What Does the Toxic Release Inventory Data Actually Represent?

A Discussion of the Data Reported by Industry & Ideas for Improvement

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Introduction

Misty Sinclair, P.E.

- B.S. & M.S. Chemical Engineering – University of Missouri - Columbia
- Started at Trinity in 2013
- Environmental consulting – 10 years
- Completed more than 70 TRI audits
- Multimedia – air quality, stormwater, wastewater, hazardous waste, toxic release inventory

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Agenda

1. What does TRI data represent?
2. How does TRI compare to other regulatory requirements & reporting?
3. Common TRI reporting errors
4. How to improve your facility's TRI data

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What does TRI Data Represent?

"Best Available Information"

- Data should represent the **best readily available information** per TRI instructions.
- What does it not represent?
  - Rarely represents precise threshold analysis or release numbers
  - Reasonable estimates can be used in the absence of actual data
  - No additional monitoring or measurements are required beyond what is required under other laws or regulations, or as part of routine plant operations

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

EPCRA Section 313 chemicals contained in mixtures and other trade name products must be factored into threshold determinations and release and other waste management calculations.

If your facility processed or otherwise used mixtures or other trade name products during the calendar year, you are required to use the best readily available data (or reasonable estimates if such data are not readily available) to determine whether the toxic chemicals in a mixture meet or exceed the *de minimis* concentration and, therefore, whether they must be included in threshold determinations and release and other waste management calculations. If you know

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.

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Why is it important to understand this data?

Because of how this data is used!

- Citizens, community groups, and other nongovernmental organizations use data for pushing environmental initiatives and policies
- Government uses to establish policy objectives and goals
- Academia uses for research purposes including investigating public health impacts, EJ concerns, and other topics
- Industry uses for evaluating sustainability metrics, comparing similar industry practices, etc.
- Media uses to obtain trends in releases, industry, and environmental conditions

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How Does TRI Compare to Other Regulatory Requirements?

Air Emissions Inventory

- State emissions inventory often do not account for all sources and all pollutants
  - Exempted, insignificant activities, fugitive, or internally vented sources are often not considered
  - Emissions under certain thresholds often can be excluded
- States may have different rules for evaluating emissions inventory to TRI guidance
  - Using maximum pound/hour from stack test for emissions inventory instead of average
    - Stack testing is often performed at a maximum rated capacity and not typical operating scenarios

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How Does TRI Compare to Other Regulatory Requirements?

RCRA Hazardous Waste or Other Waste Programs

- Toxicity Characteristic Leaching Procedure (TCLP) used for RCRA HW evaluations
  - TCLP can only be used to confirm the presence of a chemical and does not represent a tested total concentration
- RCRA HW may not account for all waste that includes the TRI reportable pollutant

Water Programs – Stormwater & Wastewater

- Often not required to sample for reportable pollutants
- Reporting for wastewater may be different than the TRI guidance for calculating releases

Tier II Chemical Inventory

- Only includes an evaluation of chemicals that are required to have a SDS present
- Exemptions differ from TRI regulations

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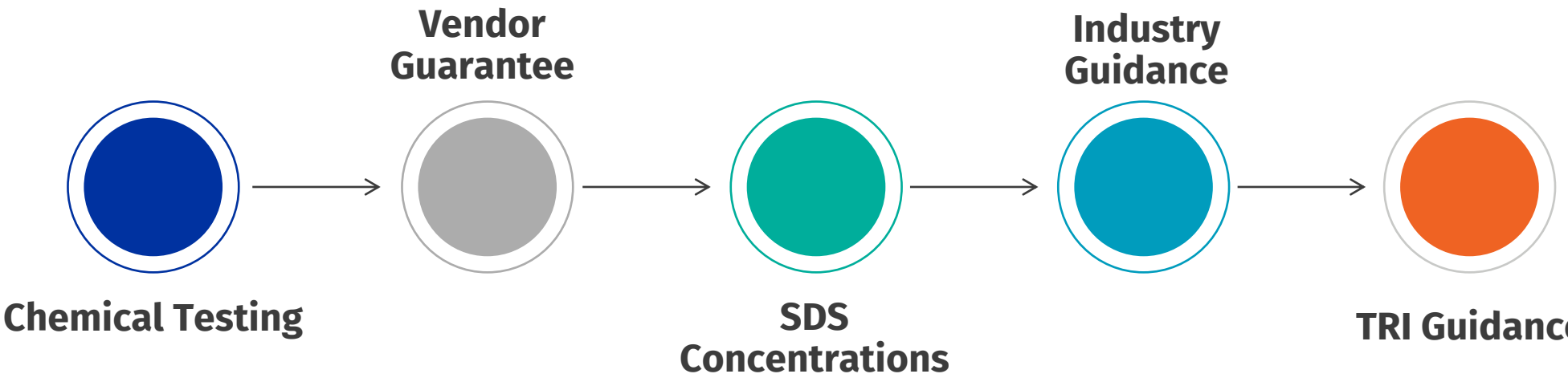
Common Errors Impacting Data

Not Using "Most Readily Available Information"

- Not using data collected for compliance with other regulations (e.g., air permit, Tier II, RCRA reporting, DMRs, etc.)
- Using published emission factors or engineering estimates versus actual monitored data to calculate releases
- Using maximum emission permitted levels versus "reasonable estimates"
- Common Safety Data Sheet issues
  - Using only current SDS - change in SDS concentration from the previous evaluated SDS
  - Multiple suppliers providing SDS with different constituent data for similar material
  - Mid-year switch
  - Using the data in SDS contrary to TRI guidance
  - Incorrect use of de minimis concentrations
    - Concentrations that straddle de minimis must be set up differently
- Using Toxicity Characteristic Leaching Procedure (TCLP) results as concentrations

Most Readily Available Information



≤X
Use X in calculations

X – Y
Average of X and Y unless straddles de minimis

0 – X
Use X in calculations (same as <X)

>X
Average of X and 100 or average of X and calculated upper bound, if known

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Common Errors Impacting Data

Errors associated with Threshold Analysis

- Not including entire compound towards threshold analysis or including entire compound towards the release calculations
  - Metal compounds
  - Nitrate compounds
- Not aggregating TRI categories
- Not evaluating or improper evaluation for chemical concentrations that straddle the de minimis
- Overlooking ammonium compounds' dissociation to ammonia in solution
- Improper use of exemptions

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Common Errors Impacting Data

Errors with Release Reporting

- Ammonia and nitrates can be represented as nitrogen in wastewater testing requiring conversion from nitrogen to compound
- Often overlooked
  - Expired or off-spec product sent to landfill
  - Amount treated for destruction in control devices (treated onsite)
  - Stormwater or wastewater releases
  - Wastewater treatment
  - Spills or other remedial actions
- Excluding container residue for container sent off-site
  - Residue that is triple rinse may go to POTW
  - Container residue that is not triple rinsed goes to vendor receiving the container (i.e., landfill, manufacturer, etc.)

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Limitations in Using TRI Data

Can the data be used for assessing environmental impact accurately?

- Air releases
  - Very difficult to model TRI data due to lack of release information
    - Dispersion modeling is complicated
  - Release data may not be precise due to the sources of the TRI information
- Water releases
  - TRI chemicals may not have Water Quality Criteria
  - Receiving stream characteristics (e.g., mixing zone considerations) or run-off estimates not easily accounted for
- Waste releases
  - Landfill design/permit data and nearby groundwater monitoring data potentially not publicly available
- Difficult to evaluate industrial health exposure due to economic health considerations
- Difficult to consider cumulative impacts from
  - Neighboring facilities
  - Multiple pollutants

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Improving TRI Data

What Can Industry Do?

- Be knowledgeable!
  - Review changes to the TRI program each year
  - Review TRI Reporting instructions, Q&A's, guidance documents each year
  - Know what changes are happening at your facility
    - Include management of change procedures to allow for review against TRI applicability changes
  - Review historical testing data to make sure the best available information is being used for reporting
  - Research others in your industry to ensure you are considering all potential pollutants
  - Understand what the data represents when using it

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Improving TRI Data

What Can Industry Do?

- Develop an understanding of all aspects of the processes at the facility
  - Raw materials, chemical reactions, intermediates, wastewater, stormwater, air emissions, etc.
  - Changes in processes over time: raw materials, final products, waste management, etc.
  - Testing completed at the facility, including testing not required by regulations
- Consider auditing to get TRI expert to help improve your threshold analysis and reporting

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Questions?

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