



# Developing a QA/QC Program for a Local Agency Annual Emission Inventory

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# Topics Covered

- Why do I need an emission inventory?
- Where does the information come from, and how do I get it?
- What do I do with the data once I have it?
- How can I make sure it is correct?
- How do I give my emission inventory to someone else?
- How often do I have to do this?!?



## *Why do I need an* **Emission Inventory?**

- State Implementation Plan (SIP)
  - For non-attainment areas
- Annual Report
  - May also include monitoring data, activities
- National Air Quality Models
  - Currently through NEI
- Regional Air Quality Models
  - Possible requests for more current data than what is available through the NEI



# Nashville's Emission Inventory History

- Designated as non-attainment for TSP in 1972
- First EI in 1972 for base year 1970
  - criteria pollutants only (TSP, SO<sub>2</sub>, Hydrocarbons, CO, NO<sub>x</sub>)
  - fuel burning, large point sources, solid waste disposal, and mobile sources
- Second EI in 1979 for base year 1977
  - VOC only (designated non-attainment for ozone)
- Implemented Annual schedule in 1980
- Added Air Toxics in 1993



# *Inventory* **Pollutants**

Identify your pollutants of interest

- 1980 – Criteria pollutants
  - Total particulate (TSP), VOC, NO<sub>x</sub> and CO
- 1982 added SO<sub>2</sub>
- 1993 added HAPs
- Particulates – TSP □ PM<sub>10</sub> □ PM<sub>2.5</sub>
- Ammonia (PM<sub>2.5</sub> Precursor)

## *Information* **SOURCES**

- Large Facilities
- Government Agencies
- Airports/Railroad Companies
- Census Data
- Business Development Data





# Nashville's DATA SOURCES

Data Source	Category
County Business Patterns 2000, SIC 7532 (NAICS 811121) "Top and Body Repair and Paint Shops"	Auto Refinishing
2001 County Population (from MPO)	Architectural Surface Coating, Degreasing, Solvent Use, Traffic Markings, Agricultural Pesticide Application
State Forestry Department Metro Fire Marshal's annual report	Open Burning
State DOT	Misc. Dust (State Highway Construction)
Metro Public Works - RAP tonnage Road projects	Misc. Dust (Metro Highway Construction)
Metro Codes "Cost of Construction Report"	Construction Losses



# Nashville's DATA SOURCES *cont.*

Data Source	Category
Census of Agriculture (1997) <a href="http://www.usda.gov/nass/">www.usda.gov/nass/</a>	Miscellaneous Dust Agricultural Tilling
DVMT from State DOT	Dust from Paved Roads
1999 "State Energy Data Report" <a href="http://eia.doe.gov/pub/state.data/html/rctn.htm">eia.doe.gov/pub/state.data/html/rctn.htm</a> , 2000 census for heating units	Residential Oil/Kerosene, Residential LPG
Local Gas Company	Residential Natural Gas
Energy Information Administration ( <a href="http://www.eia.doe.gov/index.html">www.eia.doe.gov/index.html</a> ) statewide wood usage, county census ( <a href="http://venus.census.gov/cdrom/lookup">venus.census.gov/cdrom/lookup</a> - use file STF3A)	Residential Wood Burning
Local Airports	Aircraft Emissions
CSX Railroad	Railroad Emissions



# *Point Source* Inventories

- Title V Sources
- Synthetic Minor Sources
- Minor Sources
- Perchloroethylene Dry Cleaners
- Gas Stations







# *Point Source* **Data Handling**

Emission Inventory forms are mailed out in early December, along with permit fee invoices. Fees and forms are due by April 1.

EI forms and data are:

- Logged in as they are received
- Reviewed for accuracy by Inspectors
- Entered into database by inspectors or EI personnel
- Manually compiled for Annual Report (for now)

# *Non-point Source* **Data Handling**

- Select and document procedures and data sources for each source category
  - EIIP
  - AP-42
- Can be simple – large Word Document, calculations performed by hand
- Can be complex – Excel database with multiple spreadsheets, automatic calculations



# What about QA/QC?

Can someone come in later and reproduce what you have done?

- Where did the data come from?
- Where did the emission factors come from?
- Where did the formulas come from?
- Were all unit conversions done correctly?
- What input data and assumptions did you use in your model?
- Who did you call?

***Document, document, document!***

# Checking the Data

- Data completeness
  - Do you have current data from all your sources?
  - Have you updated all of the sections from last year's inventory document?
- Data Accuracy
  - How much of your data should be checked? (How much time do you want to spend?)
- Document errors found and corrections made
  - Calculation errors
  - Data entry errors

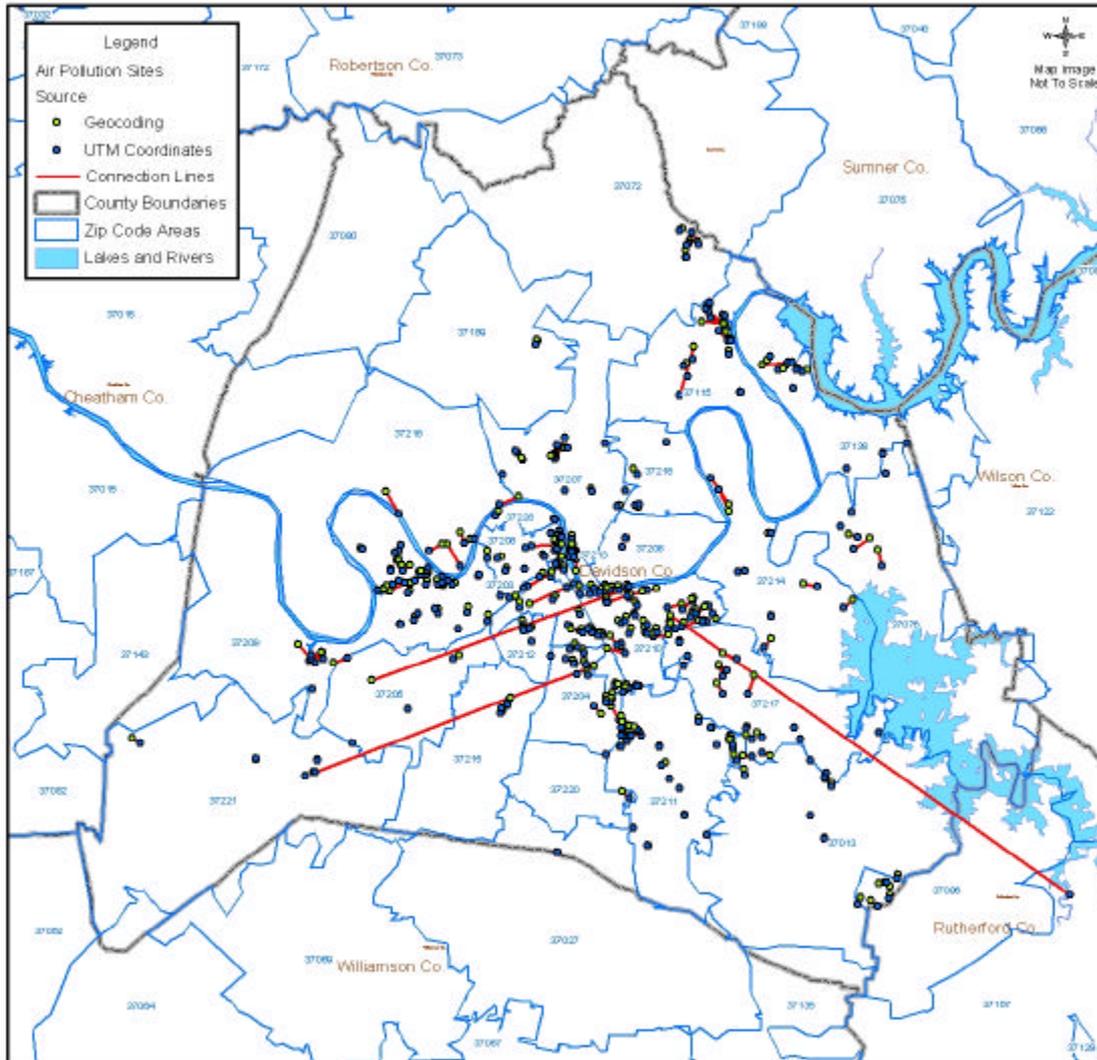


# *Automated* Data Checks

- Database validation checks during data entry
  - Data formats
  - Pick lists
  - Acceptable ranges
- NIF QA/QC Tool
  - NEI format checks
  - Data validation checks (similar to above)
- Action tracking
  - Who updated what, when?

# Other QC Checks

- SCC codes
- Compare data with previous year
  - Individual Sources
  - Aggregated values
- 10% random Facility review
- GIS Mapping of coordinates and addresses
- High priority non-random review



*Point  
Source  
Coordinate  
Reality  
Check  
Using  
GIS  
Mapping  
Tools*



# Continuous **Improvement**

- Review SCC codes and generate subset of SCC codes with guidance on where to use them
- Create Excel spreadsheet version of current Non-Point Source Word document to automate calculations and data summarization
- Create automated reports from database to summarize emissions categories using SCC codes
- Perform trend analyses for emission inventories



# Emissions Inventory Data Format

- i-STEPS<sup>®</sup> database has an export tool that generates data tables that correspond to the NEI Input Format (NIF).
- These files are then imported into the NIF Access Database shell.
- The Access Database or data tables can be electronically transmitted to EPA and others.



# When Do We Have To Do All This ?

- CERR indicates EPA's Emissions Reporting Requirements
- SIP may also require baseline inventories
- Others

*... OR ... you can do it  
annually.*



## Reasons to do an **Annual** Emission Inventory

- Information gained during the previous year's effort retained
- Easier to track changes in personnel, facilities, and activity
- Need to keep up with changing EPA models, guidance, and data formats
- Can use emissions data review to check for permit violations
- **You will have the data when you need it !**



**Metro Public Health Dept**  
Nashville/Davidson County  
Promoting and Protecting Health



# Thank You

## For Your Interest

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