TRI/NEI/SLT R&D Team Summary Report for Phase I CAER Project

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Purpose: Identify and evaluate consistencies and possible workflows for sharing emissions data between Toxics Release Inventory (TRI), State/Local/Tribal (SLT), and National Emissions Inventory (NEI).

Team Members: State representatives from MN and SC; and EPA representatives from Office of Pollution Prevention & Toxics (OPPT), Office of Air Quality Planning & Standards (OAQPS), Office of Environmental Information (OEI)

Scope:

Because the Combined Air Emissions Reporting (CAER) project has a goal of streamlining reporting, this project sought out commonalities and differences between the TRI, SLT, and NEI emissions reporting programs in the following ways:

1. Identify differences in terminology used to define reporting requirements in each program.
2. Identify pollutants that are common between the TRI and NEI, and specify how they relate to each other if there is not a one-to-one match.
3. Research how states use TRI data for their NEI submissions.

Deliverables:

In addition to the summary of findings immediately below, this report includes the following attachments that contain the detailed findings and results of the project:

1. A document identifying differences in terminology used and reporting requirements in each program (see Attachment 1: TRI and NEI Terms and Program Requirements Comparison)

2. A pollutant crosswalk for TRI and NEI pollutants (see Attachment 2: TRI NEI Pollutant Crosswalk Sample View and Reference File link)
   a. Started with an existing crosswalk
   b. Updated list of chemicals from each program
   c. Reconciled outstanding questions on particular chemicals and chemical categories
   d. Quality assurance and quality control (QA/QC)
3. Survey of states on their use of TRI data in their Emissions Inventory (EI) submissions (see Attachment 3: CAER R&D SLT/NEI/TRI Team Report on State Survey)
   a. Conducted a state-run survey with the help of the Environmental Council of the States (ECOS) to ask all states whether they use TRI data in their EI submissions
   b. Followed up with states that do use TRI data to ask about how the data are used
   c. Compiled and summarized responses

Summary of Findings: Generally, the team found that there are opportunities for combined reporting. While the programs have some differences, e.g. in reporting cycle and reporting requirements, they collect complementary information and have the same fundamental guidance for reporting. The team documented the overlap in pollutants covered by each of the programs. The NEI program requires reporting on 7 criteria air pollutants and precursors (CAPs), has voluntary reporting for 187 hazardous air pollutants (HAPs), and allows other toxic and Greenhouse Gas pollutants. TRI requires reporting on 2 of the 7 CAPs and about 96% of the 187 HAPs, in addition to other toxic chemicals. There are several categories of chemicals in each program where there is only partial overlap between the two programs, and others where the category definitions are identical. The team also found that there are three states, Illinois, Minnesota, and Indiana, that use TRI data in their EI submissions. Illinois and Minnesota include TRI data directly in their submission, and Indiana uses TRI data to inform what they submit, but does not include the data directly in their submission. Instead if they find a discrepancy between the TRI and the state data, they remove the state data to ensure EPA will fill that information in with the TRI data. The two states that do use TRI data and the NEI program categorize TRI data as an engineering judgement in the NEI data; however, this TRI data may be calculated through other methods. TRI collects information about calculation methods (e.g. continuous monitoring, periodic monitoring, mass balance) in Section 5.1.B and 5.2.B of TRI's Form R that is available to the public.

Recommendations for Phase II:

1. Develop recommendations for near and future efforts to harmonize and utilize both systems towards the CAER goals (Part 2)
2. Research consistency and possible workflows for sharing of emissions data between TRI, SLTs and NEI
3. Develop recommendations for improving on how states use TRI data in EI submissions
4. Investigate reporting guidance used in NEI and TRI and harmonize
5. Explore the option to expand SLT capacity to provide review capabilities of TRI reported data
6. SLT/NEI/TRI case studies to demonstrate workflows and data sharing in a test environment

Attachment 1: TRI and NEI Terms and Program Requirements Comparison

General Program Information and Applicability

Type of Information for Each Data System	TRI TRI-MEweb	NEI EIS
NAICS covered	One of the three TRI reporting requirements is that a facility must be in a TRI-covered sector or be a federal facility. Generally, TRI-covered sectors include manufacturing, waste management, metal and coal mining, and electric utilities.	There are no restrictions or applicability requirements based on NAICS. All NAICS are potentially covered. Note that mobile sources – railyards and airports are also covered in the point data category. Rail yards can also be covered as county-level emissions, but airports cannot.
Exemptions from reporting	TRI has activity exemptions including otherwise use exemptions, an articles exemption, a *de minimis* exemption, a laboratory activities exemption, a coal extraction exemption, and a metal mining overburden exemption. While not strictly an exemption, keep in mind, TRI has chemical qualifiers that only require reporting on specific forms of some TRI chemicals and chemical categories.	States are not required to report facilities located on tribal lands.
Pollutants	TRI-listed chemicals can be accessed here. In general, chemicals covered by the TRI Program are those that cause one or more of the following: • Cancer or other chronic human health effects • Significant adverse acute human health effects • Significant adverse environmental effects	Mandatory reporting for criteria air pollutants and precursors (CAPS) and optional reporting for hazardous air pollutants (HAPs). There are a few other pollutants such as hydrogen sulfide that are neither HAP nor CAP that can be optionally reported. Some pollutants that are reported into EIS are not "selected" for use in the NEI (in 2014, these include dioxins/furans and radionuclides). In addition, the NEI contains speciated particulate matter (PM) (i.e.,

Type of Information for Each Data System	TRI	NEI
	TRI-MEweb	EIS
		elemental carbon, organic carbon, sulfate, nitrate and remaining fine PM) and diesel PM.
Activity/Emissions thresholds	One of three TRI reporting requirements is that a facility must manufacture, process, or otherwise uses a TRI-listed chemical in quantities above threshold levels in a given year.

For most chemicals, the manufacturing and processing threshold is 25,000 pounds per year, and the otherwise use threshold is 10,000 pounds per year.

Persistent, Bioaccumulative, Toxic chemicals (PBTs) have lower reporting thresholds (e.g., the threshold level for manufacturing, processing, and otherwise use is 10 pounds per year for mercury and mercury compounds). | See Table 1 in Appendix A of Subpart A of Part 51 of Air Emissions Reporting Requirements (AERR) for pollutant specific thresholds for point sources. Generally, 100 ton/year of any CAP facility total potential to emit must be reported every third year. Very large sources report every year. Smaller sources must report if the facility is within a non-attainment area, and many States report smaller facilities voluntarily. Lead sources over 0.5 tons/year actual emissions report every third year. HAPs and other pollutants are voluntary. Sources smaller than the thresholds are voluntary. |
Employee #	One of three TRI reporting requirements is that a facility must employ 10 or more full-time equivalent employees (2,000 work hours per year).	Not applicable
Frequency of Reporting	Annually submitted by facilities to EPA by July 1st	Required to be submitted by SLTs to EPA by 12/31 every third year, except for very largest sources which are every year (see above). Each SLT, however, has its own deadline for industry reporters to submit their emissions data to the SLT, prior to SLT making submission to EPA.
Who reports?	The facility itself	SLTs report. EPA adds data to gap fill where feasible. The U.S. Department of the Interior,

Type of Information for Each Data System	TRI	NEI
	TRI-MEweb	EIS
		Bureau of Ocean and Energy Management voluntarily provides CAP emissions for off-shore platforms in Federal waters.

Facility Configurations

Type of Information for Each Data System	TRI	NEI
	TRI-MEweb	EIS
Facility ID	TRI reporting uses a TRI facility ID (TRIFID), which EPA connects to an FRS ID.	SLTs almost always report using the facility ID they use in their data systems, but can use the EIS centrally managed ID if they wish. An SLT ID is required to be on any facility that the SLT reports.
Facility name	One name is submitted by the facility	Current name and alternative names
Facility operation status	Facilities are encouraged to indicate optional information on their operations (e.g., change of ownership, whether they are closing, etc.), and TRI-MEweb provides a means to provide this information.	Required such as operating or shutdown. Status year is required for non-operating status.
Definition of facility	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." See TRI's RFI for establishment definition.	Defined by SLT data systems, usually based upon their permitting and/or emission fee programs. For TRI facilities that are not reported by SLT, the facility definition is from TRI.

Parent company	A facility must provide information on parent company. For TRI Reporting purposes, the parent company is the highest level company, located in the United States, and that directly owns at least 50 percent of the voting stock of the company. If there is no higher level U.S. company, the user may select the "No U.S. Parent Company (for TRI reporting purposes)" check box. Note that a facility that is a 50:50 joint venture is its own parent company. When a facility is owned by more than one company and none of the facility owners directly owns at least 50 percent of its voting stock, the facility should provide the name of the parent company of either the facility operator or the owner with the largest ownership interest in the facility.	SLT can optionally provide the name of the organization associated with the facility. The data field in the schema is called "Organization Formal Name" and is provided in reports as "Company Name".
Address	Facilities must enter two addresses, the physical address and mailing address.	Physical address of the emitting facility (not mailing address of parent company)
Facility on tribal land	If your facility is located on Indian country as defined by 18 USC §1151 you must enter the three-digit Bureau of Indian Affairs (BIA) tribal code in the "City/County/Tribe/State/ZIP code" field. TRI guidance on this is located here.	Does not use Federal Information Processing Standard (FIPS) or state (other than address) but is assigned a three-digit tribal code based on the specific tribe.
Location Coordinates	Facility latitude/longitudes (lat/longs) are no longer required information from the facility. However, EPA provides the option for a facility to indicate in TRI-MEweb its coordinates by indicating its location on a map through an FRS Web service. Facility information, including data collected via the FRS Web	Facility lat/longs are required. There are additional geographic coordinate fields (optional) related to the coordinate system, method, and other meta data. Release point latitude/longtitude are optionally reported.

	service, is passed to EPA's FRS system, which then assigns geographic coordinates for all TRI facilities.	
State and County FIPS	Facilities do not report the FIPS. However, these data are obtained from FRS.	Standard FIPS codes except for portable facilities (end in 777), off-shore platforms (start with 85) and facilities reported by tribes use "88" concatenated with 3-digit tribal code.
Regulatory information (Reg codes)	N/A	Regulatory code indicates a particular rule (e.g., National emission Standards for hazardous Air Pollutants [NESHAP] or other rule) that the unit or process is subject to. Optional. Very few states report this. EPA has previously assigned codes and information may be incomplete.
Facility Category type	Facilities must say whether the form being submitted represents chemical information for the entire facility, for part of the facility, from a federal facility, or if the facility is a government-owned contractor operated (GOCO).	Identifies the Clean Air Act Stationary Source designation. Examples include major, minor and synthetic minor. Submitters do not have this information for all facilities which is why "Unknown" is a choice.

Sub-Facility Configurations

	TRI	NEI
Type of Information for Each Data System	**TRI-MEweb**	**EIS**
Emission unit ID	N/A	EIS ID, SLT ID, and alternative IDs
Emission unit description	N/A	optional free form field
Emission unit operation status	N/A	Required such as operating or shutdown. Status year is required for non-operating status.
Emissions unit type	N/A	Unit type code is required to be reported (unit level). There are currently 44 different codes (for unit types such as boiler, turbine, kiln, flare, storage tank, etc.), including an "unclassified" unit type.

Unit design capacity	N/A	The AERR (reporting rule) indicates that the capacity is required to be reported for certain unit types (e.g., boiler capacity).
Emission process ID	N/A	EIS ID and SLT ID
Emission process description	N/A	optional free form field
Source Classification Code (SCC)	N/A	Required
Emission process temporal information	N/A	EIS collects actual hours/period; average days/week, hours/day, and weeks/period; percentage activity/season. Optional
Control measures	TRI collects information about how gaseous waste streams are treated. Facilities have to report waste treatment codes associated with the chemical. Codes are listed here, and include flare, condenser, scrubber, electrostatic precipitator, mechanical separation and other air emission treatment.	Control measure type, association, pollutants controlled, and reduction efficiencies. Required by AERR but optional for input in EIS.
Release point ID	N/A	EIS ID and SLT ID
Release point description	N/A	Optional free form field
Release point operation status	N/A	Required such as operating or shutdown. Status year is required for non-operating status.
Release point configuration	Facility stack or fugitive totals for each chemical	Multiple stack and/or fugitive release points allowed (e.g., a single facility could have 15 of fugitive release points and 40 stack release points)
Release parameter detail for fugitives	N/A	Fugitive height, fugitive length, fugitive width, fugitive angle
Release parameter detail for stacks	N/A	Vertical, rain cap, horizontal, downward vent, stack height, stack diameter, velocity or flow and temperature are required. If both velocity and flow are reported there is a check to ensure consistency.

Release point association	N/A	Required to identify associated process flow percentage

Emissions

Type of Information for Each Data System	TRI	NEI
	TRI-MEweb	**EIS**
Level of detail for reporting	Facility total broken out into stack and fugitive	Unit/process
Units of measure collected	Other than dioxins, lbs. Dioxins use grams	Data reporter provides any valid unit of measure (LB, TON, KG, others)
Units of measure output	Other than dioxins, lbs. Dioxins use grams	Output from the NEI for HAPs is in pounds except for lead (a CAP and a HAP) which is output in tons. CAPs and greenhouse gases (GHG) are output in tons. Pollutants that are neither CAPs nor HAPs (designated as other or "OTH") are in tons except for H2S which is output in pounds.
Emission calculation method	TRI facilities have to submit codes for their basis of estimate for air emissions, as they do all releases and transfers. (See Appendix)	Required - indicates how emissions were estimated. 23 different codes that describe different emission estimation methods such as: continuous emission monitoring system, EPA emission factor (with or without control efficiency), material balance, engineering judgement, stack test (with or without control efficiency); (see Appendix).
Activity data / EFs	In Form R, Section 8.9, facilities are required to report a production ratio or activity index. In the option Section 9.1 field, facilities can include information about what emissions factors they used, and sometimes do.	Activity data and emission factors, where used to estimate emissions, can be reported. (Note, the data used for production ratio or activity index in TRI may differ from the activity data used for emissions factor calculations in NEI).
Reporting Period Type (annual or sub-annual)	Always annual	Required field; annual emissions required as a minimum, but allows data to be reported for an episode, 5-month ozone season, average season day, ozone season day, winter (CO season) or any specific month. Only annual is used for the NEI.
Emissions operating type (routine, startup, shutdown or upset)	TRI has a category that is reflective of non-routine releases (Form R, Section 8.8.) as a result of catastrophic, remedial actions, catastrophic events	Required field; routine emissions required as a minimum and most SLT provide only routine. Only routine used for the NEI.

	such as earthquakes, fires, or floods, or one-time events not associated with normal or routine production processes - usually applies to non-air but can also apply to air.	
Comments	TRI collects comments in two elements on the Form R, one for pollution prevention-related comments (in section 8.11) and the other for miscellaneous comments (in section 9.1).	EIS allows comments for nearly every field.

Attachment 2: TRI NEI Pollutant Crosswalk Sample View and Reference File

EIS pollutant c	NEI Pollutant Code Descr	TRI poll from TRI xwalk	TRI Pollutant code	Overlap but not e	TRI group - nc	NEI Poll	NEI Pollutant Categor
100027	4-Nitrophenol	4-Nitrophenol	100-02-7			HAP	4-Nitrophenol
100414	Ethyl Benzene	Ethylbenzene	100-41-4			HAP	Ethylbenzene
100425	Styrene	Styrene	100-42-5			HAP	Styrene
100447	Benzyl Chloride	Benzyl chloride	100-44-7			HAP	Benzyl Chloride
101144	4,4'-Methylenebis(2-Chlorɑ	4,4'-Methylenebis(2-chloroaniline) (MBOCA)	101-14-4			HAP	4,4-Methylenebis(2-Chlo
101779	4,4'-Methylenedianiline	4,4'-Methylenedianiline	101-77-9			HAP	4,4-Methylenedianiline
106423	p-Xylene	p-Xylene	106-42-3			HAP	Xylenes (Mixed Isomers)
106445	p-Cresol	p-Cresol	106-44-5			HAP	Cresol/Cresylic Acid (Mix
106467	1,4-Dichlorobenzene	1,4-Dichlorobenzene	106-46-7			HAP	1,4-Dichlorobenzene
106503	p-Phenylenediamine	p-Phenylenediamine	106-50-3			HAP	p-Phenylenediamine
106514	Quinone	Quinone	106-51-4			HAP	Quinone
106887	1,2-Epoxybutane	1,2-Butylene oxide	106-88-7			HAP	1,2-Epoxybutane
106898	Epichlorohydrin	Epichlorohydrin	106-89-8			HAP	Epichlorohydrin
106934	Ethylene Dibromide	1,2-Dibromoethane (Ethylene dibromide)	106-93-4			HAP	Ethylene Dibromide
106990	1,3-Butadiene	1,3-Butadiene	106-99-0			HAP	1,3-Butadiene
107028	Acrolein	Acrolein	107-02-8			HAP	Acrolein
107051	Allyl Chloride	Allyl chloride	107-05-1			HAP	Allyl Chloride
107062	Ethylene Dichloride	1,2-Dichloroethane (Ethylene dichloride)	107-06-2			HAP	Ethylene Dichloride
107131	Acrylonitrile	Acrylonitrile	107-13-1			HAP	Acrylonitrile
107211	Ethylene Glycol	Ethylene glycol	107-21-1			HAP	Ethylene Glycol
107302	Chloromethyl Methyl Ether	Chloromethyl methyl ether	107-30-2			HAP	Chloromethyl Methyl Eth
108054	Vinyl Acetate	Vinyl acetate	108-05-4			HAP	Vinyl Acetate
108101	Methyl Isobutyl Ketone	Methyl isobutyl ketone	108-10-1			HAP	Methyl Isobutyl Ketone
108316	Maleic Anhydride	Maleic anhydride	108-31-6			HAP	Maleic Anhydride
108383	m-Xylene	m-Xylene	108-38-3			HAP	Xylenes (Mixed Isomers)
108394	m-Cresol	m-Cresol	108-39-4			HAP	Cresol/Cresylic Acid (Mix
108883	Toluene	Toluene	108-88-3			HAP	Toluene
108907	Chlorobenzene	Chlorobenzene	108-90-7			HAP	Chlorobenzene

ReadMe	**NEI to TRI Crosswalk**	TRI to NEI Crosswalk

To see the full spreadsheet file containing the TRI/NEI Pollutant Crosswalk, please refer to the file named "TRI_NEI_Pollutant_Crosswalk_9_14.xlsx", located at the CAER website location for this project.

CAER R&D SLT/NEI/TRI Team

Report on State Survey

Background on Team Survey and Process

The CAER R&D State/Local/Tribal (SLT) team members surveyed states, tribes and local municipalities (SLTs) to see if they incorporated or used TRI data for their NEI data submittals. This initial set of questions included:

- Are TRI data incorporated into SLT data before or after submitting to NEI?
- Do you only include SLT point source facilities in your emissions inventory data, or do you include all of TRI?
- Do you only include hazardous air pollutants (HAPs) in your emissions inventory data, or do you include other TRI pollutants as well?
- What methods do you use to incorporate TRI data? Do you only use TRI data for missing pollutants or only for certain processes?
- How do you determine process source classification codes (SCCs) for TRI data?
- If TRI processes are not included in SLT point sources, how do you determine release characteristics for TRI emissions?
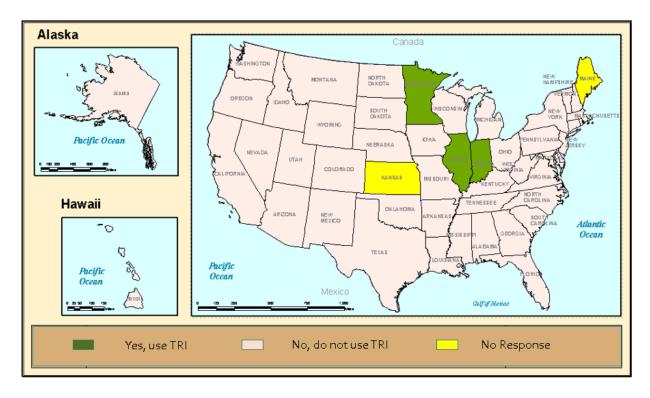
The survey process involved two steps. Step 1 was for whether SLTs incorporate TRI data into their NEI data submittals. Step 2 was for how SLTs incorporate TRI data into their NEI data submittals.

Survey Step 1

The first step was conducting one simple "Yes" or "No" question survey on whether SLTs incorporate TRI data into their NEI submittals. The survey was sent to NEI inventory preparers by the state member of the team. The state team member made follow-ups via e-mails and calls. As a result, 48 states and 2 locals responded to the survey step 1. Figure 1 shows state responses. The team analyzed the responses and found that only Illinois, Indiana and Minnesota fit the "Yes" category. There are various reasons for 45 states not incorporating TRI data into their NEI submittals such as:

- TRI data are handled by a different state agency
- Do not have HAP emissions in the state EI system
- Only use HAP emissions in the state EI system
- TRI data are incorporated into the NEI by EPA
- TRI data are difficult to use due to considerable differences in reporting and regulatory requirements
- State inventory is more comprehensive than the TRI
- Do not directly take TRI data to the NEI submittal, but use TRI data for comparisons or QA/QC

Figure 1. State responses to survey step 1

Survey Step 2

The second step of state survey was to find how states incorporate TRI data into their NEI submittals. Since only three states incorporate TRI data into their NEI submittals, the team decided to have a telephone conference that could allow an interactive and in-depth discussion. The state team member conducted the conference call on April 13, 2017. Eight questions were sent to state emission inventory preparers before the call for their review. The questions and state responses during the telephone survey are shown in Appendix A. After meeting with the three states, the EPA NEI point source lead responded to the questions to provide information on how EPA has incorporated TRI data into NEI (Appendix B).

Table 1 on the following pages summarizes the survey responses from Illinois, Indiana, Minnesota, and EPA.

Table 1. State and EPA responses to survey step 2

Question	Illinois	Indiana	Minnesota	EPA
When does your state incorporate TRI data into your NEI submittal?	Always submit before the air emissions reporting regulatory deadline	Does not incorporate TRI data into NEI submittal	Aim for submission before the air emissions regulatory reporting deadline, but sometimes lack resources necessary to complete all required data on time	After the air emissions reporting regulatory deadline
What TRI Facilities do you include in your NEI Submittal?	Include all facilities with an air emission permit as well as sources covered under our registration program (ROSS) that used to have a permit and that were in the inventory.	Report required facilities. EPA adds TRI facilities	Manually input all TRI facilities including those with air permits or those without air permits, with a few exceptions. May not be able to submit all data to NEI if miss the deadline, but do incorporate all data to Minnesota emissions inventory	All TRI facilities that have been matched to facilities the Emissions Inventory System (EIS).
What TRI pollutants do you include in your NEI submittal?	Include all TRI pollutants that are hazardous air pollutants. Do not use NH3 from TRI.	Use NEI hazardous air pollutant list. NH3 is reported under the criteria program	Include all pollutants that are hazardous air pollutants and NH3	All TRI pollutants that can be accurately mapped to an EIS pollutant (includes HAPS and NH3)
Which methods do you use to incorporate TRI data?	Use TRI data for: pollutants that: don't already have anywhere at facilities, are shown at processes that could possibly emit the pollutants, and when large differences are observed with the data estimated or collected	Don't report TRI data. Compare TRI data to state data to determine whether to exclude the state data (rationale to exclude it is that it may not be as complete as TRI data). EPA will use TRI if state data is not reported, which is the desired	Principally use TRI data for pollutants not shown at processes that could possibly emit the pollutants. Sometimes use TRI data when large differences are observed with the data estimated or collected confirm with facilities as much as possible	Use TRI emissions for pollutants that were not reported by the SLT anywhere at the facility

Question	Illinois	Indiana	Minnesota	EPA
		outcome when the state data is not complete.		
How do you determine process source classification codes (SCCs) for TRI data?	Mostly use best judgement based on existing processes. Sometimes split TRI emissions to each process that could possibly emit and may combine into one representative process	Don't assign any process information to TRI data, because don't submit TRI data. If there is a high risk or TRI pollutant may pull process to look for a possibly improved speciation profile for chromium.	Best judgement for existing processes that would typically emit TRI pollutant, and may combine into one representative process. For TRI facilities and processes that don't exist in the Minnesota database, must create processes and assign SCCs	Best judgement based on existing processes. For TRI facilities that don't exist in the NEI, must create processes and assign SCCs
How do you determine release characteristics for TRI emissions if TRI processes are not included in SLT point sources?	Use stack already in the Illinois inventory, if they do not exist there they are not added. Practically all cases of any significance have an existing stack.		Use stack already in the state inventory. Use SCC-based stack defaults if there is only TRI data (i.e., there's no state data), then, sum fugitive and stack emissions and report them as stack emissions	Keep TRI apportionment between stack and fugitive. Use the tallest stack already at a facility for stack emissions. If no stack already, create one with 100 ft ht, 1 ft diam, 50 FPS, 300 deg F
What do you choose for the emissions calculation method code for TRI data?	Use engineering judgement		Use engineering judgement	Use engineering judgement
Do you have any comments on using TRI data?	TRI is not always correct, so it shouldn't be interpreted as infallible	It can be useful for some industry	Manual work, time consuming. Take a lot of effort to confirm with facilities when they report different values to state EI and TRI. Lack of process info and range reporting can be challenging	With the integration coming from CAER, it would be good to see the regulatory-required TRI emissions be used for all sources

Summary of High-Level Survey Takeaways

The information gleaned from research with Illinois and Minnesota demonstrated that their approach to incorporating TRI data into NEI inventory is generally similar. They all submit hazardous air pollutants from TRI in their NEI submittals. Indiana is different because they don't use TRI directly in their submittal but they use it to inform what they submit. For example, if Indiana spots discrepancies between emissions from TRI and their state data, they will remove the state data from their submittal to ensure that EPA will use the TRI to gap fill. Minnesota and Illinois will check them to make sure they fit well with their experience and parameters and apply them accordingly.

The similarities were also observed between states and EPA, such as choosing engineering judgement for the emissions calculation method code for TRI data. States and EPA all check the presence of TRI data at the facility level in their respective emission inventories but states go further to the process level.

Findings from this survey provide a useful point of reference for how states, local and municipal governments, and tribes apply TRI data in their NEI submission.

Appendix A: Step 2 Survey Results from Illinois, Indiana and Minnesota

1. *When does your state incorporate TRI data your NEI submittal (select all that apply)?*
   a. *Before the deadline identified by the AERR*
   b. *During the NEI/NATA version 1 revision*
   c. *During NEI/NATA version 2 revision*
   d. *Other, please specify*

   - Illinois – answer b. They use the 1st release (July version).
   - Indiana – d. – doesn't incorporate TRI data in their submittal, but they do review it. They use it to make sure there are no misreported or incomplete data. For example, if Indiana system has low benzene but TRI system has high benzene then Indiana will often remove its low benzene data. This is not a uniform practice because TRI has range reported pollutants and Indiana would prefer they not be used.
   - Minnesota – aims for a., but frequently Minnesota does not have enough resources available to incorporate all their TRI data into their NEI submittal. If there is time available, they may also do b. and c.

2. *What TRI facilities do you include in your NEI submittal (select all that apply)?*
   a. *All facilities with an air emission permit*
   b. *All facilities covered by your EI definition as point sources, including permitted and not permitted*
   c. *Only "Type A" facilities*
   d. *Facilities with special permit types, please specify*
   e. *All TRI facilities*
   f. *Only for certain processes/SCCs, please specify*
   g. *Other, please specify*

   - Illinois – mash up of a and b. Registration program for smaller sources doesn't require permit, but they must meet registration rule. That removes 3,300 facilities out of 6,300 that used to be permitted but are now are just in registration program. However, these facilities are in EIS so team tries to report them. Facilities are still being reported at the previous levels (prior to registration), and if those sources report to TRI then the team will change the estimate to TRI.
   - Indiana – reports the required facilities and EPA adds the TRI data.
   - Minnesota - e. - uses all TRI facilities manually. There are some exceptions – e.g., if the team sees 25 tons of lead it would raise a red flag. Minnesota may not be able to submit everything to NEI but, it would be able to input into state emissions inventory.

3. *What TRI pollutants do you include in your NEI submittal (select all that apply)? Please provide the pollutant mapping from TRI to your state EI, including NEI codes if it is applicable.*
   a. *All TRI pollutants that are HAPs*
   b. *All TRI pollutants that are HAPs and some others that are not HAPs, please specify others*
   c. *Specific list, please provide*

   - Illinois – a. – all TRI pollutants that are HAPs.
   - Indiana – uses NEI HAP list and reports NH3 under criteria program.
   - Minnesota – a. – all TRI pollutants that are HAPs and NH3.

4. *Which methods do you use to incorporate TRI data?*
   a. *Use TRI data for pollutants that you don't already have anywhere at the facility*
   b. *Use TRI data for pollutants that are not shown at processes that could possibly emit the pollutants*
   c. *Use TRI data when large differences observed with the data you estimated or collected*
      i. *Contact facilities to confirm emissions*
      ii. *Use TRI data without contact with facilities*
      iii. *Use your estimated or collected data without contact with facilities*

- Illinois – Use TRI data for everything aside from contacting facilities to confirm emissions. The Illinois Reporting Rule requires that all process regulated by a MACT or NESHAP have to be reported to Illinois. The team will supplement non-required process with AP-42 and then compare them with TRI to determine differences. E.g., using emission factors to determine HCl and HF related to coal use and comparing them to TRI numbers. NATA review is also useful for Illinois – the team attempts to resolve issues that may arise due to ranges before the data gets sent to NEI.
- Indiana – keeps TRI data separate during review to make sure it isn't submitted inadvertently. If state data isn't complete based on TRI, then Indiana won't submit. Indiana does calculations for combustion, and they may or may not submit depending on how their calculations compare to TRI. NATA data is useful for reviewing TRI data. If their calculations produce a high risk result they may reach out directly to the facility.
- Minnesota - uses a, b. and sometimes all three options under c. Ethanol plants and paper mills would often not report, so in those cases the Minnesota team pulled the data from TRI. That said, TRI info is not referred to if Minnesota has stack testing data in the state EI.

5. *How do you determine process SCCs for TRI data (select all that apply)?*
   a. *Best judgement based on existing processes*
   b. *Add processes if existing processes unlikely to emit the TRI pollutants*
   c. *Split TRI emissions to each process that could possibly emit*
   d. *Add TRI emissions to one process to represent all processes possibly to emit*
   e. *Other, please specify*

- Illinois – a., c., and d. apply, but a. (best judgement) is the most common way that Illinois determines process SCCs for TRI data. Often, when a facility realizes there's something awry, they will report it correctly split out in the future. c., and d happen less frequently – there are three reactors and TRI benzene, so the team can re-split TRI benzene based on its own calculations (which are based on activity/emission factor data). Also, the team may group processes and report all at one process (multiple degreasers).
- Indiana – review NATA high risk TRI data to find better speciation data for chromium. There would be documentation on the speciation profile assumption, but EPA would need to change the SCC because Indiana doesn't change the TRI SCC codes.
- Minnesota uses a., b., c., d. and looks for the process that would typically emit the TRI pollutant. They may combine these into one representative process (i.e., they may make up a process). For TRI that's not in the MN database they need to make up process and assign SCC. They do not call the facility to determine a process.

6. *How do you determine release characteristics for TRI emissions if TRI processes are not included in SLT point sources?*
    a. *Do not use TRI emissions*
    b. *Use default release characteristics*
    c. *Keep apportionment between stack and fugitive (which is specified in the TRI data) when including in your inventory?*
    d. *Other, please specify*

   - Indiana - they have stack parameters with criteria. If NATA turns up high-risk they may look into what sight-specific parameters apply.
   - Illinois - uses stack that already exists in the inventory. If it's not in the inventory already, the team usually doesn't add them – this tends to be a small number. Illinois does not have confidence that TRI fugitives are always really fugitives (e.g., donut manufacturer says all their emissions are fugitives). At times, there may be a disconnect between TRI fugitive and inventory fugitive, but this may have to do with what the interpretation/definition issue of what fugitive is. Stack parameters include permits, SCC defaults, and the overall default. If the overall default affects hazard ranking then the team circles back to the facility and get better data.
   - Minnesota – uses defaults. If they only have TRI data (no state data), then they sum fugitive and stack emissions and report as stack.

7. *What do you choose for the emissions calculation method code for TRI data?*

   - Indiana - EPA uses engineering judgement to add TRI data to the Indiana inventory.
   - Illinois uses engineering judgement.
   - Minnesota uses engineering judgment.

8. *Do you have any additional comments on using TRI data?*

   - Group:
     - TRI is not 100% accurate, but it can be a good resource and reference point if one has that in mind.
     - Lack of process information and range reporting can present issues.
     - Manual work, time consuming. Take a lot of effort to confirm with facilities when they report different values to state EI and TRI.

Appendix B: Step 2 Survey Results from US EPA

1. *When does your program incorporate TRI data the NEI (select all that apply)?*
    a. *Before the deadline identified by the AERR*
    b. *During the NEI/NATA version 1 revision*
    c. *During NEI/NATA version 2 revision*
    d. *Other, please specify –* **incorporate TRI data into NEI submittal after AERR deadline, before release of draft v1**

2. *What TRI facilities do you include in the NEI (select all that apply)? All facilities with an air emission permit*
    a. *All facilities covered by your EI definition as point sources, including permitted and not permitted*
    b. *Only "Type A" facilities*
    c. *Facilities with special permit types, please specify*
    d. *All TRI facilities*
    e. *Only for certain processes/SCCs, please specify*
    f. *Other, please specify*
        All TRI facilities that have been matched to EIS facilities are included. Facilities that cannot be matched are included based on pollutant thresholds. Facilities that have difference definitions (e.g., one TRI facility that maps to two NEI facilities) are not included.

3. *What TRI pollutants do you include in the NEI (select all that apply)? Please provide the pollutant mapping from TRI to EIS, including NEI codes if it is applicable.*
    a. *All TRI pollutants that are HAPs*
    b. *All TRI pollutants that are HAPs and some others that are not HAPs, please specify others –* **All TRI pollutants that can be accurately mapped to an EIS pollutant; HAPs + NH3. Crosswalk mapping per NEI TSD 2011 and 2014**
    c. *Specific list, please provide*

4. *Which methods do you use to incorporate TRI data?*
    a. Use TRI data for pollutants that you don't already have anywhere at the facility **– this one**
    b. *Use TRI data for pollutants that are not shown at processes that could possibly emit the pollutants*
    c. *Use TRI data when large differences observed with the data you estimated or collected*
        a. *Contact facilities to confirm emissions*
        b. *Use TRI data without contact with facilities*
        c. *Use your estimated or collected data without contact with facilities*

5. *How do you determine process SCCs for TRI data (select all that apply)?*
    a. *Best judgement based on existing processes –* **this one**
    b. *Add processes if existing processes unlikely to emit the TRI pollutants*
    c. *Split TRI emissions to each process that could possibly emit*
    d. *Add TRI emissions to one process to represent all processes possibly to emit*
    e. *Other, please specify*

6. *How do you determine release characteristics for TRI emissions if TRI processes are not included in SLT point sources?*
    a. *Do not use TRI emissions*
    b. *Use default release characteristics*
    c. *Keep apportionment between stack and fugitive (which is specified in the TRI data) when including in your inventory?* **– this one. We use tallest stack already at facility for stack emissions. If no stack already, we create one with 100 ft ht, 1 ft diam, 50 FPS, 300 deg F**
    d. *Other, please specify*

7. *What do you choose for the emissions calculation method code for TRI data?* **We use *engineering judgement***

8. *Do you have any additional comments on using TRI data?* **With the integration coming from CAER, it would be good to see the regulatory-required TRI emissions be used for all sources**

Appendix C: Emission Calculation Codes for EIS and TRI

Table 1. EIS emissions calculation methods

Emission Calculation Method Code	Description	Notes
1	Continuous Emission Monitoring System	
10	Site-Specific Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation
11	Vendor Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation
12	Trade Group Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation
13	Other Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation
2	Engineering Judgment	
24	Stack Test (pre-control) plus Control Efficiency	Use if test was before controls and therefore a control efficiency was also used in emissions calculation
28	USEPA Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation
29	S/L/T Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation
3	Material Balance	
30	Site-Specific Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation
31	Vendor Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation
32	Trade Group Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation
33	Other Emission Factor (pre-control) plus Control Efficiency	Use if Emission Factor was before controls and therefore a control efficiency was also used in emissions calculation

4	Stack Test (no Control Efficiency used)	Use if source is uncontrolled or if test was after controls
40	Emission Factor based on Regional Testing Program	
41	Emission Factor based on data available peer reviewed literature	
42	Emission Factor based on Fire Emission Production Simulator (FEPS)	
5	USEPA Speciation Profile	Use where emissions for one pollutant were derived as a fraction of or ratio to another pollutant's emissions
6	S/L/T Speciation Profile	Use where emissions for one pollutant were derived as a fraction of or ratio to another pollutant's emissions
7	Manufacturer Specification	
8	USEPA Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation
9	S/L/T Emission Factor (no Control Efficiency used)	Use if source and Emission Factor are uncontrolled or if Emission Factor itself accounts for controls without need to apply a control efficiency in emissions calculation

Table 2. TRI release and waste managed estimation codes

TRI Release or Waste Management Calculation Estimation Code	Description
M1	Estimate is based on continuous monitoring data or measurements for the EPCRA Section 313 chemical.
M2	Estimate is based on periodic or random monitoring data or measurements for the EPCRA Section 313 chemical.
C	Estimate is based on mass balance calculations, such as calculation of the amount of the EPCRA Section 313 chemical in streams entering and leaving process equipment.
E1	Estimate is based on published emission factors, such as those relating release quantity to through-put or equipment type (e.g., air emission factors).
E2	Estimate is based on-site specific emission factors, such as those relating release quantity to through-put or equipment type (e.g., air emission factors).
O	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 estimated removal

| | efficiency to a waste stream, even if the composition of the stream before treatment was fully identified through monitoring data. |

Note: In TRI, each release and otherwise managed waste estimate (Sections 5 & 6), facilities are required to indicate the principal method used to determine the amount of release and otherwise managed waste reported.