International Emission Inventory Conference

Emission Inventories: Integration, Analysis, Communication

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Overview

- Role of EI's in Air Quality Management
- Future of Air Quality Management
- Meeting current and future needs
  - Challenges
  - Opportunities
- Reinventing the National Emissions Inventory (NEI)
  - Better emission measurements and estimates
  - More stakeholder collaboration
  - Better tools
  - Benefits

Why are EI's Important?

- Cornerstone of air quality management (AQM) planning and accountability
  - Assessment & modeling of current air quality status
- Project future air quality status
- Assess proposed AQM strategies
- Accountability
- Cost/Benefit analyses
- Public Reporting
- International Reporting

Why are EI's Important: EPA

- Regional and Local Scale Air Quality & Human Exposure Modeling
- Control Strategy Analysis
- Regulatory Impact Analysis
- Risk Assessment Studies
- Recent Applications
  - CAIR
  - CAMR
  - NAAQS Designations
  - RIA for PM NAAQS Revision
  - NATA

Why are EI's Important: States

- State Implementation Plan (SIP) Development
- Regional and Local Scale Air Quality & Human Exposure Modeling
- Control Strategy Analysis
- Emission Trends and Program Accountability
- Public Reporting

The Importance of Emissions Inventories: Houston Example, NARSTO Report

Houston is an Ozone Non-Attainment Area

Initial attainment strategy based on inventory called for 90% NOx reduction

Special field study in 2000 found that sources of highly reactive VOCs were not in the inventory

Based on new emissions information, a new strategy was developed that controlled the VOCs and called for an 80% NOx reduction

BOTTOM LINE:
NOx only strategy would have been less effective and more costly

Consequences of Incomplete Information

Incomplete or unreliable emission information can have serious consequences in terms of the cost and effectiveness of air pollution control strategies. The case in Houston, Texas is a good example. Houston is currently in noncompliance with federal air quality standards for ozone. he state had to devise a strategy that would result in compliance with the Clean Air Act ozone standards or face federal sanctions. Based on the existing emissions inventories, the state concluded that reducing NOx emissions by 90 percent would be effective in meeting the standard. In 2000, a field experiment was conducted in Houston to examine the atmospheric chemistry of the Houston area and the emissions driving the chemistry. The study discovered sources of highly reactive volatile organic compounds that were not included in the existing inventory. Revised emission estimates and new modeling showed that achieving the desired air quality improvements would require reductions in these volatile organic compounds but only an 80 percent reduction in NOx emissions.

A NOx-only strategy would not have been as effective as expected. It would also have been costly. Interest groups active in the decision process have asserted that ten years after implementation, a 90 percent reduction in NOx emissions would result in 65,000 fewer jobs and a $9 billion smaller regional economy compared to a 79 percent NOx reduction strategy that allowed emissions trading. While this analysis did not account for the costs of VOC controls, even when they are included the revised control strategy results in substantial annual cost savings. Clearly, obtaining accurate and complete emission estimates is very important.

Improving Emission Inventories for Effective Air Quality Management Across North America. 2005

Challenges of the Current EI Process

- General Challenges
  - Takes a long time to develop EIs
  - Too many sources of data: whose data is correct?
  - Data quality issues
- EPA-centric Challenges
  - No transparency to the process
  - Inconsistent/limited public access to NEI data
  - No staff time to analyze emissions data

Future of Air Quality Management

- Move Beyond:
  - Low hanging fruit
  - Command and control
  - Urban-only focus
- Integrate
  - Multi-pollutant
  - Land-use
  - Transportation
  - Climate

The Importance of Emissions Inventories: New Challenges

- Fully integrated multi-pollutant inventory
- Better resolution; spatially and temporally
- Better characterization of smaller source categories
  - Sector approach
  - Voluntary/innovative programs
- Shrinking resource base requires more agreement on emission estimates among stakeholders (EPA, State, Local, Tribes, Industry)

Reinventing the NEI

- Better Quality Emission Measurements and Estimates
  - e.g., Quantifying woodstove emissions = support for voluntary woodstove changeout program.
- More Stakeholder Collaboration
  - NEI Task Force
  - Enhanced transparency
- Better Tools
  - Emission Inventory System (EIS)

Benefits of Reinvention

- A national inventory in 12-18 months
- Direct on-line access throughout EI process
- EIS data linked to other EPA data systems
- Better data for end uses:
  - Air quality models
  - Human exposure models
  - Regulatory Impact Analyses
  - Control strategies
  - Program accountability

How can you help?

- Participation in NEI task force
- Open dialogue
- Recognition of what's working, not working
- Each of us play to our strengths – to build a system to meet aggregate needs