CHIEF Clearinghouse for Inventories & Emission Factors newsletter

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The CHIEF Newsletter *is produced quarterly by the Emission Factor and Inventory Group; Emissions, Monitoring, and Analysis Division; of EPA's Office of Air Quality Planning and Standards. Its purpose is to enhance communication within the emission factor and inventory community by providing new and useful information and by allowing for the exchange of information between and among its readers. Comments on the* **Newsletter** *and articles for inclusion in it are welcome and should be directed to Emission Factor and Inventory Group (MD-14), US EPA, Research Triangle Park, NC 27711; telephone (919) 541-1000 or email info.chief@epa.gov.*

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Development of the 1999 National Emission Inventory

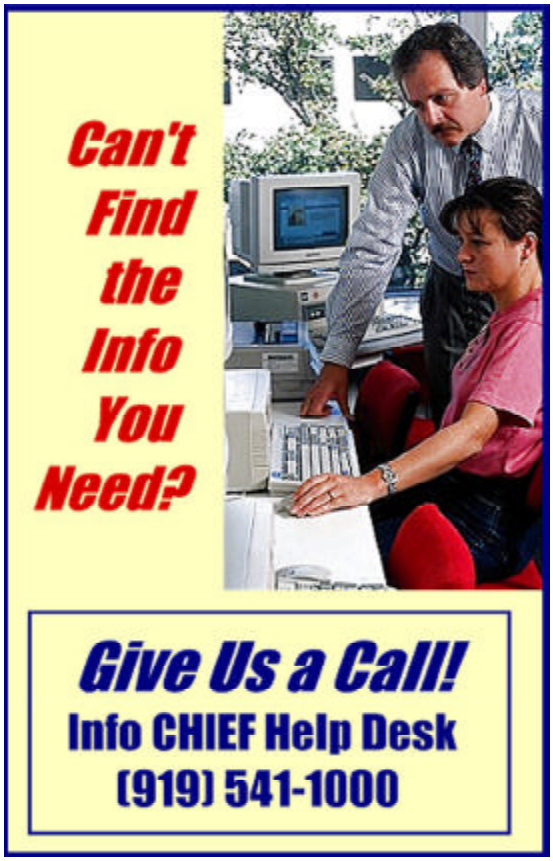
by Douglas Solomon, US EPA

The Emission Factor and Inventory Group (EFIG) is busy developing the 1999 National Emission Inventory (NEI) of criteria and Hazardous Air Pollutant (HAP) emissions. The main focus of this effort for the past several months has been collection and preliminary Quality Assurance (QA)/Quality Control (QC) of State, local, and tribal emission inventory data. To get into the next release of the 1999 NEI (Version 2, scheduled for release in June 2002), State, local, and tribal agencies were required to submit their inventory date to EFIG by June 1, 2001. Participation from State, local, and tribal agencies was outstanding as EFIG received at least some data from 40 States, 12 local, and 1 tribal agency.

The next step for EFIG is to run additional quality control checks to identify potential data content errors, delete or create records to address referential integrity errors (e.g., an emissions record was submitted for a facility but no corresponding site record was included), blend and merge the data with information from additional data bases (e.g., Toxic Release Inventory, MACT data bases, CEMS electric utility data), add or correct stack parameters and locational coordinates (latitude/longitude) where data are missing or errors are identified, and prepare documentation, data files, and summary reports to facilitate the review of the draft NEI Version 2. EFIG plans to release the draft NEI Version 2 for review in October.

After the draft NEI is published in October, EFIG will accept and review comments on the draft through the end of January, 2002. At that point, EFIG will incorporate necessary comments and release the final 1999 NEI Version 2 in June, 2002.

EFIG is incorporating several new initiatives into the preparation of the 1999 NEI Version 2. First, the formatting for submitting criteria and toxics data was consolidated in the NEI Input Format (NIF) Version 2.0. Agencies had the option of submitting criteria and HAP data together or separately, but in either case the same format was used to submit the data. Second, all data was submitted through EPA's new Central Data Exchange (CDX), a single agency-wide portal used for transferring data between EPA and its trading partners. Third, a desktop QA program was developed and used for preliminary QA/QC of the data submitted to EPA. Finally, three agencies participated in a pilot to test the use of Extensible Markup Language (XML) to transfer emissions data to EPA. All of these initiatives will streamline the NEI development process and will reduce burden on both EPA and its trading partners.



Facility Registry System

by David Misenheimer, US EPA

FRS Background -

EPA's Office of Environmental Information has been compiling a data base, known as the Facility Registry System (FRS), that links facility level information from several of EPA's program office data bases such as the Toxics Release Inventory (TRI), Resource Conservation and Recovery Act Information System (RCRAInfo), and Permit Compliance System (PCS). It also includes information on facilities in the 1996 National Toxics Inventory (NTI) and National Emission Trends (NET) inventory. FRS assigns a unique EPA ID to each facility and identifies the "most accurate" latitude/longitude, address and other information for each facility. FRS can be used to identify latitude/longitude and other facility level information where it is incorrect or missing from other data bases.

FRS Population -

The FRS population now includes 600,550 unique facility records (as of July 31st). This surpasses the FY 2002 goal of 500,000 records! The FY 2003 goal for FRS is 750,000 unique records. Program Systems currently in FRS are: All TRI Reporters for the last 11 years, the universe of all hazardous waste type facilities including Treatment Storage and Disposal Facilities, Large Quantity Generators (LQG), Small Quantity Generators (SQG), Conditionally Exempt Small Quantity Generators (CESQG) and Biennial Reporting System (BRS) 1997/1995 reporters in RCRAINFO. Also included are all Risk Management Programs (RMP), PCS-Majors, some Permit Compliance System (PCS) minors, Air Information Retrieval System (AIRS)/ AIRS Facility Subsystem (AFS) Compliance from EPA's Office of Enforcement and Compliance Assurance (OECA), NET and NTI from EPA's Office of Air Quality Planning and Standards (OAQPS), the State of Pennsylvania master records from PA-EFACTS, the South Carolina file called EFIS, the Mississippi system called EN-SITE, the Utah records from CIM, the Ohio records in CORE, Maryland records in EPSC, and Nebraska records in IIS. The next national data sets targeted for inclusion in FRS are CERCLIS, SDWIS, and NCDB from OECA.

Accessing FRS -

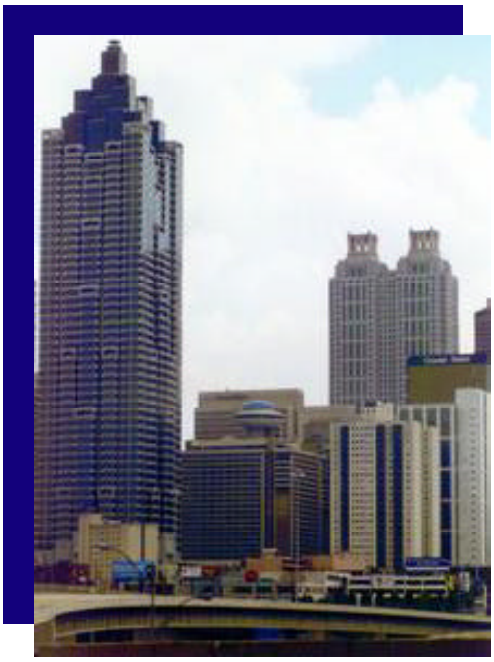
The web site for FRS is http://www.epa.gov/enviro/html/facility.html. From the main page, click on "Facility Information Query" to search for information for a specific facility. Criteria for searches include facility name, location (state, city, etc.), Standard Industrial Classification (SIC), North American Industry Classification System (NAICS), and data system. If the query is successful, the result will be a list of facilities matching the query criteria. Users can then click on a facility of interest to see specific information for that facility and to view matching facilities from other data bases. To view the latitude/longitude data identified as being most accurate for that facility, click on "Map this facility" and look for the data identified as "default map value." As FRS continues to expand, you may want to check back periodically to see which EPA and state program office data bases have been added. We think FRS will be a very useful resource for years to come.

International Emission Inventory Conference
”Emission Inventories - Partnering for the Future”

“Emission Inventories - Partnering for the Future” will be held in the April 15-18, 2002 in Atlanta, Georgia. This is the eleventh annual symposium on emission inventories and is sponsored by the U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emission Factor and Inventory Group, with assistance from the EPA Region IV office.

The technical program committee is interested in papers that describe new developments in methodologies for characterizing and inventorying air pollutant emissions, especially in emerging programs such as air toxics, regional haze, fine particulate matter and emission factors. Also of interest are papers related to continuing developments in the ozone program and in uses of inventories for SIP development. This conference will provide a useful forum for exchange of ideas and information on the use of emission data between industry, the U.S. EPA, state/local regulators, regional planning organizations, and international agencies.

Papers will be presented from the following topic areas covering criteria and regional haze pollutants and their precursors, air toxics, greenhouse gases:



- Regional Planning Organizations
- PM Fine Particles
- Inventory Validation/Quality Assurance
- Area Sources
- Mobile Sources
- Ammonia
- Managed Burning and Wildfires
- Tribal Emission Inventories
- Integration of Criteria/HAP Emission Inventories
- Air Toxics
- Emission Inventory Preparation for Modeling
- Point Sources
- Emission Factors
- Fugitive Dust
- Data Management
- Greenhouse Gas

Continuing education courses and an exhibit of related products and services will be held in connection with the conference technical program.

Platform and poster presentations are invited. Send (by email, mail, or fax) a 200-400 word abstract by October 5, 2001 to Sally Dombrowski of the U.S. Environmental Protection Agency, MD-14, Research Triangle Park, NC 27711, Tel: (919) 541-3269, Fax: (919) 541-0684, email: dombrowski.sally@epa.gov. Include a complete mailing address, telephone and fax numbers, E-mail address, an indication if platform or poster is preferred, and choice of session(s). Unless otherwise noted, the first author listed will be assumed to be the primary author and will be the main contact for conference correspondence.

Improved Emission Inventory Methodologies

by Roy Huntley, US EPA

EFIG strives continuously to improve emission inventories. One area where work has been done to improve inventories is for emissions from area sources. For this latest round of updates to the NEI, there were some notable changes to the methodology for some area sources. This article briefly describes the procedure to estimate emissions from residential wood combustion (RWC).

RESIDENTIAL WOOD - Emissions from RWC became a hot issue in the 1980's. Of most concern were Particulate Matter (PM), Polycyclic Organic Matter (POM) and Carbon Monoxide (CO) emissions. Interest in RWC emissions (and a subsequent New Source Performance Standard (NSPS) in Code of Federal Regulations (CFR) Title 40 Part 60, Subpart AAA, promulgated in 1988) sparked interest in research and industry redesign of the stoves. The NSPS requires that all wood stoves sold after July 1, 1988 be certified. Certification procedures are in the Rule.

There are about 9 million cordwood stoves in use in the US. About 1 million of these are EPA certified; the rest are non-EPA certified, or "conventional" wood stoves.

Fireplaces are not covered in the Rule. There are about 32 million fireplaces in the US; of these, we estimate only about 11.5 million are actually used to burn wood.

How does one estimate RWC emissions? First, separate RWC into three categories; wood stoves, fireplaces, and fireplaces with inserts. The procedure is outlined below.

FOR FIREPLACES

1. DETERMINE the number of homes with fireplaces in the US. This can be determined by using US Department of Census (DOC) data.

2. ADJUST for the fact that some homes have more than one fireplace (multiply by 1.17).

3. ADJUST for the fact that not everybody burns wood (74% burn wood, 26% burn gas).

4. SUBTRACT out the fireplaces not being used (42% not used).

5. SUBTRACT out the number of fireplace with inserts. (DOC data. Fireplaces with inserts are treated as wood stoves).

6. SEPARATE the fireplaces into 2 categories; those used for heating and those used for aesthetics (DOC data).

7. DETERMINE the amount of wood burned in each device. To do this, assume wood consumption rates of 0.656 cords burned /unit/year for fireplaces used for heating and 0.069 cords per unit/year for fireplaces used for aesthetics. The 1997 estimate is that 2.94 million cords of wood were burned in the former and 0.483 million cords of wood were burned in the latter.

8. ACCOUNT for climate differences. Now that the total wood burned in fireplaces is determined, allocate the tons of wood burned into 5 climate zones. This is done based on information from the Department of Energy (DOE) that indicates the relative amounts of wood burned in each climate zone.

9. ALLOCATE wood consumption in each climate zone to individual counties in that zone.

10. DESIGNATE each county as either urban or rural and ADJUST urban and rural wood

Methodologies

(cont'd. from p. 5)

consumption to match American Housing Survey data (68% of wood burned in fireplaces is burned in urban counties). Note: if the Census data indicates that greater that 50 percent of the county's population is located in cities and towns, that the county was considered urban. Less than 50 percent, rural.

11. ADJUST the final allocation so that the desired urban and rural split is achieved.

12. Use AP-42 factors (section 1.9) to determine county emissions from fireplaces.

NOTE:
What is an insert? That term covers many types of devices, from a device that is almost a free standing woodstove that sits inside the fireplace, to a conventional fireplace with tubes above the flames and a fan that blows the heated air into the room. For more on the definition of a fireplace insert as well as other information on RWC technology, check out *Residential Wood Stove Technology Review, Volume I* on the CHIEF web site: *http://www.epa.gov/ttn/chief/ap42/ch01/related/c01s10.html*.

FOR WOOD STOVES AND INSERTS

1. DETERMINE the number of wood stoves and inserts in the US. Use data from the DOC and adjust for the fact that some homes have more than one stove. Consider units used for main heating different from units that are used for other heating.

2. The 1997 Energy Information Administration (EIA) estimate for total cords of wood consumed by the residential section does not include consumption for aesthetics, so subtract the cords of wood used for aesthetics used in fireplaces (determined previously).

3. ALLOCATE wood consumption to the five climate zones.

4. Within each climate zone, allocate wood consumption to the individual county using the relative percent of detached single family homes in the county to the total number of detached single family homes in the entire climate zone.

5. SUM the wood consumption in each zone and compare the urban and rural split. Adjust the total until you get the desired split. For wood stoves, the split is 69% rural and 31% urban. For inserts, the split is 50/50. For example, if the total wood consumption for wood stoves in climate zone 1 was 60% for rural 40% for urban, then each urban and rural county with that zone would receive a percent increase or decrease in cordwood consumption to obtain the correct percent split to reach the 69% rural and 31% urban split.

6. One must also apportion wood stove type. 92% of the wood stoves are non-EPA certified, 5.7 percent are EPA certified non-catalytic, and 2.3 percent are EPA-certified catalytic.

7. Once the amount of wood consumed per RWC type is obtained, use AP-42 factors to obtain emission estimates.

This procedure is newly developed and this is the first year we are using it, although emissions in the NEI will be backcast to 1996. If a state submits data for RWC during our regular submittal times, we will use that instead.

For more detail, see our reports on this procedure on the CHIEF web site or contact Roy Huntley at Huntley.Roy@epa.gov.