

Preparation of the 2005 National Emissions Inventory

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Acknowledgments

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Overview of Presentation

- Compilation of the inventory
 - Updates since June 2008 EI Conference
 - Example uses of the 2005 NEI
 - Wrap-Up
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Compilation of the Inventory

□ Pollutants Include:

- Criteria air pollutants (CAPs)
- Hazardous air pollutants (HAPs)

□ Source Types Include:

- Large stationary (e.g. petroleum refineries)
- Small stationary (e.g. gas stations)

□ Geographic Coverage Includes:

- Entire United States
 - Puerto Rico and Virgin Islands
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Data Sources

- State/Local/Tribal (SLT) Agency data submittals
 - 48 State Agencies (including D.C. and Puerto Rico)
 - 19 Local Agencies
 - 4 Tribal Agencies
 - Risk and Technology Review (RTR) data
 - 54 MACTs reviewed
 - EPA Emission Inventory and Analysis Group (EIAG) data (EGUs, Airports, misc.)
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Data Sources (cont.)

- Sector Policies and Program Division (SPPD) data
- Regional Planning Organization (RPO) data
- Toxic Release Inventory (TRI)
- Version 3 of the 2002 NEI
- Gulf of Mexico Oil and Gas Platform data from MMS



Timeline

- ❑ Spring 2007: 2005 NEI, V1 prepared
 - ❑ Summer/Fall 2007: Data Gathering/QA
 - ❑ May 2008: 2005 NEI, V2 draft
 - ❑ Summer 2008: EIAG review
 - ❑ October 2008: 2005 NEI, V2 final delivered.
 - ❑ Spring 2009: 2005 NEI, V3 draft
 - ❑ Summer/Fall 2009: 2005 NEI, V3 final
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Version 2 Updates Since May 2008

- Incorporated additional RTR data
 - Incorporated revisions due to lead NAAQS revision
 - PM Augmentation
 - Emissions, facility, and locational corrections after EIAG review.
 - Emissions, facility, and facility status corrections after GHG ANPRM activities
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Version 3 Updates Since October 2008

- Incorporated additional RTR data
 - Incorporated revisions due to lead NAAQS revision
 - Boiler HAP Augmentation
 - Additional reconciliation of facilities (NEI Site ID) and pollutants
 - Revisions to emissions, locations, and facility status due to Schools Monitoring Study
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Version 3 Updates Since October 2008 (cont.)

- Area Sources category assignments
 - BART Facility tags (based on RPO data)
 - Additional NATA02 updates
 - Assignment/Identification of biorefineries
 - Additional data fields in NOF include: Emission Process Group, Facility Category Flag, and Closed Year.
 - Identification of closed landfills and year
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Upcoming Tasks

- Preparation for NATA05
 - Additional revisions due to lead NAAQS revision
 - Landfills emissions adjustment
 - RTR Form Files
 - Additional RTR revisions (Group 2 and 3)
 - Source Sector Updates
 - Pulp and Paper
 - Portland Cement
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Comparisons – 2002 and 2005

Parameter	2005 NEI	2002 NEI
Annual emission records	4.7 million	3.5 million
# Unique Facilities	>101,600	>85,000
# Tribal Areas	23	15
# U.S. Counties	3,108	3,027
# Gulf of Mexico OCS Areas	1,079	0

Comparisons – 2002 and 2005 (cont.)

Parameter	2005 NEI	2002 NEI
Total CO emissions (tpy)	3,987,864	3,833,574
Total NH ₃ emissions (tpy)	181,502	184,884
Total NO _x emissions (tpy)	6,168,911	7,080,750
Total PM ₁₀ -PRI emissions (tpy)	1,306,002	1,233,399
Total PM _{2.5} -PRI emissions (tpy)	953,775*	883,449
Total SO ₂ emission (tpy)	12,502,152	12,637,803
Total VOC emissions (tpy)	1,490,170	1,472,238
Total HAP emissions (tpy)	886,473	910,620

* Prior to PM Augmentation, PM_{2.5}-PRI emissions were 255,630 tpy

Example Uses of the 2005 NEI

□ Modeling:

- NATA05
- IPM



□ Ambient Monitoring:

- Lead NAAQS revision
- School Monitoring
- ATSDR Exposure Investigations



Example Uses of the 2005 NEI (cont.)

□ Accountability:

- GPRA (comparisons to 1990, 1996, 1999, and 2002)
- Toxicity-weighting (e.g., MACT standards);
- Comparisons to ambient monitoring (mass and toxicity-weighted)

□ Communication:

- EPA's "Report on the Environment"
- EPA's "Where You Live"



<http://www.epa.gov/air/emissions/where.htm>

Example Uses of the 2005 NEI (cont.)

□ Rulemaking:

- Used to gather baseline emissions
- Backend data for RTR Forms



□ Climate Change:

- Update Landfills Methane Outreach Program (LMOP); identify potential partners
- GHG Reporting Rulemaking Process



Example Uses of the 2005 NEI (cont.)

□ Enforcement:

- New Source Review determinations
- MACT Notifiers
- BART determinations



Enforcement Example

- EPA's Region 10 Office was interested in identifying facilities that were increasing in emissions over the last 10 years, and that qualify as major for NSR.
 - Data Sources:
 - 2005 NEI
 - 2002 NEI
 - 1999 NEI
 - 1996 WRAP
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Enforcement Example (cont.)

- NSR “major” sources by pollutant (CO, NO_x, PM₁₀-PRI, PM_{2.5}-PRI, SO₂, or VOC) defined by:
 - Pollutant emissions >100 tpy PTE if subject to at least 1 of the 26 source categories listed in 40 CFR 52.21. Includes fugitive emissions; or
 - Pollutant emissions > 250 tpy PTE if not subject to 1 of the 26 categories listed in 40 CFR 52.21. Applicable to stack emissions only (fugitive emissions not counted).
 - Other requirements (e.g., ozone nonattainment status, etc.)
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Major Stationary Sources Identified in 40 CFR 52.21

Fossil-fuel fired steam electric plants of > 250 MMBTU/hr	Coke Oven Batteries
Coal Cleaning Plants (with thermal dryers)	Sulfur Recovery Plants
Kraft Pulp Mills	Carbon Black Plants
Portland Cement Plants	Primary Lead Sources
Primary Zinc Smelters	Fuel Conversion Plants
Iron and Steel Mills	Sintering Plants
Primary Aluminum Ore Reduction Plants	Secondary Metal Production Facilities
Primary Copper Smelters	Chemical Process Plants
Municipal Incinerators capable of charging >50 tons of refuse/day	Fossil-fuel Boilers of > 250 MMBTU/hr
Hydrofluoric, Sulfuric, and Nitric Acid Plants*	Petroleum Storage and Transfer Facilities with capacity exceeding 300,000 barrels
Petroleum Refineries	Taconite Ore Processing Facilities
Lime Plants	Glass Fiber Processing Plants
Phosphate Rock Processing Plants	Charcoal Production Facilities

* Often split into 3 distinct categories

Enforcement Example (cont.)

- ❑ Version 2 of the 2005 NEI was used to first identify facilities in the Region 10 states.
 - ❑ SCCs subject to the 26 categories listed in 40 CFR 52.21 were identified.
 - ❑ Using the EM, EP, ER, and SI tables:
 - SI: Facility Name, NEI Site ID, Location Address
 - EP: SCC
 - ER: Emission Release Point Type (stack or fugitive)
 - EM: Emissions data
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Enforcement Example (cont.)

- ❑ Multi-step process identifying facilities, keeping in mind the respective requirements.
 - ❑ Identified facilities were applied to the 2002 NEI, 1999 NEI, and 1996 WRAP inventories:
 - Matchup issues (e.g., no NEI ID in 1996 WRAP)
 - Once resolved, criteria pollutant emissions data pulled
 - Comparisons across all four baseyears to identify an increasing trend.
 - Note: actual emissions in NEI, not PTE
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Enforcement Example (cont.)

□ SO₂ emissions from Tesoro Northwest Company in Anacortes, WA

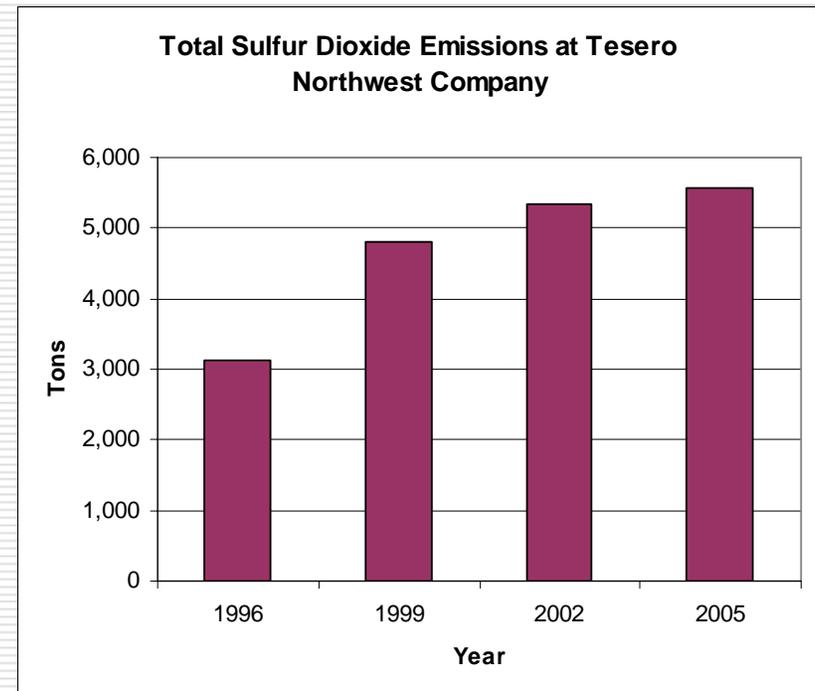
■ 1996: 3,138 tpy

■ 1999: 4,809 tpy

■ 2002: 5,345 tpy

■ 2005: 5,575 tpy

□ Region 10 can use the results of this work to potentially identify sources for permit reviews



Wrap-Up

- ❑ Version 2 of the 2005 NEI was finalized in October 2005.
 - ❑ Some improvements to the 2005 NEI include:
 - Incorporation of MMS platform data
 - Increased number of facilities
 - Identification of closed landfills
 - Better locational coordinates (no county-centroids!)
 - Identification of sources near schools
 - BART facilities assigned
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Questions?

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