Compiling the Point Source 2002 NEI

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Why is the NEI Important?

We are preparing the 2002 NEI to meet several specific needs, including:

- Key input to regional/national modeling by EPA, RPO's, S/L/T's, etc.
- Basis for National Air Toxics Assessment (NATA) analyses
- Starting point for rule development (residual risk and area source categories)
- Trends and GPRA tracking
- Public information
- International Reporting

Goals of 2002 NEI

- Make efficient use of multiple data resources
- Integrate HAPs and CAPs data
- Use updated input formats (NIF 3.0 & XML Schema)
- Provide more feedback to S/L/T earlier on quality of data submitted
- Improve quality of data in the 2002 NEI
- Peer Review methodology and final NEI product

2002 NEI: Attributes

National Emission Inventory – air emissions

- Geographic coverage: 50 states, District of Columbia, and territories
- Pollutant coverage:
  - 188 Hazardous Air Pollutants listed in Clean Air Act – collected every 3 years
    - **Speciated mercury** – elemental gaseous, divalent particulate, divalent gaseous
    - Speciated compounds by Chemical Abstracts Services number
  - Criteria Air Pollutants - collected every year
    - Ozone precursors, VOC, NOx, CO, Direct PM Emissions, PM precursors, PM10, PM2.5, SO2, NH3
- Anthropogenic Inventory – Source categories:
  - point - > 90,000 facilities in the 1999 NEI
  - stationary nonpoint
  - mobile onroad and nonroad
- No emissions reporting thresholds

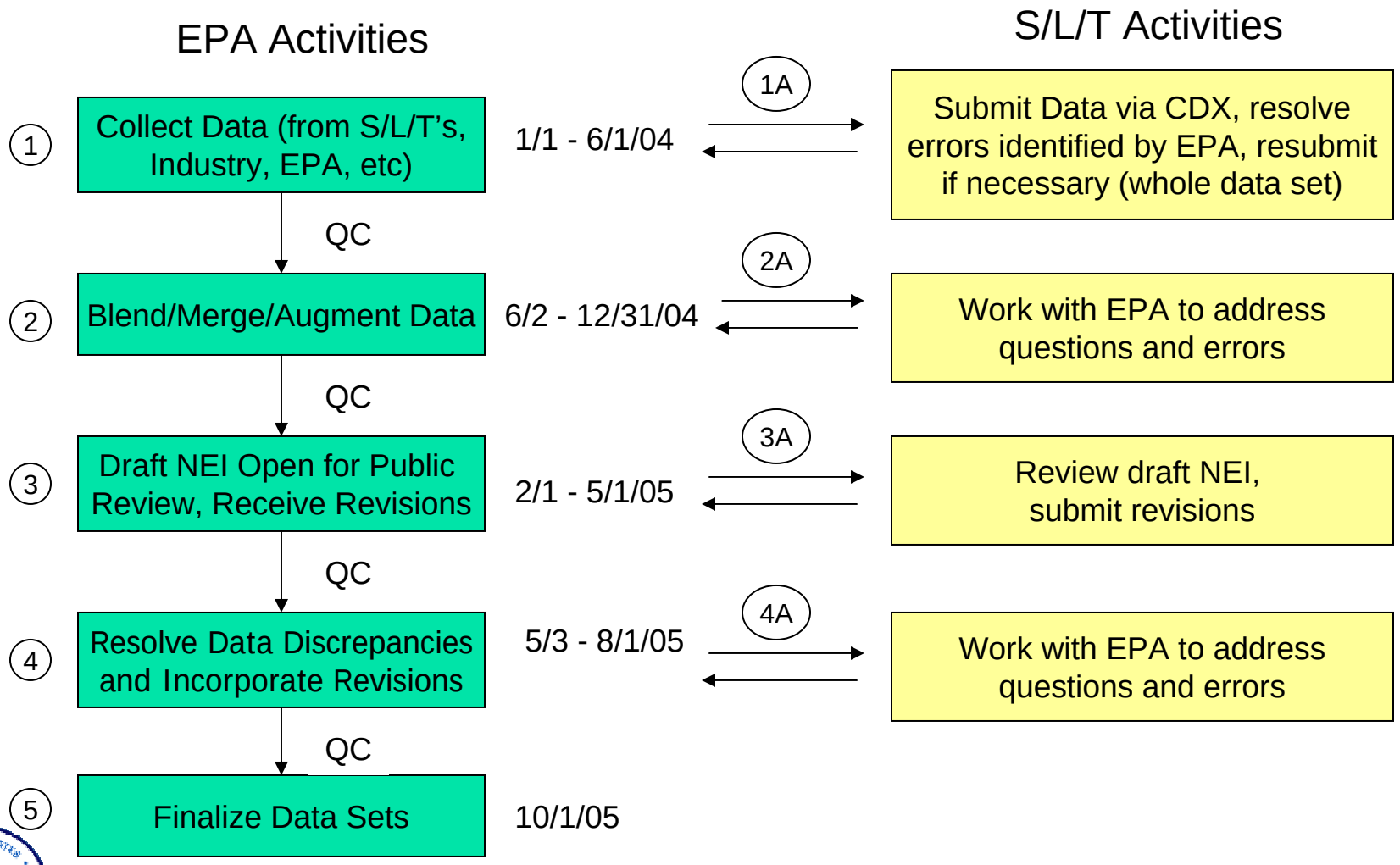
2002 NEI: Attributes

National Emission Inventory – air emissions

- Resolution:
  - Individual Stacks and fugitives within point source (facilities)
  - County level emissions for nonpoint stationary and mobile sources

- Modeling Inventory – emissions from individual stacks and fugitives within facility
  - Stack parameters
  - Latitude/longitude
  - Control Device and Efficiencies
  - Standard Industrial Codes/North American Industry Classification System Codes (type of business or product)
  - Source Classification Codes which describe specific emitting processes, fuel type, etc.
  - Maximum Achievable Control Technology Codes identify processes within facilities subject to US EPA regulations

2002 NEI Schedule & Activities



2002 NEI: Compilation Steps

1. US EPA compiles data from a variety of sources
   - State Agencies (S)
   - Local Agencies (L)
   - Tribes (B)
   - US EPA
     - Emission Standards Division (ESD) MACT, Residual Risk, and new area source data (P, M)
     - Clean Air Markets Division (CAMD) electric generating unit data (E)
     - Toxic Release data (T)
     - Augmented data (A)

2. US EPA merges data from these sources, with attention to selecting the most reliable information in a given case, and to avoiding duplications.

2002 NEI: Compilation Steps

3. US EPA augments data for missing or invalid stack parameters and location coordinates

4. US EPA conducts quality assurance and quality control
   - External QC was conducted for a period of 3 months by EPA, Industry, Tribes, and state and local agencies.
   - US EPA conducted automated QC for format and content
   - Developed QC tools for agencies and tribes to use prior to submitting inventory data to US EPA
   - Historical NEI that tracks revisions

5. US EPA releases final 2002 NEI in December 2005

   Modeling Inventory available at: ftp://ftp.epa.gov/pub/EmisInventory/nei02model/

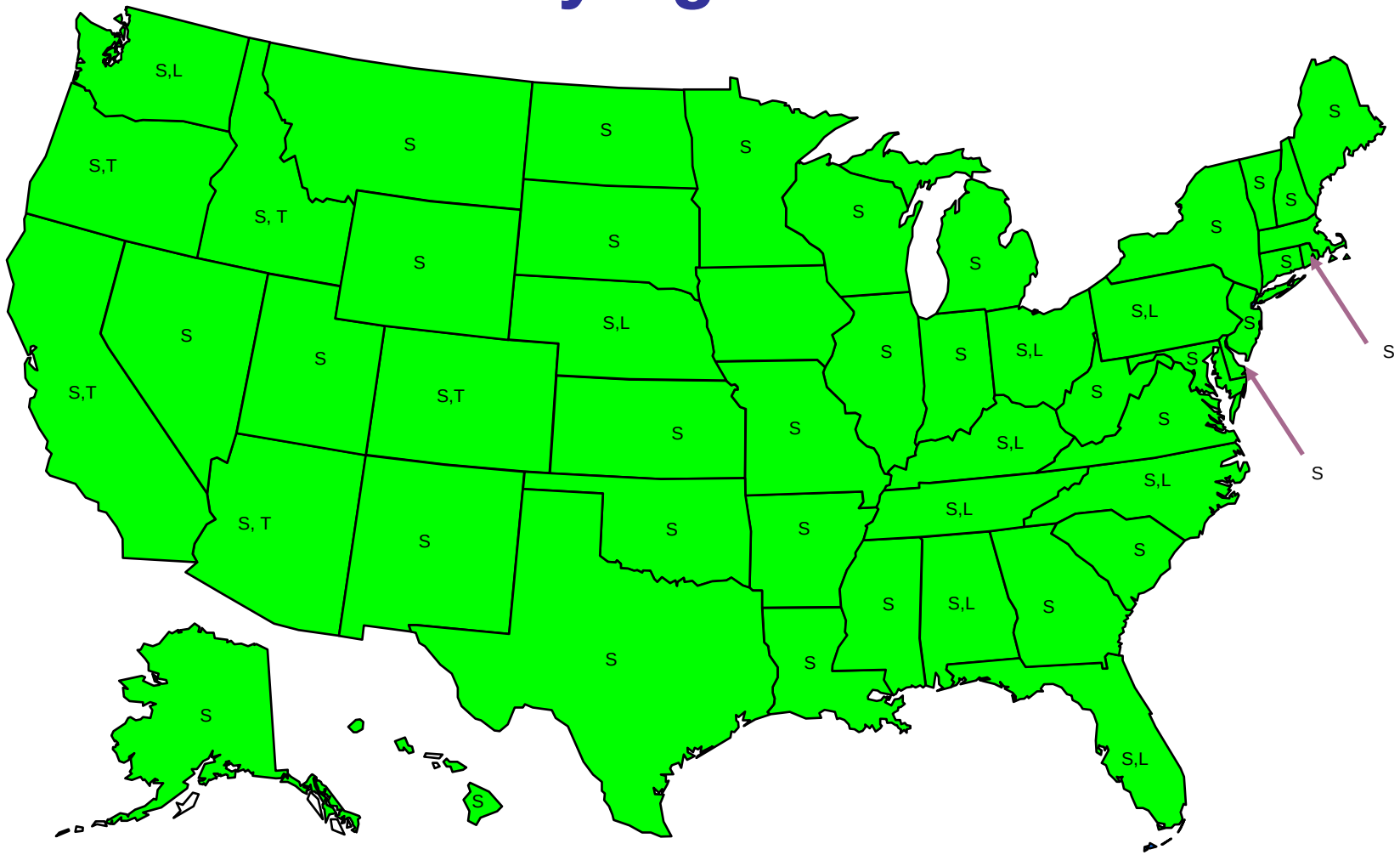
   Summary Files, Documentation, README, Code Lookup Table available at: www.epa.gov/ttn/chief/net/2002inventory.html

Hierarchy of Data Selected

1. Preferred ESD data (P) for MWCs, MWIs, Coke Ovens, and Brick Manufacturing

   CAMD CEM data (E) for NOx and Sulfur Oxides
2. Tribal Agency data (B)
3. Local Agency data (L)
4. State Agency data (S)
5. Other non-preferred ESD data (M) and other non-preferred CAMD data (E)
6. TRI data (T)
7. Augmented data (A) for PM filterable and condensible, HAPs from VOC and PM, and CAP from HAPs

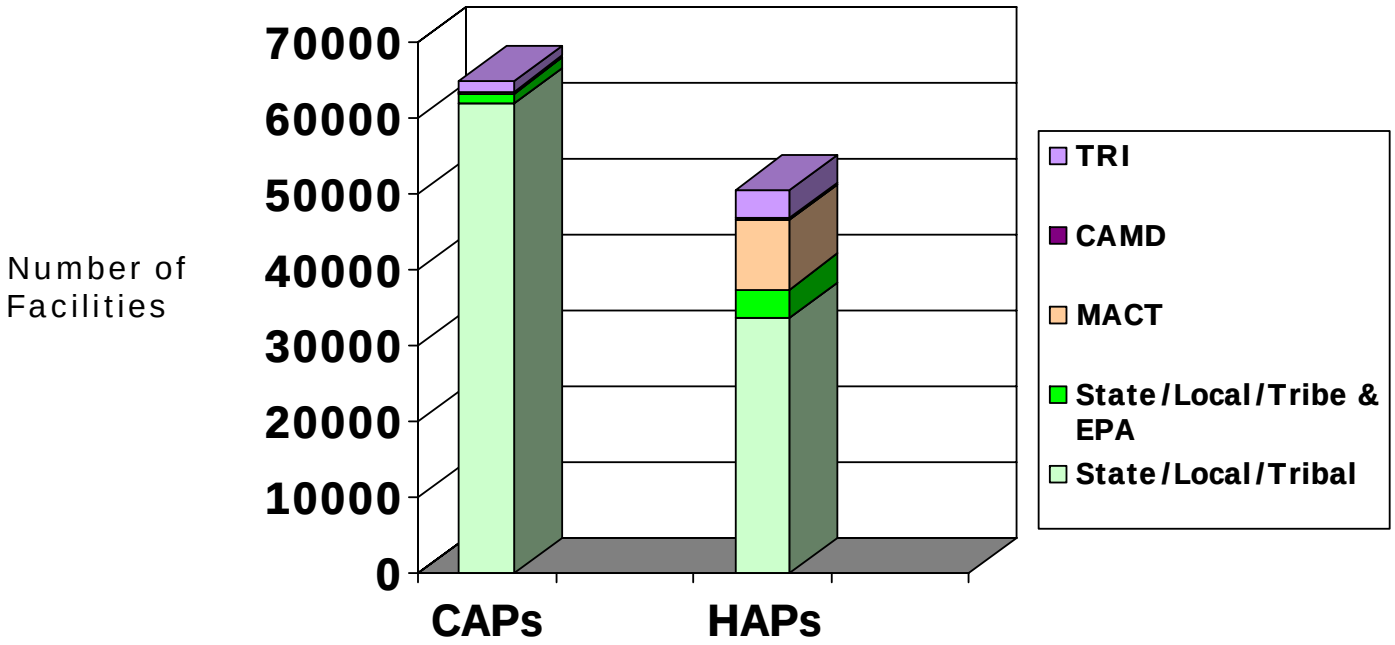
2002 NEI Point Source Data Provided by Agencies



T - tribes
L - local agencies
S - state agencies

HAP data not provided by AK, state of AZ, DC GA, HI, ND, and NV for the draft.

Data Source of Facilities



CAPs: State/Local/Tribal data only used for 97% of Sources
HAPs: State/Local/Tribal data only used for 62% of Sources

Data Source of Facilities

- **CAPs:**
  - **State. Local and Tribal data only used for 97% of facilities**
  - **EGU CEM data for NOx and SO2 used for 3% of facilities**

- **HAPs:**
  - **State. Local and Tribal data only used for 62% of facilities**
  - **MACT data only used for 17% of facilities**
  - **TRI data only used for 14% of facilities**
  - **Mixture of State, Local and Tribal data with MACT, EGU and TRI for remaining 7%**

Assignment of NEI Unique Facility ID to Site Records

- **NEI Unique Facility ID assigned to site records submitted by multiple data sources**
  - **Integrates HAP and CAP IDs for same facility**
  - **Integrates multiple site IDs submitted by different data providers for same facility**

- **2002 NEI Facility File contains crosswalk of NEI HAP and CAP facilities**
  - **Site IDs, NEI Unique Facility ID, FRS ID, TRI ID, ORIS ID**
  - **Standardized Facility Name and Address**
  - **Site Latitude and Longitude**
  - **SIC/NAICS Code**
  - **Information on whether facility contained 99 HAP, 99 CAP, 2002 HAP or 2002 CAP data**

ftp://ftp.epa.gov/EmisInventory/draftnei2002/point/summaries

Assignment of NEI Unique Facility ID to Site Records

State County FIPS	Tribal Code	State/Local Facility ID	NEI Unique Facility ID	Facility Name	Data Source
42003	000	4200300157	NEI13183	Orion Power Midwest Dallas Station	State
42003	000	EGU0978	NEI13183	Dallas Power Plant	CAMD
42003	000	T$1432	NEI13183	Orion Dallas Plant	TRI
42003	000	ESD420031	NEI13183	Orion Power Dallas Plant	Preferred MACT for Utility Coal mercury

Data Selection: Benefits

- **Data selection from different sources contributes to more complete inventory.**

- **Benefits of Using NEI Unique Facility ID and Retaining IDs reported by Data Submitters**
  - Easy Identification of data reported by different data providers: Users can identify source of data for each data point because local IDs are retained in the StateFacility ID, Emission Unit ID, Process ID and Emission Release Point ID fields
  - More transparency of Data Reported to EPA: Comparisons with earlier datasets are easier when local IDs are not changed resulting in more transparency in the NEI
  - Reduced Costs: A more complex data selection process involving unit, process and or emission release point level matching is more difficult and would require a lot more resources.

Data Selection: Issues

- **Complete facility estimates are obtained in NEI by using the NEI Unique Facility ID**
  - Emissions are not duplicated
  - Different data sources use different site, unit, process and emission release point IDs
  - Query on NEI Unique Facility ID to obtain facility estimate

- **Data Selection Occurs at the Facility Level**
  - Units appear to have more stacks than exist
    - Emissions are not duplicated
    - This may be an issue for modeling if stacks reported in different data sets have different locations or stack parameters
  - Some non-duplicative HAP estimates are eliminated
    - SCCs are not mandatory for HAPs
    - Some agencies and TRI only report data at the facility level for HAPs
    - Reviewers can add back in HAPs that were eliminated in the draft
  - Inadvertent supplementation of estimates from shutdowns may occur.
    - Data submitters should submit zero emissions for recent or temporary shutdowns
    - Reviewers can delete emissions for shutdowns.

What is Best Way to Review Selection Process in the Draft NEI?

1. **Review Sites Table in state NOF files and the 2002 NEI Facility File to identify duplicate facilities**
   - Look for sites that appear to be identical facilities that do **NOT** have the same NEI Unique Facility ID
   - Mark duplicate sites with a “D” for delete

2. **Review emission estimates for facilities using the NEI Unique Facility ID using the ALL NEI files .**
   - Look at data source code for each record.
   - Review pollutants and emissions for each process.
   - If a unit has shutdown, mark pollutants for deletion.
   - If the emissions need to be revised, provide revised values.

3. **Use the Historical Emissions Report to compare estimates from multiple data sources and to see what value was selected in the draft.**
   - Use the NEI Unique Facility ID to identify facilities
   - Identify pollutants of interest.
   - Compare emissions and data source of Current Data Source Reported to other values provided by different data sources
   - Calculate percent difference for selected pollutants and facilities to identify facilities to investigate further.
   - Provide comments to EPA for proposed revisions.

Historical Emissions Report

State County FIPS	Tribal Code	Facility Name	NEI Unique Facility ID	Pollutant Code	Pollutant Name	Curr Version Date	Curr Emiss (TPY)	Curr Data Source	Curr S (TPY)	Curr P (TPY)	Curr M (TPY)	CurrT (TPY)
01001	000	ABC	NEI008	100425	Styrene	2/1/ 2005	2.21	S	2.21	1.82		4.2
01001	000	ABC	NEI008	107028	Acrolein	2/1/ 2005	6.28	P	6.14	6.28		5.3
01001	000	ABC	NEI008	195	Lead and Compounds	2/1/ 2005	0.2	S	0.2		0.8	
01001	000	ABC	NEI008	75070	Acetaldehyde	2/1/ 2005	38.83	T				

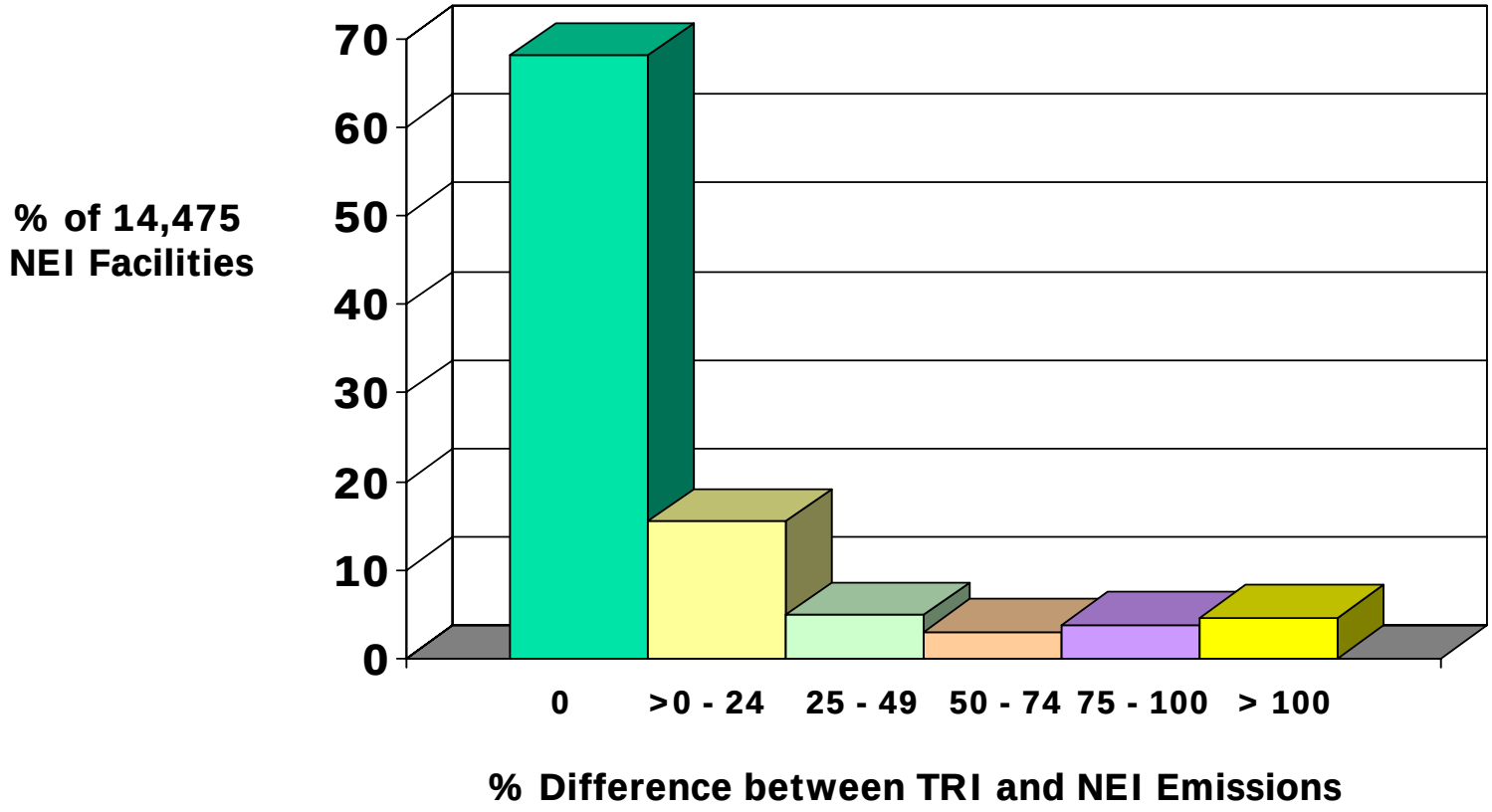
TRI Facilities in the NEI

- **25,000 facilities in 2002 TRI have air emissions**
- **15,515 TRI facilities emit HAPs or ammonia and are in 2002 NEI**
- **10% of facilities in 2002 NEI have TRI as the only data source; 15% of facilities have TRI data**

Facilities	Total Number of 2002 Facilities	Number of CAP Facilities	Number of HAP Facilities
NEI Facilities	86,3220	64,438	54,733
TRI Facilities in NEI	15,515	9261	14475
TRI Facilities in the NEI with TRI as only data source		876	7908
TRI Facilities with TRI and other NEI data sources		554	3024

Data Selection: Comparison of TRI Data to NEI HAP Data

- **15,515 TRI Facilities in 2002 NEI**
  14,475 TRI Facilities in 2002 NEI HAPs



Conclusion: The Main Ingredient of EI Development is Courage

The Zen of Inventories

Inventories are never right,

and never completed.

The more you use an inventory,
the more accurate it
becomes.

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