Combined Emission Reporting for Air Toxics – Phase II

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By State/Local/Tribal Emission Inventory (SLT EI) /National Emission Inventory (NEI)/Toxics Release Inventory (TRI) Research and Development Team

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Background - Current

Toxics Release Inventory (TRI)

EPA uses TRI for gap filling

State/Local/Tribal Emission Inventory (SLT EI)

National Emissions Inventory (NEI)
Background – Future Vision
Combined Air Emissions Reporting (CAER)
TRI/NEI/SLT EI Project

• **Purpose**
  • Identify and evaluate consistencies and possible workflows for sharing emissions data among TRI, SLT ELs, and NEI.

• **Two Phases**
  • Phase I – Completed Oct. 2017
  • Phase II – Completed Sept. 2018
Phase I

• Team Members
  • States: MN, SC
  • EPA: Office of Pollution Prevention & Toxics, Office of Air Quality Planning & Standards, Office of Environmental Information
  • Environmental Council of the States (ECOS)

• Products
  • Document identifying differences in terminology used and reporting requirements in TRI and NEI
  • Pollutant crosswalk between TRI and NEI
  • Survey of states on their use of TRI data in their emissions inventory submissions

Pollutant crosswalk: https://www.epa.gov/sites/production/files/2018-01/tri-nei-crosswalk.xlsx
Phase II

• **Team Members**
  - States: MN, SC, MI, GA, TX*
  - EPA: Same as Phase I
  - ECOS

• **Products**
  - Metrics on facilities reporting to each program and overlaps
  - Comparison of SLT emissions with TRI emissions
  - Case studies exploring differences between data reported to NEI and TRI
  - Crosswalks between NEI and TRI for emission estimation method codes and control/treatment codes
  - Cross-program data quality: process survey and recommendations
  - Recommendations for CAER Common Emissions Form (CEF)

*TX participated in a few deliverables
Universe Overlap - NEI & TRI
2014 Reporting Year

• About 10,000 facilities in both NEI and TRI (based on ID matching)
  • About 65% of these have at least one pollutant that is reported by SLT

• Emissions from the ~10,000 TRI facilities that matched to NEI facilities comprise 97% total TRI emissions for matching pollutants
Universe Overlap - NEI & TRI
2014 Reporting Year

- NEI
- TRI
- SLT EI

6534 facilities

Gap filling for >= 1 pollutant
Emissions Comparisons between TRI and SLT-reported data to NEI – 2014

Distribution of TRI/NEI emissions ratios based on about 15,000 observations

OVERALL
• Within 10%: 45%
• TRI > NEI by more than 10%: 35%
• NEI > TRI by more than 10%: 20%
Emissions Comparison by State

Legend
- TRI/NEI ratio is less than 0.5
- TRI/NEI ratio is between 0.5 and 0.9
- TRI/NEI ratio is between 0.9 and 1.1
- TRI/NEI ratio is between 1.1 and 2
- TRI/NEI ratio is greater than 2
For some facilities, TRI emissions may be 100 or more times greater than the SLT data.
Causes of TRI and NEI Emissions Differences (1)
~ 50 case studies – compared SLT data in NEI with data in TRI

- Incomplete SLT reporting for a pollutant at a facility
  - SLT automated emission factor approach
    - Emissions for SCCs with emission factors (mostly combustion processes)
    - No emissions for SCCs without emission factors
  - NEI business rules
    - When data are available for a pollutant in both SLT EI and TRI
      - Use SLT data not TRI data
        - Even if SLT data are only at one process
        - Even if SLT data are much less than TRI
    - When data are available for a pollutant only in TRI not in SLT EI
      - Use TRI data
Causes of TRI and NEI Emissions Differences (2)

- Different HAP reporting requirements/thresholds between TRI and SLT
- Different definitions for glycol ethers (ethylene glycol monobutyl ether)
- Different reporting for non-routine such as accidental releases
  - Not for some SLT
  - Yes for TRI
- Different emission factors used
- Different numerical values allowed (discrete vs. range, significant digits)
- Reporting errors by facilities
Crosswalks
Calculation Method and Control Code

- Fewer and broader codes in TRI than NEI
  - Emission calculation method codes/basis-of-estimate codes
    - 23 in NEI
    - 6 in TRI
  - Control measure codes/waste treatment codes
    - 124 in NEI
    - 25 in TRI (some not applicable to air streams)
- Code mapping
  - 1 NEI code \(\Rightarrow\) 1 TRI code
  - 1 TRI code \(\Rightarrow\) > 1 NEI codes, selected best fit NEI code
- Different codes in SLT programs
Quality Assurance
Using Data from Different Programs

- Surveyed EPA program offices and regions
  - A few regions responded
  - Some SLT provided information
- Respondents varied
  - In approaches
  - In support for doing these comparisons, indicating limitations
- Identified recommendations to short-term-wins to improve use of other program data for QA
  - Short-term-wins - current programs (pre-CAER implementation)
Recommendations for Short Term Wins

- Loading TRI data into EIS before SLT reporting deadline (in Oct./Nov.)
  - Allow SLTs to do comparisons using EIS
- SLTs comparing SLT-EI data to TRI data for their QA
- Using TRI basis-of-estimate code when loading TRI data into EIS
  - “Engineering judgement” used in previous NEIs
- Increasing coordination across SLT, TRI staff, and facilities for data quality efforts within TRI
- Including treatment codes in TRI data quality calls - correct where non-air treatment codes are being reported for air waste streams
Recommendations for CEF

Focused on the scenario:
Facility reports air emissions to CEF, and those data are pushed to NEI, TRI and SLT-EI

- **Common Emissions Form**
  - Interface for reporter
  - Behind the scenes

- **Pollutants/processes required by SLT**

- **All processes but only pollutants used in NEI**

- **Add other portion**

- **TRI pollutants meeting thresholds for reporting**
  - Exclude pollutant/processes not covered due to DeMinimis concentration exemption

- **Recommendations for CEF**
  - Focused on the scenario: Facility reports air emissions to CEF, and those data are pushed to NEI, TRI and SLT-EI
Recommendations for CEF (1)

• Interface/other features
  • Provide clear definitions of pollutant codes
  • Incorporate requirements of different programs
  • Automated QA and emissions inventory assistance
  • Show data reporters what was reported and the data that will be pushed to TRI
Recommendations for CEF (2)

• Behind the scenes (back end calculations)
  • Compute proper emissions for each program, allocated properly to fugitive and stack release points
  • Provide proper basis-of-estimate and treatment information to TRI by using code crosswalks
  • Compute reporting fees associated with SLT reporting programs
Requirements for Populating TRI Data Elements for Air Releases in CEF

- TRIFID – TRI Facility ID
- Multi-establishment name (if applicable)
- Chemical no. and name
- Release quantities and basis of estimate codes
  - Stack
  - Fugitive
- Treatment information for air waste stream(s)
  - Treatment code(s) – not chemical-specific
  - Efficiency code – is chemical-specific
  - Waste treatment method sequence

Back end calculations needed to populate this information
Conclusions

• Combined Air Emissions Reporting is worthwhile and do-able for SLT EI/NEI/TRI work flows

• Our deliverables have been useful in the ongoing design and development of the CEF

• Things not addressed
  • How to deal with changes to emissions after originally reported on form
  • Multiple air waste streams

Thank You