



THE CHIEF NEWSLETTER

— THE CLEARINGHOUSE FOR INVENTORIES AND EMISSION FACTORS —

AP-42 SUPPLEMENT E IS NOW AVAILABLE!

Supplement E to the AP-42 stationary source volume (Volume I) has been received from the Government Printing Office, stock no. 055-000-00422-6, price \$17.00. This supplement contains new or revised emission factor information involving Anthracite Coal Combustion; Natural Gas Combustion; Liquified Petroleum Gas Combustion; Wood Waste Combustion In Boilers; Bagasse Combustion In Sugar Mills; Residential Fireplaces; Residential Wood Stoves; Waste Oil Combustion; Automobile Body Incineration; Conical Burners; Open Burning; Stationary Gas Turbines For Electricity Generation; Heavy Duty Natural Gas Fired Pipeline Compressor Engines; Gasoline And Diesel Industrial Engines; Large Stationary Diesel And All Stationary Dual Fuel Engines; Soap And Detergents; and Storage Of Organic Liquids.

Copies of **Supplement E** are available for reference at the Library Of Congress, all U. S. Government Depository Libraries, and the library system of the Environmental Protection Agency (EPA). A courtesy distribution is being made to each EPA Regional Office and to each member agency of the State And Territorial Air Pollution Program Administrators and the Association Of Local Air Pollution Control Officials. Others must purchase copies from the Government Printing Office. For details on how to obtain the entire AP-42 series, call the *Info CHIEF*, phone (919) 541-5285.

THE NEW NATIONAL EMISSION ESTIMATES — — —

The latest annual report on criteria pollutant emission trends, *National Air Pollutant Emission Estimates, 1900 - 1991*, EPA-454/R-92-013, has been printed and is now available. This report presents EPA's latest estimates of national and regional emissions since 1900, with increasing detail on emission levels in the later years.

National emissions are estimated annually by EPA, based on statistical information about each source category, emission factor, and control device efficiency. The estimates are made for over 450 individual source categories, including nearly all major sources of anthropogenic emissions.

Estimates for individual source categories are aggregated to show the emission trends at national and regional levels and by major source category. It is important to note that these trends estimates are for comparative purposes, and using the estimates as absolute values for any given year should be done with caution.

New items in this latest report include information on: the top 50 operating point sources of CO, NO₂, SO₂, and VOC; biogenic emissions; historic emission trends since 1900; and an improved method for calculating emissions from both highway vehicles and electric utilities. Also, beginning

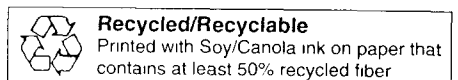
with this report, PM-10 point and fugitive process sources will be combined with the PM-10 fugitive dust emissions. For more information, contact the *Info CHIEF* at the Newsletter, phone (919) 541-5285.

Copies of this document are available free of charge to current federal employees, contractors and grantees, and to nonprofit organizations — as supplies permit — from the Library Services Office (MD 35), US EPA, Research Triangle Park, NC 27711, or, for a fee, from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.



1993 IS THE YEAR OF EMISSION INVENTORY
REVIEW & IMPROVEMENT!

FINAL EMISSION INVENTORIES FOR O₃/CO NONATTAINMENT AREAS
WERE DUE TO EPA BY 11/15/92.



2 DAYS ONLY

REFLECTIONS ON THE SPECIALTY CONFERENCE

By J. David Mobley
Emission Inventory Branch Chief

"EMISSION INVENTORIES - PROGRESS AND ISSUES", the second annual EPA/AWMA Specialty Conference held last October in Durham, NC, was a tremendous success from many different aspects. The 400 or so attendees, a sizeable increase from last year, constituted a good cross section of the emission inventory community: federal, state and local agencies; industry, consultants, academia, and foreign governments.

The conference addressed the key issues of emission inventory work, such as agency and industry experiences in developing SIPs, data base management, mobile sources, biogenics, modeling, and air toxics. On the first day of the event, Jim Southerland and Anne Pope of EIB offered five training courses on emission estimation techniques and tools for industry. These courses were sold out, suggesting that there is a need for, and application of, emission inventory products in the user community. The keynote talks by Bill Laxton (OAQPS's Technical Support

Division Director) and Bob Collom (GA) underscored well the importance of the emission inventory in air programs. The entire conference facilitated active communication among attendees, in meetings and in the hallways. Also, the exhibits and poster sessions drew much interest, especially to the *Air CHIEF* CD-ROM and other electronic data bases. As with most such conferences, the informal exchanges among attendees were as valuable as the formal sessions, certainly the barbecue social one evening. From EIB's standpoint, we made good use of this opportunity to coordinate with Region and State contacts on SIP emission inventory submissions and to talk with industry representatives on factor development and field testing.

The panel discussion at the close of the conference, "Future Directions In Emission Inventories", proved to be an effective way to recap highlights of the meeting and to consider future developments.

In my view, the most important conclusions from this meeting are:

1. *Emission inventories continue to*

grow in importance, as evidenced by control strategy applications for O₃/CO/PM-10; emission trading for SO₂/VOC/NO_x; permit fees; and air toxic assessments.

2. *Technology is advancing at a rapid rate*, both in hardware and software, with ominous implications for how and when emission inventories will be compiled in the future. It will be a major challenge to keep pace with these developments.

3. *Data Quality is not currently adequate*, and while we are steadily improving this situation, expectations and demands for quality emission data continue to increase rapidly.

It's clear that EIB has an important mission. Many challenges remain. We hope that our capability to accomplish this mission increases along with your expectations for quality products from us.

All in all, the conference seems to have been a thorough success, and EIB and AWMA are looking forward to next year's meeting in California. (See Upcoming Meetings below.)

ON FUGITIVE DUST SOURCES:

SURFACE COAL EMISSION FACTOR IMPROVEMENT — The Clean Air Act of 1990 required that EPA study the emission factors and ambient air quality prediction models use to assess surface coal mining activity, to assure that they did not significantly over-predict emissions and subsequent air quality. To accomplish this, we have a two phase study in place. The first is emission testing to evaluate and validate or revise the existing emission factors for the most important sources. The second phase of the program is a model validation study.

During the fall of 1992, we tested

for PM-10 and Total Particulate from coal and overburden haul trucks and roads at a large Wyoming surface coal mine. This testing covered a variety of moisture conditions and road surfaces. Also, ambient PM-10 monitoring was conducted for use in the model validation phase of the study, which will begin in the spring of 1993.

CRUSHED STONE PROCESSING — The Emission Inventory Branch (EIB) has completed emission testing for PM-10 from tertiary crushers and screens at 3 granite quarries, and factors for these sources should be calculated and reviewed in the near future. This

work has been a cooperative effort with the National Stone Association, which has been most helpful by making arrangements with quarry operators and by contributing to the cost of the testing program. During 1993, we plan to conduct emission tests for PM-10 from tertiary crushers and screens at limestone quarries. We will be doing this in part to determine if emission factors already developed for granite would also be appropriate for limestone. For more information on these topics, contact Dennis Shipman at the Newsletter, phone (919) 541-5477.

— — FROM THE CHIEF'S CORNER — —

1992 was a busy and productive year. We worked very hard here, toward more goals than we had time and resources to achieve, and we *have* reached a major portion of them. The 282-page *Supplement E* of AP-42 is now avail-

able, with new assessments of 17 source categories, including an extensively revised 122-page section on storage tanks. We also have, in draft form, about a dozen new toxics *Locating And Estimating* documents, and everyone

on our mail key will be notified when they're ready. Many of the tools in our "tool kit" have been updated, such as the *Air CHIEF* CD-ROM, *XATEF*, and *SPECIATE*, and we've provided the popular new program, *TANKS*, which

reflects the new information in AP-42 and allows users to calculate losses from organic liquid storage. Lastly, but not least, we helped put on the successful AWMA emission inventory specialty conference in Durham in October. There are other pieces of news, which are elsewhere in this issue.

Our efforts continue on the cover-to-cover enhancement of AP-42. The contents of *Supplement F* are beginning to take shape, and it'll be larger than *E*. We hope to have it available by this June. Our search for new emission factor data has produced considerable information on some sources and none on others. We are stressing work on the background

reports for new sections, should the user need to know more about how factors are derived and quality rated. Some older factors may be downrated, as we apply firmer and more consistent standards to them, resulting in the occasional factor getting a lower rating than before but having a stronger reliability. For such situations, we've coined the doublespeak motto, "Even though it's worse, it's actually better"!

Sad to say, we're having to deal in all of this with a nearly 60% budget cut in FY 93 funding, so our testing program will be somewhat reduced and some of our work on VOC, PM-10 and toxics will be impinged. We can hope for money restoration, but meanwhile,

our priorities are to finish the major projects already under way and to try to find ways to "expand" the money through cooperative projects with others.

Remember, we like to hear from our readers. Tell us what you need and what you think we need to hear. The emission factor community is a sizeable group, and each one of us may know something that could help many others. This Newsletter now goes to more than 4500 addressees in 49 countries (who'll make it 50?), and we want it to be a vehicle for communicating this sort of knowledge. ✉

Jim Southerland
Chief, Emission Factor & Methodologies Section

EMISSION INVENTORY ACTIVITIES:

AN "INTENSIFIED EFFORTS" TASK FORCE was created in October to assist States with their final Emission Inventory submissions. Major efforts have been under way since then to help States in overcoming AIRS data entry problems and in organizing area data. Priority has been given to the serious nonattainment areas. The goal of the Task Force was to obtain as many complete inventories by the 15 November deadline as possible. The intensified effort continues in some areas through January 1993. For more information on the Task Force or the above tabulation, contact Sharon Nizich at the Newsletter, phone (919) 541-2825.

GUIDANCE ON PROCESSING FINAL INVENTORY SUBMISSIONS has been issued by EIB and the Air Quality Maintenance Division (AQMD) to deal with the failure of some States to submit all elements of an inventory. We have identified five components necessary in an inventory: point source data, area source data, mobile source data, biogenic emissions data, and documentation for all of them. (See Table above.) Although it is not required that these data also be in AIRS for an inventory to be considered properly submitted, the data must be there before an inventory can be approved. The guidance memo also informed the Regional Offices of these

requirements, and it detailed the respective responsibilities for review of the inventories by the Regions, the Office Of Air Quality Planning And Standards (OAQPS), and the Office Of Mobile Sources (OMS). For more information, contact Bill Kuykendal at the Newsletter, phone (919) 541-5372.

SIP EMISSION INVENTORY FINDINGS LETTERS were issued by the EPA Regional Offices on January 15 to certain States for failing to submit State Implementation Plan (SIP) elements that were required by November 15, 1992. Of the 17 elements required by the November date, three involved emission inventories: Ozone (O₃) SIP inventories for 1990, Carbon Monoxide (CO) SIP inventories for 1990, and Emission Statement rules.

Findings of failure to submit Ozone inventories were issued to Delaware, Maryland, Utah and Arizona. Findings of failure to submit CO inventories were issued to Connecticut, Maryland, Utah, Arizona and Alaska. Fifteen states received findings for failure to submit Emission Statement rules.

The SIP elements submitted to EPA will move on to the next step of determination of "approvability". As required by the Clean Air Act, EIB and the Regional Offices will review the base year 1990 inventory submissions to determine if they are "complete,

comprehensive, and accurate". Emission Statement rules will also be reviewed to see if they meet the requirements of the Act. For more information, contact David Misenheimer at the Newsletter, phone (919) 541-5473.

ASSISTANCE ON ENTERING MOBILE SOURCE DATA INTO AIRS/AMS has been given by EIB to the States regarding highway and nonroad mobile sources. Through EIB's Direct Assistance contract, the nonroad mobile source inventories which OMS developed for 33 O₃/CO Nonattainment Areas were transformed into batch transactions and loaded onto AMS in December. This work was coordinated with the Regions and the National Air Data Branch. To create nonroad inventories for the remaining nonattainment areas, EIB will be adjusting the existing nonroad inventories by a methodology recommended by OMS, a ratio by human population. These adjusted inventories will likewise be placed in AMS in batch transaction, with the concurrence of the involved States.

To aid further in getting highway mobile source inventories into AMS, we have designed a spreadsheet which will reformat data into the AMS transaction file format. This will be

helpful to States still having mobile source data in some other type of spreadsheet format. An available Lotus 2.0 import option, either automatic or manual, can be used to reformat the data. This option has already proved quite successful, and it is now available, with a user's guide, on the *CHIEF* bulletin board. Look for it under "Utility Programs", named VMT_EF.WK1. For more information, contact Lee Gabele at the Newsletter, phone (919) 541-5292.

ROTATION TO NEW ASSIGNMENTS is on schedule in the Inventory Guidance And Evaluation Section of EIB. In mid-January, David Misenheimer became Acting Chief of the section, a position he will hold while Marty Martinez goes on an international detail to the Secretaria Desarallo Social (SEDESOL), the Mexican environmental agency. Marty will handle that assignment for about six months, beginning in March. He will advise the Mexican agency on

emission inventory methods and on the U. S. experience with conventional and greenhouse gasses and their relationship to air emissions. He will also advise on matters such as the ozone problem in Mexico City and U. S./Mexico border issues. Marty is one of five EPA people in the newly organized EPA/SEDESOL technical personnel exchange program. ♣

NEW ON THE CHIEF BULLETIN BOARD:

Bulletin Board log-ins since the last Newsletter exceeded 4500, and we're glad to know that so many people are making use of the BB. We are making more access lines available for you. Remember, when checking the list of current Alerts, to look at old Alerts to make sure you're up to date. Alerts will stay current for at least a month before they are moved to the "old" list. We are planning some changes to the BB's main menu which will make it easier to use. Write, phone or E-mail your comments, questions or suggestions you have to Michael Hamlin, bulletin board System Operator, here at the Newsletter.

The 1992 version of *XATEF*, the Crosswalk/Air Toxic Emission Factor Data Base Management System, has taken over as the most popular data base downloaded from *The CHIEF BB*. More than 1800 citations and emission factors have been added to *XATEF* this year, the majority of which come from the California Hot Spots Inventory Pooled Source Test Data. 1992 is the end of the line for *XATEF*. It served us well, but soon it will be replaced by

FIRE, the Factor Information Repository System, which will contain rated toxic and criteria emission factors.

NEW AP-42 DRAFTS — Drafts of a number of new AP-42 sections are now on the BB, including several from Chap. 2, Solid Waste Disposal; and Chap. 5, Chemical Process Industry. More are being added. Please comment on this new material, by BB E-mail or however you wish.

TANKS — EIB's newest emission estimation tool, the *TANKS* pc program, can be copied from *The CHIEF BB*. This menu driven program contains the newly revised storage tank equations contained in the new Chapter 12 to AP-42. The system calculates monthly and annual VOC and toxic air emissions, for horizontal and vertical fixed roof tanks, internal and external floating roof tanks, and underground tanks, incorporating the latest American Petroleum Institute equations. *TANKS* can produce either summary, detailed, or fully detailed reports. The user's manual for the system is also on *CHIEF*. *TANKS* requires 3 MB of hard disk space to

operate. For more information, contact *Info CHIEF* at phone (919) 541-5285.

LOCATING & ESTIMATING . . . DOCUMENTS — The BB now has the draft L&E document on Mercury, and the final for Methylene Chloride will be on in March.

INTERIM SPECIATE — The 1992 version of the VOC/PM Speciation Data Base Management System (*SPECIATE*) is available from *The CHIEF BB*. This *SPECIATE* has new species profiles developed by the Office Of Mobile Sources for automobile exhaust and evaporative emissions. These profiles were produced with data from EPA, the California Air Resources Board, and AUTO/OIL.

ORDERING MODULE FOR DOCUMENTS — Remember the BB module for quick ordering of any of the *Locating And Estimating* series on toxic substances. To reach the module, go to the main menu and select Order Documents. Your requests will then go directly to our library services people for distribution to you. For assistance or more information, call the *Info CHIEF*, phone (919) 541-5285. ♣

THE JOINT EMISSION INVENTORY OVERSIGHT GROUP:

JEIOG Research In Progress

AIR TOXIC DATA BASE MANAGEMENT — The JEIOG air toxics subcommittee wants to identify state and local toxic emission inventory needs in a computerized data base management system. Options being considered include support for a relational data base management system in

a client/server UNIX environment, in a stand alone pc system, and in a pc system that could function as a front end for a client/server data base or in AIRS. The subcommittee would like to talk with possible users of such a system. To begin this discussion, a pc prototype air toxic inventory system

has been developed which can perform basic data entry and report output functions for both point and area sources. The prototype does not interface with other emission estimation models for emission calculation purposes, but we hope to develop an interface with the Factor

Inventory Reference (FIRE) system of air toxic factors, now being developed by EIB. Please give your comments, or requests for more information, to Chuck Mann, phone (919) 541-4593.

STARRSS – The Emissions And Modeling Branch of EPA's Air And Energy Engineering Laboratory has recently developed pc software to assist state regulatory agencies and utilities in dealing with Title IV of the Clean Air Act, which requires the electricity industry to curtail SO₂ emissions sharply by 1995 and to make an even more stringent reduction by 2000. The pc program, the *State Acid Rain Research And Screening System (STARRSS)*, is an integrated information/modeling system which will help

determine the "best" strategy for complying with the requirements.

Utilities must file compliance plans with EPA and with state public utility commissions to indicate how these SO₂ reductions will be made. Various strategies may be selected, involving costs of compliance, alternative controls, fuel switching, single vs. diverse approaches, and other options. *STARRSS* addresses these factors by analyzing the present value of revenue requirements over hundreds of possible strategy combinations, and then generating a full range of costs to achieve the reductions. No single strategy can be considered optimal, since future costs and other factors are uncertain. The *STARRSS* approach involves

selecting a set of plans from a list of many possible compliance strategies. The program then offers a level of risk associated with each, including considerations for such variables as operating conditions, future fuel prices and allowance prices.

The *STARRSS* system is now being used by utility commissions in Indiana, Michigan, Mississippi, Missouri, Ohio, Pennsylvania and Wisconsin. The system has also been presented at recent conferences on power generation and utilities regulation, and at EPA/DOE Clean Air Act regulatory workshops. For further information, contact Chris Geron, phone (919) 541-4639. *en*

⑧ QUIZ CORNER ⑧

Congratulations for quickly solving last issue's quiz go to George Leney, head of the EI section of the Allegheny Cy. Health Dept. in Pittsburgh. Close behind him was Daniel L. Herman, environmental analyst with the Massachusetts agency, who used the puzzle in his CD-ROM orientation course there. Others tried, but these two got it. The answer was **1992**, the Year Of The Emission Inventory.

Now here's another challenge, this one also concocted by Keith Baugues:

QUIZ NO. 2

```

  _ _ _ _ _      _ _ _ _ _      _ _ _ _ _
13 10 14 14 9    13 5 12 2 11 10 9 8
  _ _ _ _ _      _ _ _ _ _
   7 6 5 4        3 2 1
  
```

The numbers under the blanks correspond to the numbers of the clues below. Look up the emission factor in AFSEF, either program or hard copy (EPA-450/4-90-003), for the SCC and the pollutant specified. The integer portion of the emission factor refers to the letter in the alphabet you need to place in the blank above. For example, if the emission factor were 2.6, the 2 would refer to the second letter in the alphabet, B. 1=A, 2=B, etc.

The first five people who respond with the correct answer will be lauded in the next Newsletter. Please send all responses to Whit Joyner at the Newsletter, phone (919) 541-5493.

<u>Clue</u>	<u>SCC</u>	<u>Pollutant</u>
1	30501617	NO _x
2	30101901	SO _x
3	10200224	CO
4	30100305	CO
5	30501905	Particulate
6	20200402	NO _x
7	10200707	Particulate
8	30400304	CO
9	30121124	VOC
10	30101827	VOC
11	20100901	PM-10
12	30112510	VOC
13	30116702	VOC
14	30102729	Particulate

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

HEADQUARTERS INVENTORY CONTACTS

January 1993

— EMISSION FACTORS —

	AP-42 Chapter	Contact	Telephone (919) 541-
1.	External Combustion	Joe McSorley	4796
2.	Solid Waste Disposal	Ron Myers	5407
3.	Internal Combustion	Michael Hamlin	5232
4.	Evaporation Loss Sources	Ron Ryan	4330
5.	Chemical Process Industry		
	Organics	Dennis Beauregard	5512
	Inorganics	Ron Myers	5407
6.	Food And Agricultural Industry	Dallas Safriet	5371
7.	Metallurgical Industry	Dennis Shipman	5477
8.	Mineral Products Industry	Ron Myers	5407
9.	Petroleum Industry	Ron Ryan	4330
10.	Wood Products Industry	Dallas Safriet	5371
11.	Miscellaneous Sources	Dennis Shipman	5477
12.	Storage Of Organic Liquids	Anne Pope	5373
Other	Toxics	Anne Pope	5373
	Lead	Dennis Shipman/Ron Myers	5477/5407
	General information, Newsletter, Bulletin Board, XATEF, SPECIATE, Air CHIEF CD, Publications	Info CHIEF	5285

— EMISSION INVENTORIES —

1990 O ₃ /CO SIP Inventory Status	Sharon Nizich	2825
Inventory Guidance		
PM-10, Lead	Bill Kuykendal	5372
O ₃ /CO	David Misenheimer	5473
AIRS/AFS Emissions Data Quarterly Report	Lee Gabele	5292
AIRS Area And Mobile Subsystem (AMS)	Lee Gabele	5292
AIRS Facility Subsystem (AFS)	David Misenheimer	5473
Biogenic Inventories	Steve Bromberg	1000
Emission Statements	Mary Ann Warner-Selph	1192
Mobile Sources	Mary Ann Warner-Selph	1192
Modeling-related Inventories	Mary Ann Warner-Selph	1192
PM-10/Lead	Bill Kuykendal	5372
Quality Assurance	Sharon Nizich	2825
Tracking Reasonable Further Progress	Mary Ann Warner-Selph	1192
SIP Air Management System (SAMS)	David Misenheimer	5473
Toxics Inventories	Anne Pope	5373
Emission Trends	David Misenheimer	5473
Other	David Misenheimer	5473
— PM-10 SIPS —		
OAQPS/AQMD	Larry Wallace	0906
OAQPS/SSCD	Chris Oh	(202) 308-8732
— O ₃ /CO SIPS —		
OAQPS/AQMD	Laurel Schultz	5511
OAQPS/SSCD	Vishnu Katari	(202) 308-8717
Office Of Mobile Sources	Mark Wolcott	(313) 668-4219
— LEAD SIPS —		
OAQPS/AQMD	Tom Pace	5634

⌘ TECH NOTES

⌘ — **ALL O₃/CO INVENTORY PREPARATION PLANS (IPP) ARE NOW APPROVED** - The 45 final IPPs, involving 43 States, have been received, reviewed and approved. EIB will continue to work with the Regions on how to deal with any problems. For more information, contact Lee Gabele at the Newsletter, phone (919) 541-5292.

⌘ — **NATIONAL STORM WATER HOT LINE** - For those experiencing problems in evaluating the pollution aspects of storm water and downpour runoff, help is available at (703) 821-4823.

⌘ — **U. S. CODE AVAILABLE ON COMPACT DISC** - A great bargain from the federal government – the entire 30,000 pages of the U. S. Code, comprising all federal laws in force as of 2 January 1991, can now be obtained now on one CD-ROM for only \$30.00. In paper copy, the Code is 23 volumes long, @ \$800. The CD has many user help features. It requires a pc compatible machine w/ 2 MB RAM and DOS 2.0 or Windows 2.0 or higher. A Macintosh version is planned within about a year. For more details, contact Elliot Chabot, House Information Systems, U. S. House Of Representatives, phone (202) 226-6456. The CD is sold by the Government Printing Office, Box 371954, Pittsburgh, PA 15250-7954, Stock No. 052-001-00439-6.

⌘ — **COMPACT DISC FEDERAL REGISTER®** - The complete *Federal Register*, updated weekly, is available on CD-ROM, including text, tables, illustrations, and search capability by key word, agency, date and other tags. A subscription comes with toll-free phone support, and only two discs are required for every year of the *FR*. For details, or a floppy sample, contact Counterpoint Publishing, Box 928, Cambridge, MA 02140, phone (800) 998-4515. ⌘

UPCOMING MEETINGS AND CONFERENCES

— Call For Papers, AWMA Specialty Conference, "The Emission Inventory: Perception And Reality", 18-20 October 1993, Pasadena, CA. Abstracts are due 15 Mar. Contact Patricia Velasco, CA Air Resources Board, Box 2815, Sacramento, CA 95812, or Kathy Hsiao, South Coast AQMD, 21865 E. Copley, Diamond Bar, CA 91765

— Papers for the 86th Annual Meeting of AWMA, 13-18 June 1993, Denver, CO. Final papers are due 19 April. Contact Lisa Bradley, AWMA, Box 2861, Pittsburgh, PA 15230, phone (412) 232-3444.

— Waste Combustion In Boilers And Industrial Furnaces, 2-4 March 1993, Clearwater, FL, Contact Marci Mazzei, AWMA, Box 2861, Pittsburgh, PA 15230, phone (412) 232-3444.

— Pollution Prevention, Reuse, Recycling And Environment Efficiency - AWMA specialty conference, 20-22 April 1993, Durham, NC, Contact Gretchen Watson, AWMA, Box 2861, Pittsburgh, PA 15230, phone (412) 232-3444.

— Measurement Of Toxic And Related Air Pollutants - AWMA/EPA specialty conference, 3-7 May 1993, Durham, NC, Contact Gretchen Watson, AWMA, Box 2861, Pittsburgh, PA 15230, phone (412) 232-3444. ⌘

THE CHIEF NEWSLETTER is produced quarterly by the Emission Inventory Branch, Technical Support 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 Whitmel M. Joyner, Editor, Emission Inventory Branch (MD 14), US EPA, Research Triangle Park, NC 27711; commercial phone (919) 541-5493.

The contents of THE CHIEF NEWSLETTER do not necessarily reflect the views and policies of the Agency, neither does the mention of trade names or commercial products constitute endorsement or recommendation for use. ⌘ ⌘ ⌘ ⌘ ⌘ ⌘ ⌘