction, provided the substitution reduces the overall toxicity or quantity of the chemical category managed as waste. Facilities are encouraged to report substitutions of toxic chemicals with less toxic alternatives (even substitutions within the same TRI chemical category, for example, changes from chromium (VI) compounds to chromium (III) compounds). To obtain information on chemical toxicity to aid in determining whether substitutions are preferable alternatives, several resources are available, including EPA's Risk-Screening Environmental Indicators (RSEI) toxicity weights (https://www.epa.gov/rsei) and EPA's Safer Chemical Ingredients List (SCIL) (https://www.epa.gov/saferchoice/safer-ingredients).

Material Substitutions and Modifications Decision Tree

The material substitutions and modifications decision tree is structured from specific to broad chemical use functions. First, identify the primary function of the chemical in the context for which it is being substituted and then use the decision tree to select the first applicable code (as the codes are ordered from most to least specific). For example, if a TRI-listed organic chemical is used as a solvent within a facility and is substituted with another chemical or technique, the facility should report S02 ("Substituted an organic solvent") even if the same chemical is used for a different purpose elsewhere in the facility. If the material substitution or modification also requires a process modification, refer to the category *Process and Equipment Modifications* to report related source reduction activities.



- **S01 Substituted a fuel** covers activities such as changing grades of fuel or switching from one type of fuel to another. Fuel types include natural gas, oil, or coal, which are used to produce energy or electricity necessary for a manufacturing process. Example: Switching from coal to natural gas to eliminate releases of mercury and lead compounds. [Green chemistry code]

- **S02 Substituted an organic solvent** refers to substituting an organic TRI chemical used as a solvent with another substance or implementing a technique that obviates the need for the TRI-listed chemical. This code covers most uses of TRI-listed organic solvent chemicals (cleaning, degreasing, process solvents, extraction solvents, carrier solvents, etc.), except for instances where a facility produces a formulated product which contains a solvent. Example: replacing methyl isobutyl ketone as a solvent for degreasing with a semi-aqueous cleaning solvent containing limonene, thereby eliminating fugitive emissions of methyl isobutyl ketone. [Green chemistry code]
- **S03 Substituted raw materials, feedstock, or reactant chemical** refers to the substitution of starting materials, commonly referred to as raw materials, feedstocks, reagents, or reactants, and used in a process. This code also covers the substitution of intermediate materials (e.g., coatings, solder). These materials are consumed during chemical reactions and/or are typically incorporated into the final product. Example: substituting solvent-based photochemical coatings (e.g., methylene chloride, 1,1,1-trichlorethane, or perchloroethylene) with aqueous base coating of 1% sodium carbonate. [Green chemistry code]
- **S04 Substituted manufacturing aid, processing aid, or other ancillary chemical** refers to the substitution of chemicals used to aid the manufacturing process but not incorporated or intended to become part of the product. Example: replacing TRI-listed perfluorinated surfactants used for chrome plating with non-perfluorinated alternatives. [Green chemistry code]
- **S05 Modified content, grade, or purity of a chemical input** refers to using a chemical input with a lower concentration of impurities or unwanted components. Example: switching from zinc that has

Definitions

Raw Material is a crude, unprocessed, or partially processed material used as a basic input material in a process; examples include materials extracted or harvested, such as minerals, tars (e.g., coal, tar), metals, grain, and forest resources.

Feedstock is a raw material or starting material (chemical) needed in an industrial process. The terms ***feedstock*** and ***raw material*** are often used interchangeably, and what is considered a raw material or feedstock may vary significantly from industry to industry.

A ***reactant*** is a natural or synthetic chemical that undergoes a chemical transformation and is consumed during a reaction. A ***reagent*** is any chemical which participates in a chemical reaction but is not necessarily consumed. ***Reactant*** and ***reagent*** are often used interchangeably to mean a substance that undergoes a chemical reaction.

Chemical processing aid is a chemical added to a reaction mixture to aid in the manufacture or synthesis of another chemical substance but is not intended to remain in or become part of the product or product mixture.

Manufacturing aid is a chemical that aids the manufacturing process but does not become part of the resulting product and is not added to the reaction mixture during the manufacture or synthesis of another chemical substance.

Ancillary or other use is a chemical used for purposes other than aiding chemical processing or manufacturing.

1% lead content to a higher-grade zinc with 0.003% lead content to reduce the amount of lead waste generated. [Green chemistry code]

- **S06 Other material modifications made** refers to modifications not covered by other codes in the category. Activities may relate to physical material changes such as changing dimension of sheet blanks introduced in machining to reduce scrap metal.

Product Modifications refer to changing the end product through design, composition, formulation, or packaging changes, as well as full final product replacements that reduce the generation of waste.

- **S11 Reformulated or developed new product line** refers to changes to the ingredients or their proportions in a formulated product or development of a completely new product line marketed as such to customers. Example: reviewing a formula to reduce and only use the least amount of a chemical before product quality suffers, e.g., reduced amount of zinc added to compound master by studying when the product quality changed.
- **S12 Altered dimensions, components, or final design of product** refers to changes to manufactured end products such as textiles, food, automobiles, or metal parts. Changes may involve altering dimensions, components used in the product, or design specifications. This category is intended to capture activities other than those focused on chemicals or allied product manufacture. Example: altering the dimensions of a part to generate less scrap during production. [Green chemistry code]

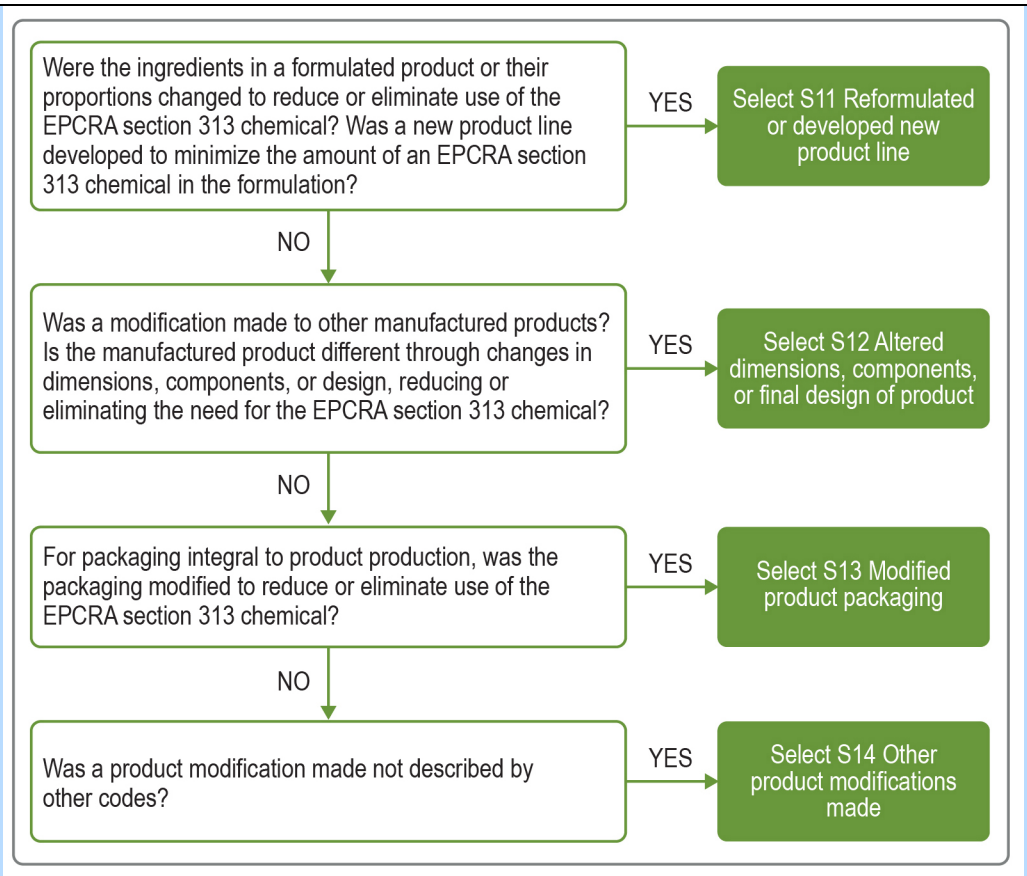
Definitions

A ***formulated product*** is a mixture of different chemicals combined in specific ratios to give the mixture desirable properties. Examples include paints, detergents, personal care products, adhesives, and insecticides.

Reformulation refers to changes in the ingredients or their proportions in a formulated product.

Product line refers to a product or group of products with distinct branding.

- **S13 Modified product packaging** refers to changes in packaging integral to the final product. Examples include the container used to hold the product, product labels, caps, foils, and wrapping. Note that this code is only intended to capture changes to packaging which affect waste management quantities of the chemical reported to TRI. Facility initiatives to reduce packaging which do not impact quantities of TRI chemicals should not be reported as source reduction. Example: switching the ethylene-vinyl acetate adhesive used to seal food packaging to formulations containing less vinyl acetate.



Process and Equipment Modifications refer to improvements to industrial processes and/or associated equipment including implementation of new processes that produce less waste, direct reuse of chemicals, or technological changes impacting synthesis, formulation, fabrication, assembly, and surface treatment such as cleaning, degreasing, surface preparation, and finishing.

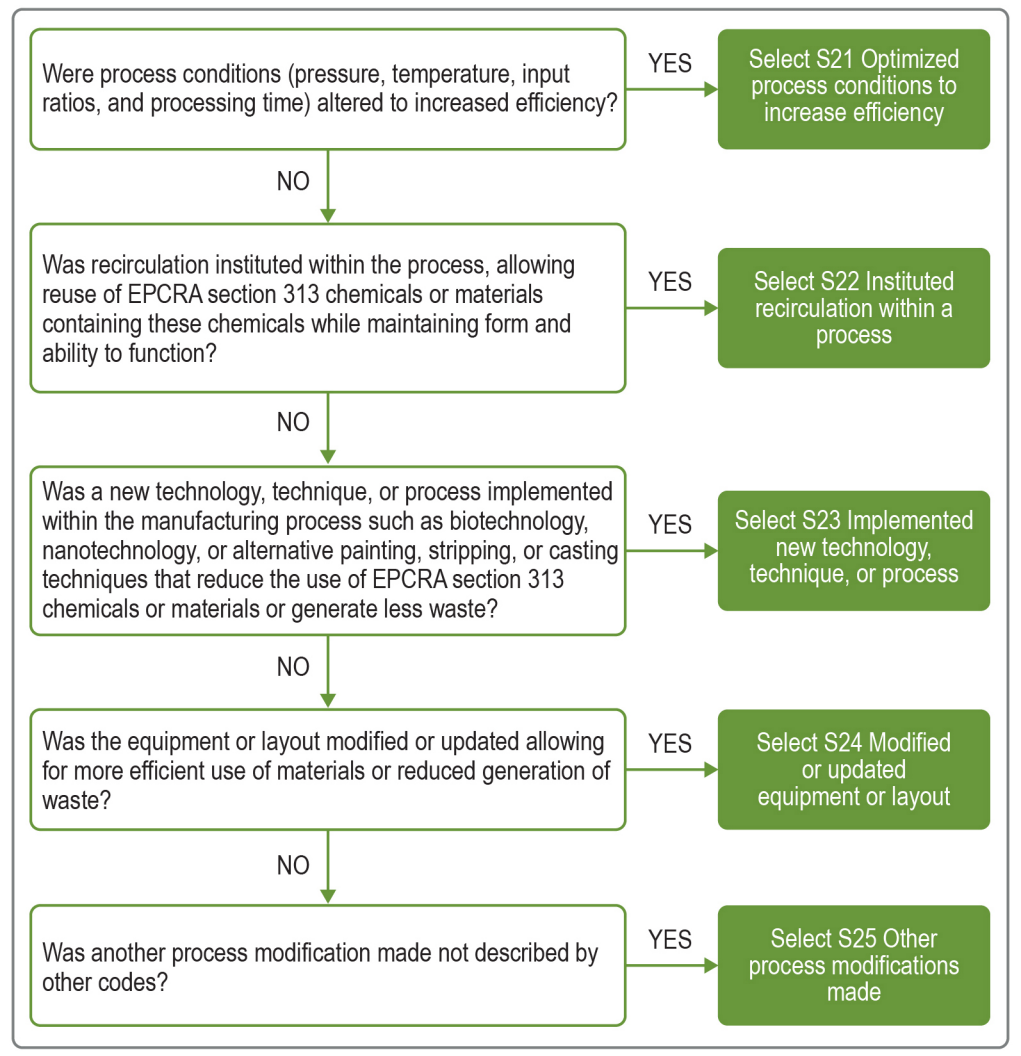
- **S21 Optimized process conditions to increase efficiency** refers to adjustments to process conditions, such as pressure, temperature, input ratios, and processing time, to positively influence process efficiency (e.g., improved product yield while decreasing production-erelated waste). Example: Increasing dyeing time, resulting in greater fixation of copper metallized dyes, and a decrease in the amount of copper compounds managed as waste. [Green chemistry code]
- **S22 Instituted recirculation within a process** refers to the introduction of a direct re-circulation system in the process that extends the utility of chemicals (products or component parts) used during manufacturing. Chemicals or materials containing EPCRA Section 313 chemicals used within the process are returned for direct reuse while maintaining form and ability to function. *Note that to qualify as source reduction, re-circulation should be integral to the process and would not involve mechanical, chemical, or other reclamation steps to allow for reuse.* Example: Installing a distillation column to condense unreacted methanol

Definition

Re-circulation refers to the direct return of a chemical (product or component part) within a process or between processes, while maintaining its form and ability to function for reuse.

and return it directly to the reaction vessel for the production of biodiesel from used cooking oil. [Green chemistry code]

- **S23 Implemented new technology, technique, or process** refers to the use of new technology, techniques, or processes within the manufacturing process that reduce use of TRI chemicals or production of wastes that contain TRI chemicals. Examples include use of biotechnology that utilizes biological systems, living organisms, or processes to develop or create different products; nanotechnology; or new painting or stripping techniques. *Note that the use of biotechnology for waste treatment should not be reported as a source reduction activity.* Example: Implementing a thermal stripping technique to replace solvent stripping when removing hydrocarbons from engines, eliminating the use of 1,1,1-trichloroethane for engine cleaning. [Green chemistry code]
- **S24 Modified or updated equipment or layout** refers to equipment or layout improvements that optimize the efficiency of processing steps and reduce waste generation. Example: Changing computer numerical control (CNC) machinery resulted in more accurate tooling, reducing scrap generated.



Inventory and Material Management refers to improvements in procurement, inventory tracking, preventative monitoring, and storage and handling of chemicals and/or materials while on-site at a facility to optimize their use and prevent spills and leaks during operation.

- **S31 Instituted better labeling, testing, or other inventory management practices** refers to more efficient management of chemicals and materials through labeling, material testing, material exchange programs, or other inventory management practices. Example: implementing a system to track quantities of custom-mixed resin formulations in inventory to avoid expiration on shelves and minimize generation of formaldehyde-containing waste when expired resin is discarded.
- **S32 Changed size or type of containers procured** refers to changes to the size, volume, or dimension of containers procured, or ordering materials in a different kind of container. Example: ordering smaller volumes of resins containing diisocyanates to avoid material expiring while in inventory and subsequently managed as waste.
- **S33 Improved containment or material handling operations** includes changes to handling techniques or equipment, as well as changes to containment of chemicals while in inventory, process equipment, or during movement throughout the facility. Example: installing lids (e.g., roll-type covers) on all cold cleaning tanks and dip tanks to reduce fugitive releases of methanol during cleaning of metal parts.
- **S34 Improved monitoring practices of potential spill or leak sources** refers to changing procedures or equipment used to examine or monitor potential spill or leak sources, as well as methods for detecting spill and leaks anywhere they might occur. Example: installing additional high-level storage tank alarms on storage tanks of cresol used for the manufacture of pesticide intermediates.

Operating Practices and Training refer to improvements in maintenance, production scheduling, process monitoring, and other practices that enhance operator expertise and housekeeping measures that eliminate or minimize waste.

- **S41 Improved scheduling, record keeping, or procedures for operations, cleaning, and maintenance** refers to improvements related to maintenance, typically reflected in new or revised written standard operating procedures. Example: installing a preventative maintenance program, including scheduled sump and machine cleaning, and periodic inspections of wipers and oil seals, to postpone contamination of waste fluids and reduce waste generation.
- **S42 Changed production schedule to minimize equipment and chemical changeovers** refers to planning and sequencing production so that only necessary operations are performed, and that no operation is needlessly undone by a following operation. Example: switching changeout of aluminum etch baths from time-based to throughput-based, ensuring better bath exhaustion and reducing the amount of nitric acid managed as waste.
- **S43 Introduced in-line product quality monitoring or other process analysis system** refers to the use of manual or automated process analysis or quality analysis. Example: monitoring cyanide baths used in copper plating to ensure the minimum amount of cyanide compounds is added, resulting in smaller amounts of cyanide and copper compounds managed as waste. [Green chemistry code]

Example 39: Source Reduction Activity Scenarios

Scenario 1. Changing solvent-borne coating to powder coating on cabinets
A facility uses a spray system to apply paint to metal parts, which are then assembled into cabinets. The paint formulation contains toluene, an organic solvent chemical included on the TRI chemical list. To reduce toluene emissions, the facility switches from spray coating the metal parts to applying a powder coating which cures in an oven and does not contain or require the use of toluene or any other TRI solvent chemical. The switch to the powder coating necessitates a new system for coating application and curing, in addition to the new powder coating material.

How should the facility report this source reduction activity?

1. Since the facility must make significant changes to its equipment, the facility should select code S23 (*Implemented new technology, technique, or process*) under *Process and Equipment Modifications* to report implementing a new technique—powder coating—at the facility.
2. Since the facility substituted the solvent-borne coating material for powder coat, the facility should select S03 (*Substituted raw materials, feedstock, or reagent chemical*) under *Material Substitutions and Modifications*. While the coating substitution resulted in the elimination of an organic solvent, the facility should report S03 because this was achieved through the substitution of the entire coating material, not just the individual organic solvent.

Scenario 2. Using a mechanical process to replace solvent-based paint stripping
A facility that reconstructs aircraft uses a paint stripping solution to remove paint from aircraft parts during the repair process. The stripping solution contains dichloromethane (methylene chloride) and formic acid, both of which are TRI-listed chemicals. To reduce quantities of these chemicals that will inevitably need to be managed as waste, the facility installs and uses sand blasting equipment for most paint stripping, which dramatically reduces the need for use of the dichloromethane-formic acid solution.

How should the facility report this source reduction activity?

1. Since the facility made significant changes to its equipment, the facility should select code S23 (*Implemented new technology, technique, or process*) under *Process and Equipment Modifications* to report implementing the sand blasting technique for paint stripping. This source reduction activity should be reported on the Form Rs for formic acid and dichloromethane.
2. The facility substituted use of a chemical with a mechanical technique.
    a. On the Form R for dichloromethane, the facility should select S02 (*Substituted an organic solvent*) because the facility substituted the use of a solution containing an organic solvent with a new technique.
    b. On the Form R for formic acid, the facility should select S04 (*Substituted manufacturing aid, processing aid, or other ancillary chemical*) because it replaced the solution containing formic acid (a chemical "otherwise used" for an "ancillary or other use") with a new technique.

Facilities are encouraged to provide additional details about the source reduction activities implemented, including estimated return on investment, anticipated reductions, benefits of change,

extent of implementation (pilot, single manufacturing line, or plant-wide).

8.11 Optional Pollution Prevention Information

In Section 8.11, provide more detail about activities the facility undertook to reduce releases of the EPCRA Section 313 chemical, including source reduction; waste management methods such as recycling, energy recovery, or treatment; or other pollution prevention activities. EPA encourages facilities to provide detail in Section 8.11, as it offers the facility the opportunity to showcase its achievements in preventing pollution.

While EPA welcomes submissions about recycling and pollution control measures, the agency is most interested in collecting information about innovative and effective source reduction activities, such as green chemistry or green engineering practices. EPA encourages reporters to provide enough detailed information about their most effective source reduction activities to spur other facilities to adopt similar practices, as well as to inform the public about such activities being implemented in industry and in their communities.

To encourage submissions with additional pollution prevention information, EPA is increasing the prominence and accessibility of this information. The Agency also uses information provided in 8.11 entries to select and highlight effective efforts to improve environmental performance. Visit https://www.epa.gov/tri/p2 to learn how to access this information (e.g., through the TRI P2 Search Tool at https://enviro.epa.gov/facts/tri/p2.html) and to view examples of optional pollution prevention information highlighted in EPA's annual TRI National Analysis report or other communication materials.

The following questions can help provide meaningful additional information:

- Which processes and products were affected?
- Which technologies and materials were used?
- How did release (e.g., air, water, land) or waste management (e.g., recycling, treatment) quantities change?
- What other benefits (e.g., cost savings, energy savings, improved product quality) were attained?
- Who provided the idea or assisted with implementation?
- Why was this activity implemented?

If available, share useful URLs for equipment manufacturers or to company web pages or other information sources related to the activity described.

Additional guidance and sample pollution prevention entries can be found at https://www.epa.gov/sites/default/files/documents/tri_p2_tipsheet.pdf.

EPA also encourages facilities to provide details on any barriers the facility faces in implementing additional source reduction or waste management practices, including recycling or pollution control measures. EPA believes this information is valuable in giving a full picture of the environmental management activities facilities engage in and the barriers faced in the implementation of source reduction or waste management activities. EPA also believes this information may allow for an exchange between those that have knowledge of source reduction practices, such as the EPA P2 Program, and those that are seeking additional help. In addition, it will better enable EPA to identify technological areas for which EPA can support basic research to identify alternative technologies that are less polluting.

Optional information provided in earlier report sections will display in Section 8.11. Facilities have the option to review and edit previously reported text. Facilities can also use the checkboxes in TRI-MEweb to provide additional information on source reduction activities, waste management activities, or other pollution prevention measures. For example, facilities may use the General Environmental Management checkbox to provide details about efforts to reduce, repurpose, or re-use waste that does not contain TRI-reportable chemicals, such as packaging materials (e.g., plastic) that are used for transfer of products along the value chain (subsequent manufacturing, distribution, retail).

Optional Information Topics

- Source Reduction
- Barriers to Source Reduction
- Recycling
- Energy Recovery
- Waste Treatment
- Methods for Identifying Waste Management Opportunities
- Procurement and Environmentally Preferable Purchasing
- Product Disclosures to Consumers
- Barriers to Waste Management Activities
- General Environmental Management
- Other Optional Pollution Prevention Information

Each topic selected will be included in the Section 8.11 entry, followed by the information provided about that topic. Facilities that wish to provide additional information that is not related to pollution prevention or other environmentally friendly practices should use Section 9.1.

Section 9. Miscellaneous Information (Form R & A)

9.1 Miscellaneous, Optional, and Additional Information for the Form R

Facilities may provide additional information pertaining to any portion of the Form R submission in the free text box provided in TRI-MEweb. Submissions to Section 9.1 regarding miscellaneous, additional, optional information may provide EPA and/or the public with useful data that help explain why a facility submitted data in one or more data elements that might appear unusual or inconsistent with previous TRI Form R submissions or with other data supplied by the facility during the reporting year. Such additional data may help EPA reduce the need for additional data quality control as well as additional TRI-related enforcement and compliance efforts. **Do not submit information on the Form R that is CBI or otherwise protected.**

When completing this section in TRI-MEweb, indicate submitted information pertaining to one or more of the following topics by checking the appropriate box:

- Changes in Production Levels
- Calculation Methods (e.g., Emissions Factors)
- One-time or Intermittent Events Impacting Reported Quantities
- Issues or Difficulties Encountered in Submitting Form
- Other Regulatory Requirements Related to This Chemical
- No TRI Reports Expected for This TRIFID Next Year
- No TRI Report Expected for This Chemical Next Year

Each topic selected is included in the Section 9.1 entry, followed by the information provided about that topic (if any). Using these checkboxes will ensure that EPA and other TRI data users understand the factors that have contributed to any apparent data quality issues. Note that if one of the last two topics above is selected, it is helpful to include the reason for not submitting a report the following year (e.g., facility closure, move, temporary shutdown).

9.2 Optional Pollution Prevention and Additional Information for This Toxic Chemical for the Form A Certification Statement

Facilities may provide additional information pertaining to pollution prevention or other topics for each toxic chemical or mixture component on the Form A submission. Information provided in this section may provide EPA and/or the public with useful data that help explain use of the Form A. For example, a facility could include information on steps it took to reduce its manufacture, processing, or otherwise use of the chemical. **Do not submit information on the Form A that is CBI or otherwise protected**.

TRI-MEweb allows facilities to categorize optional information provided by checking a box next to the appropriate topic:

- Changes in Production Levels
- Source Reduction Activity Involving this Chemical
- One-Time or Intermittent Events Involving this Chemical
- No TRI Report Expected for this Chemical Next Year

Each topic selected is included in the Section 9.2 entry, followed by the information provided about that topic (if any). Using these checkboxes will ensure that EPA and other TRI data users understand useful factors related to how a facility dealt with any chemicals reported on a Form A. Note that if a facility selects the last topic listed above, it is helpful to include the reason for not submitting a report for the following year (e.g., facility closure, move, temporary shutdown).

E. Instructions for Completing the Form R Schedule 1 (Dioxin and Dioxin-like Compounds)

E.1 What Is the Form R Schedule 1?

The Form R Schedule 1 is an adjunct to the Form R that mirrors the data elements from Form R Part II Chemical-Specific Information Sections 5, 6, and 8 (current year only) and requires reporting the individual quantity in grams for each member present of the dioxin and dioxin-like compounds category. Only facilities that file Form R reports for the dioxin and dioxin-like compounds category may be required to file a Form R Schedule 1.

E.2 Who Is Required to File a Form R Schedule 1?

Facilities that file Form R reports for the dioxin and dioxin-like compounds category are required to determine if they have any of the information required by the Form R Schedule 1. Facilities that have any of the data required by Form R Schedule 1 for the individual members of the dioxin and dioxin-like compounds category must submit a Form R Schedule 1, in addition to the Form R. Note that the dioxin and dioxin-like compounds are not measured as a total quantity; the measurements are based on the individual compounds within the category. Emissions factors for dioxin and dioxin-like compounds are also based on emissions factors for the individual compounds within the category. EPA's TRI reporting guidance document for dioxin and dioxin-like compounds is available in GuideME at https://guideme.epa.gov/ords/guideme_ext/f?p=guideme:gd:::::gd:dioxin. This resource includes tables that contain the emissions factors for the individual members of the dioxin and dioxin-like compounds category. Since measured data and emissions factor data are based upon data for the individual members of the dioxin and dioxin-like compounds category, the information the Form R Schedule 1 requires should be available to facilities that file Form R reports for the dioxin and dioxin-like compounds category.

E.3 What Information Is Reported on the Form R Schedule 1?

The only data reported on the Form R Schedule 1 are the mass quantity information required in Sections 5, 6, and 8 (current year only) of the Form R. All the other information required in Sections 5, 6, and 8 of the Form R (e.g., off-site location names, stream or water body names) is identical, so this information is not duplicated on Form R Schedule 1. For example, if a facility reported 5.3306 grams on Form R Section 5.1 for fugitive or non-point air emissions for the dioxin and dioxin-like compounds category, then the facility would report on the Form R Schedule 1 the quantity in grams for each individual member of the category that contributed to the 5.3306-gram total. The sum of the quantities reported for each individual member of the category should equal the total quantity in grams reported for the category on Form R for each data element (see examples in Figure 8). The "**NA**" checkbox has the same meaning on Form R Schedule 1 as it does on the Form R and should only be marked if it is marked on the Form R.

It is extremely important that facilities enter the quantity in grams for the individual members of the category based on the order shown in the "Individual Members of the Dioxin and Dioxin-like Compounds Category" table that follows Figure 8. This information is used to calculate toxic equivalency values using toxic equivalency factors that are specific to each member of the category. As with reporting on the Form R, facilities should report on the Form R Schedule 1 to the level of accuracy that their data support, up to seven digits to the right of the decimal; EPA's reporting software and data management systems support such data precision.

Form R Section 5 Example

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE					
			A. Total Release (pounds/year*) (Enter a range code** or estimate)	**B. Basis of Estimate** (Enter code)	**C. Percent from Stormwater**
5.1	Fugitive or non-point air emissions	NA ☐	5.3306	M2	

Form R Schedule 1 Section 5 Example

SECTION 5. QUANTITY OF DIOXIN AND DIOXIN-LIKE COMPOUNDS ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE								
		5.1 NA ☐		**5.2** NA ☐		**5.3** Discharges to receiving streams or water bodies (Enter data for one stream or water body per box) NA ☐		
		Fugitive or non-point air emissions		Stack or point air emissions		**5.3.1**	**5.3.2**	**5.3.3**
D. Mass (grams) of each compound in the category (1-17)	1	0.0035						
	2	0.0059						
	3	0.0071						
	4	0.0008						
	5	0.0065						
	6	0.0923						
	7	0.5720						
	8	0.0723						
	9	0.0695						
	10	0.0399						
	11	0.3562						
	12	0.1309						
	13	0.0132						
	14	0.0815						
	15	1.4625						
	16	0.3126						
	17	2.1039						
If additional pages of Section 5.3 are attached, indicate the total number of pages in this box ☐ and indicate the Section 5.3 page number in this box ☐ (Example: 1, 2, 3, etc.)								

Figure 8. Hypothetical Form R, Section 5.1 and Form R Schedule 1, Section 5.1

The Form R Schedule 1 provides boxes for recording the quantities in grams for all 17 individual members of the dioxin and dioxin-like compounds category. The boxes on the Form R Schedule 1 for each release type are divided into 17 boxes. Each of the boxes (1-17) corresponds to the individual members of the dioxin category as presented in the table below.

Individual Members of the Dioxin and Dioxin-like Compounds Category

Box #	CASRN	Chemical Name	Abbreviation
1.	1746-01-6	2,3,7,8-Tetrachlorodibenzo-*p*-dioxin	2,3,7,8-TCDD
2.	40321-76-4	1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin	1,2,3,7,8-PeCDD
3.	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,4,7,8-HxCDD
4.	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin	1,2,3,6,7,8-HxCDD
5.	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin	1,2,3,7,8,9-HxCDD
6.	35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin	1,2,3,4,6,7,8-HpCDD
7.	3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-*p*-dioxin	1,2,3,4,6,7,8,9-OCDD
8.	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF
9.	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PeCDF
10.	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PeCDF
11.	70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF
12.	57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF
13.	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF
14.	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF
15.	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF
16.	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF
17.	39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	1,2,3,4,6,7,8,9-OCDF

E.4 How Are Form R Schedule 1 Data Reported?

All dioxin and dioxin-like compound data must be submitted electronically via TRI-MEweb. For each data element in Sections 5, 6, and 8, TRI-MEweb has a button labeled "**Enter Schedule 1 Quantities**" that loads a separate "**Member-Specific Quantities**" page. In this page, enter the individual quantities for each category member. TRI-MEweb will automatically calculate the category total. If any releases or transfers were due to non-production-related wastes (see Part II, Section 8.8), enter those values on the same page. If the facility does not have individual member data, select the checkbox labeled "**No, I do not have member-specific quantities available**" to enter a total quantity.

F. Optional Facility-Level Information and Non-Reporting

Although there is no requirement to inform EPA of updates to a facility's contact and location information outside of what is required on a TRI reporting form, each year some facilities voluntarily elect to provide this information to EPA. Additionally, each reporting year some facilities contact EPA to indicate that they will no longer be reporting to TRI or will not be submitting a form for one or more specific TRI-listed chemicals for that reporting year.

Facilities can use TRI-MEweb to provide optional facility-level information for the following categories:

- Facility name has changed
- Facility Technical Contact has changed
- Facility Public Contact has changed
- Facility has relocated to a new physical address
- Facility merged with another location
- Facility has closed
- Facility was temporarily shut down
- Facility did not have 10 or more full-time employee equivalents
- Facility is no longer in a covered NAICS sector
- Facility fell below reporting threshold for one or more chemicals due to source reduction/pollution prevention
- Facility fell below reporting threshold for one or more chemicals due to exemption (e.g., *de minimis*, articles, laboratories, etc.)
- Facility fell below reporting threshold for one or more chemicals for reasons other than source reduction or use of an exemption (e.g., change in source materials, decrease in business activity, etc.)