



THE CHIEF NEWSLETTER

— THE CLEARINGHOUSE FOR INVENTORIES AND EMISSION FACTORS —

— THE EMISSION INVENTORY: PERCEPTION AND REALITY — THIRD ANNUAL CONFERENCE IS A SUCCESS

The successful specialty meeting on emission inventories in Pasadena, October 18-20, proves the contention that this topic remains very important across the spectrum of air pollution control interests. This year's conference, jointly sponsored by the California Air Resources Board (CARB) and the Air & Waste Management Association (AWMA), with coordination and support from EPA, hosted about 365 attendees from all corners of the emission inventory arena. The group "categorized" into 33% from California's state and local agencies, 25% contractors, 15% industry, 13% other state/local agencies, 7% foreign entities (10 countries), 5% U. S. EPA, and 2% academia. Only 10 states were represented. No doubt, the EPA contingent would have been larger but for travel funding problems.

The preconference training courses, although held on a Sunday, still were well attended, and Anne Pope's demonstrations of EIB's *TANKS* and *FIRE* programs and the *Air CHIEF* compact disk were popular.

Topics highlighted during the meetings, and discussed as well at the wrap-up session, include:

– The need to enhance mobile source inventories, to accommodate recent research, and to study the relationships

of mobile model predictions with actual study data. (Nonroad enhancement is needed, too.)

– The need for a mechanism to coordinate the rapid evolution of computer tools, at all levels, from micros on the desk up to mainframes. It is difficult to integrate and share knowledge of programs involving permits, State Implementation Plans, toxic substances, and the Aerometric Information Retrieval System (AIRS).

– Necessary work to refine emission inventory validation techniques and uncertainty estimates.

– Increased demands for toxics data, while factor, inventory and estimation abilities are still primitive.

It is important to remember, although many short-term frustrations remain in the work for clean air, that tremendous progress has been made over the years, and optimism for the future is well warranted.

The conference was a success, in its courses, speaker sessions, and frequent opportunities for collegial discussion and airing of ideas. This meeting mirrored, in subject and focus, those held in 1991 and 1992 in Durham, NC. Following a coastal rotation sequence to encourage broad participation, 1994 sessions will be in the Durham area. ♣

OMS HOLDS NONROAD VEHICLE INVENTORY WORKSHOP

On Sept. 20, EPA's Office Of Mobile Sources (OMS) held a workshop for state and Regional personnel on nonroad vehicle emission inventories in Ann Arbor, MI. At the workshop, a contractor who has prepared nonroad emission inventories for 33 Ozone and CO Nonattainment Areas spoke on how the inventories were derived, including a description of the methodology and all inputs used in the effort.

The details of the presentation will be supplied to EPA by the contractor in a complete report. Also included will be a specific case study of the Philadelphia Nonattainment Area,

with all input data and formulae used to calculate the inventory for Philadelphia. This report will be available on the OMS portion of the Office Of Air Quality Planning And Standards Technology Transfer Bulletin Board System.

The workshop also offered sessions on the benefits of reformulated gasoline in nonroad equipment; the 1996 inventory projection methodology; and the present status of, and future plans for, regulation of nonroad mobile sources.

For more information, about the report or the conference, contact Greg Janssen, OMS, (313) 668-4285. ♣

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THE 1992 EMISSION TRENDS REPORT

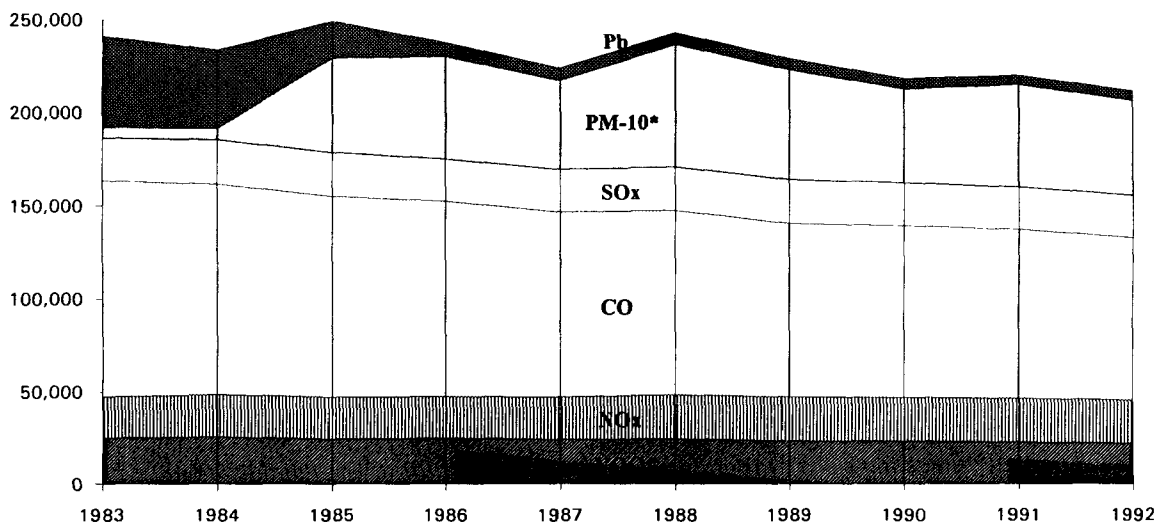
The *National Air Pollutant Emission Estimates, 1900 - 1992*, is being printed and is on the *CHIEF* electronic bulletin board (BB). This year's report makes use of an updated methodology that provides more accurate estimates of emissions for all the criteria pollutants. The changes result from improvements in the data bases, methods and models used to develop the estimates. For instance, mobile source emissions, previously underestimated, are now reflected more accurately through applying the *Mobile5a* model nationally to estimate emissions from 1940 to the present. In addition, the nonroad mobile source estimates in this year's report are based on extensive nonroad survey data. Other improvements include using actual fossil-fuel steam

utility data; using rule effectiveness factors on 1985 NAPAP data, where applicable; applying Bureau Of Economic Analysis (BEA) earnings data, by industry, to the 1985 NAPAP inventory; utilizing emission factor updates/changes for railroads, residential wood combustion and aircraft; and using county-specific information for mobile source estimations. The graph below gives a representative sample of emission trends for the past decade.

The new report is on the *CHIEF* bulletin board now, and paper copies will be available in late January. For further information, including how to obtain copies, contact Sharon Nizich at the Newsletter, (919) 541-2825, or call the *Info CHIEF*, (919) 541-5285. ♣

CRITERIA POLLUTANT TRENDS, 1983 - 1992

(UNITS ARE 10⁶ TONS)



*Since 1985, PM-10 estimates have included fugitive dust from agricultural and construction activities.

UPCOMING MEETINGS AND CONFERENCES

— 1994 EPA/AWMA Title III, Air Toxics Compliance Strategies: MACT Standards, HON Rule, Toxics Permitting, Residual Risk, Monitoring, Interface with other Sections of the Act, &c. 13-14 Jan, San Francisco; 24-25 Feb, Baton Rouge; 17-18 Mar, Houston; 7-8 Apr, Charlotte; 28-29 Apr, Newark; 19-20 May, Chicago. Contact Court Gould, AWMA, Box 2861, Pittsburgh, PA 15230, (412) 232-3444.

— AWMA Meetings/workshops (Information: AWMA, Box 2861, Pittsburgh, PA 15230, (412) 232-3444):

Ozone Control Strategies For The Next Decade (Century), San Francisco, 11-13 April '94.

Training Institute: Northwest Regional Center, Calgary, Alberta, April '94.

Global Climate Change: Science, Policy And Mitigation Strategies, Phoenix, 5-8 April '94.

Waste Combustion In Boilers And Industrial Furnaces, Kansas City, MO, 20-22 April '94.

Source Reduction And Risk Analysis, Valley Forge, PA, 27-29 April '94.

87th Annual Meeting, Cincinnati, 19-24 June '94.

Measurement Of Toxic And Related Air Pollutants, Durham, NC, 3-6 May '94.

Tropospheric Ozone, Orlando, 11-13 May '94.

Training Institute: Southeast Regional Center, Florida, Fall '94.

— New Mexico Conference On The Environment, 24-26 April '94, Albuquerque, NM. Contact John Geddie, NM Dept. Of The Environment, Box 26110, Santa Fe, NM 07502, (505) 827-2850.

— 4th Annual Specialty Conference, The Emission Inventory: Perception And Reality, October '94, Durham, NC. ♣

AP-42 SUPPLEMENT F IS OUT

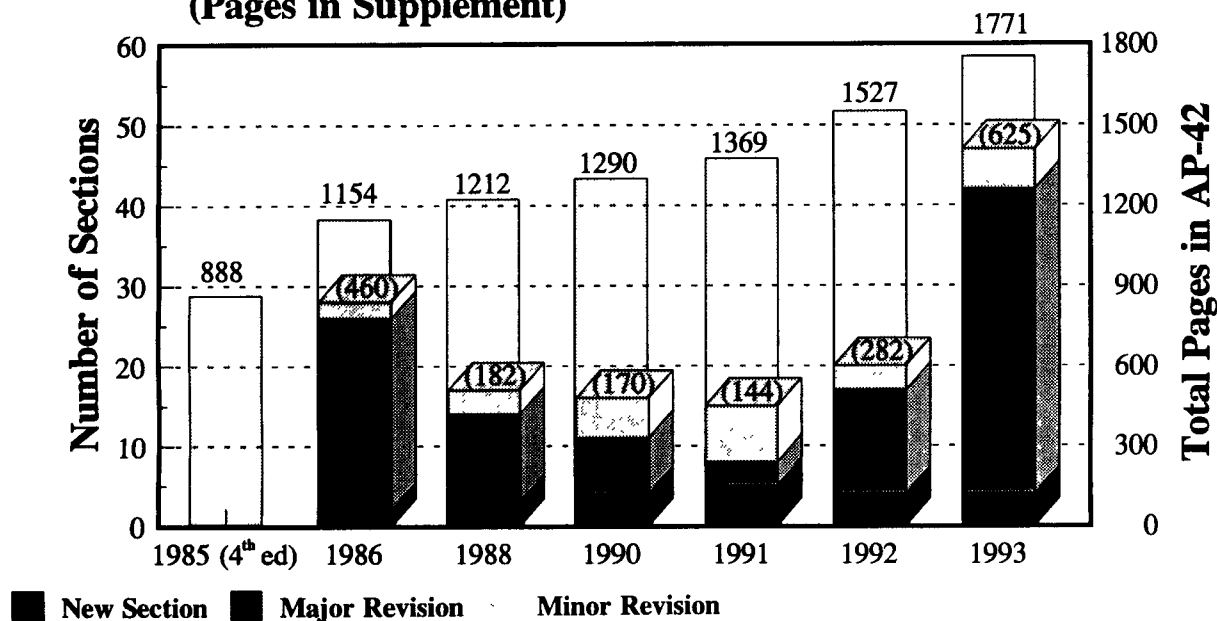
EIB has published and released the largest supplement in the long history of the AP-42 series. The stationary point and area source volume's 628-page SUPPLEMENT F contains 1715 new or revised emission factors and process information for 51 different source categories.

The contents of Supplement F are already on the CHIEF bulletin board, Fax CHIEF, and the Air CHIEF compact disc

(CD-ROM), Version 3.0. EIB has sent complimentary copies of the printed document to EPA libraries and to each state and local control agency. Printed copies are available to others for \$42.00 (includes shipping and handling) from the Government Printing Office, Washington, DC 20402-9325, with a stock number of 055-000-00453-6. To purchase with major charge cards, call (202) 783-3238. ♣

EMISSION FACTOR DEVELOPMENT PROGRAM RESULTS

(Pages in Supplement)



EMISSION INVENTORIES IN SOUTH AFRICA

by Paul G. van Nierop

(After the emission inventory specialty conference in Pasadena, one conference attendee broke his long journey home with a visit to the offices of The CHIEF Newsletter. We enjoyed Paul's views on the conference and on other topics.)

A paper authored by P. G. van Nierop and H. J. Annegarn, "Particulate Source Inventory For The Vaal Triangle", was presented at the international conference in Pasadena. The Schonland Research Center For Nuclear Sciences at the University Of The Witwatersrand, in Johannesburg, is compiling a particulate emissions inventory in the Vaal Triangle, an area to the southwest of Johannesburg. Because of the limited extent of inventory compilation techniques available in South Africa, we have used U. S. EPA techniques and methodology extensively.

I found the conference most interesting and informative. It was encouraging to find that many of the problems we experience in South Africa are also faced in the USA. I also attended the preconference course on emission inventory compilation, presented by Jim Southerland [EPA], Anne Pope [EPA], and [contractor] Angela Andrews. This course was extremely useful, as it provided technological assistance which is impossible to obtain in South Africa.

Afterward, on Monday the 1st of November, I visited the Emission Inventory Branch [EIB] of EPA at Research Triangle Park and spent an interesting day discussing inventory topics with various people. These discussions generated several ideas and plenty of useful literature, which will make our task in South Africa considerably easier. What I have learned from my visits to the conference and the EPA will definitely improve the quality of our inventory. My thanks to Jim Southerland for hosting me, and to all the other people that I met. ♣

AIR/SUPERFUND COORDINATION PROGRAM

The Air/Superfund Coordination Program assists all EPA Regions in 1) evaluating the effects of air emissions from Superfund sites, before and during remediation, and 2) developing and implementing site cleanup measures to mitigate these effects, toward protecting both public health and the environment.

The Air/Superfund Coordinator in each Region's air office is responsible for assuring support to the Superfund efforts. Air offices provide routine site support services such as consultation and review of proposals, plans and studies. They also inform decisions about preredial, remedial and removal actions that may affect air emissions. They help make sure that site decisions involving air pollution issues are consistent with federal, state and local regulations and policies. Also, they perform air pathway analyses (APA) and special field evaluations during removal and remediation actions and assist Superfund contractors with matters such as air modeling, monitoring and use of control devices.

An APA is a systematic evaluation of a Superfund site's actual or possible effects on air quality, which can involve modeling or monitoring. A plan's major components are

- Characterization of the emission source(s)
- Determination of the effects of atmospheric processes such as transport and dilution

- Evaluation of the exposure potential at receptors.

Both CERCLA* and SARA* mandate a characterization of all contaminant migration pathways from the waste or hazardous material to the environment, along with evaluation of any resulting effects. Often, however, APAs are not prepared, because many sites show little or no perceptible emissions in undisturbed or baseline states. Even low emission levels can be important, especially of toxic or carcinogenic compounds. And during cleanup activity, emissions can greatly increase. Not performing an APA can lead to health risk underestimation, with possible work stoppages and other augmented cleanup costs.

To date, the Air/Superfund Coordination Program has produced 35 National Technical Guidance Studies (NTGS) that provide technical assistance in conducting APAs. These reports deal with estimating emissions, analyzing dispersion model results, conducting ambient monitoring, and evaluating site cleanup techniques. To obtain copies of the various NTGS reports, or for more information, contact Joe Padgett at EPA, (919) 541-5589, or Patricia Flores, EPA Region III, (215) 597-9134.

*CERCLA: *Comprehensive Environmental Response, Compensation And Liability Act of 1980*; SARA: *Superfund Amendments And Reorganization Act.* ♣

CARB ACTIVITIES & PUBLICATIONS

The Stationary Source Emission Inventory Branch of California Air Resources Board's (CARB) Technical Support Division has recently begun producing an informative quarterly newsletter, the *Emission Inventory Informer*. The *Informer* details some important work currently being done there.

Air Toxics Hot Spots Requirements - CARB has streamlined the "Hot Spots" program regulation reporting requirements. Inventory update efforts are now focused on significant risk facilities, while these efforts are reduced for all other affected facilities. The update submission schedule has been modified to reflect this change in focus. Workshops have been held to explain the new procedures. Other efforts are under way to move the program along, including developing toxics emission factors from collected source test data, to supplant work done by the U. S. EPA. For more information on this topic, contact Marcelle Surovik, (916) 324-1842.

Now available is *California Emission Trends, 1975 -*

2010. The book details the decreases in emissions since 1975 and then mixes controls and population changes to project expectations through the first decade of the coming millennium. For more information, contact Martin Johnson, (916) 323-3567. For copies of the report, contact CARB's Public Information Office, (916) 322-2990.

The report, *Status And Capabilities Of The ARB's Air Toxics Emission Data System (ATEDS)*, was prepared recently. ATEDS is a comprehensive, relational data base addressing emissions of over 700 toxic substances, as reported by facility operators under the "Hot Spots" program. The report describes the structure of the ATEDS data base and its reporting capabilities, and it presents preliminary analysis of toxics data, based on an evaluation of "toxicity-weighted" emissions. For more information, call Beth Schwehr, (916) 322-6002.

Inquiries about this interesting newsletter should be directed to Carolyn Lozo, CARB, 2020 L St., Sacramento, CA 95814-4219, phone (916) 323-8372. ♣

 **EMISSION INVENTORIES — THE KEY IN '93!**

FROM THE EFMS CHIEF'S CORNER

Well, the dam broke loose! Since the last edition of this newsletter, we have been able to meet several hefty milestones. Among these are:

- the publication and release of the 628-page AP-42 Supplement F (containing 1715 new or revised emission factors for 51 source categories),
- production of 10 *Locating And Estimating* documents
- completion and distribution of Version 2.0 of the TANKS emission estimation program,
- completion and distribution of the new Factor Information And Retrieval system, FIRE, for both criteria (5712 factors) and rated toxic pollutant emissions (3903 factors), and
- completion and distribution of Version 3.0 of our Air CHIEF CD-ROM, containing Supplement F, FIRE and other new material.

The amount of support we give our "customers" via our help line, *Info CHIEF*, has continued to grow (we will even be expanding this assistance soon). Also, use of the new *Fax CHIEF* facility has been increasing at logarithmic rates. We have 30 to 40 more sections of AP-42 in the latter stages of review, and their first appearance in final form, as usual, will be on the *CHIEF* bulletin board and *Fax CHIEF*. It still takes eight weeks or more to get paper copies printed.

In processing all this information, it's impossible to avoid

the occasional error. If you run across a factor or other piece of information which appears to be in error, please call the *Info CHIEF* help line about it, (919) 541-5285, and we will try to chase it down and verify or correct the information. We will put notification of errors on the *CHIEF* bulletin board, will make corrections in that part of the *CHIEF* bulletin board and in the *Fax CHIEF*, and will include corrected pages in the next volume in the AP-42 series. *Fax CHIEF* and the bulletin board files will always reflect the latest information, so if you need to verify that your copy of something is the latest, dial up *Fax CHIEF* (919 541-0548 or 5626) on your fax machine and check the date on the index or fax yourself a copy of the section in question. Please use this automatic service, if it has the information you need.

Now we are on to see what the new year (fiscal) bringeth! EIB is now dealing with a further 55% whack in our budget, with severe effects, to put it mildly. We will continue to meet your needs the very best we can with the resources we have. Please provide us feedback as you see ways we can improve. We still want to get some Newsletter articles from you, on things you've done that may be helpful to us or to others in the emission inventory community, so don't forget that. If you are a state or local agency with a newsletter, we would like to receive your issues, too.

Until next time, keep up the good work!

Jim Southerland

Chief, Emission Factor & Methodologies Section

STATUS OF THE INTERIM TOXIC EMISSION INVENTORY

During 1991, it became apparent that a national toxic emission inventory was needed in order to conduct regional transport and deposition modeling in support of the 1990 Clean Air Act Amendments. To address this need, existing toxic emission data were examined, including those of the Toxic Release Inventory (TRI). No existing emission data bases contained information suitable for regional air quality modeling. Consequently, it was necessary to compile, from existing information, an estimated county-level national interim toxic annual emission inventory. The initial compilation effort focused on 26 compounds of interest in the Great Lakes area. Because of limited emission factors and activity data on toxic emissions, the emission estimates were based principally on speciation of the base year 1985 total suspended particulate (TSP) and volatile organic compound (VOC) inventories gathered for the National Acid Precipitation Assessment Program (NAPAP). The results were generally two or more orders of magnitude larger than existing toxic emission estimates, depending upon the pollutant. This was because of, variously, 1) use of old data in NAPAP, in some cases dating to the 1970s, and 2)

uniform application of speciation profiles of varying quality to sources with variable characteristics.

That interim toxic emission inventory is now being expanded and improved, by using updated base inventories and by placing first priority upon chemical and source-type-specific emission factors, when possible, and second priority on the use of updated speciation profiles. The updated interim annual toxic emission inventory bases VOC-related toxic emissions on EPA's 1990 interim national emission inventory. (This inventory does not address particulate matter, so the updated toxic emission inventory uses the 1985 NAPAP inventory for particulate-related toxic emissions). The 1990 interim inventory will be improved as 1990 emission data from the states are collected under the State Implementation Program for ozone precursor pollutants. Information is generally insufficient at this time to perform temporal allocation of the estimated emissions to seasonal, daily, or hourly values. Sixty compounds, including the 26 mentioned above, were selected for the updated toxic emission inventory, based on toxic-emission program needs and toxicity of the compounds. The most

recent information was examined to extract emission factors for each toxic pollutant/source category pair. Where there was no emission factor information, the best available speciation profile information was determined for speciation profile/source category pairs. Although the information available is improved from 1991, in many instances it is necessary to use a default profile. The default profiles are average representations of all profiles and, consequently, are of low quality when applied to specific sources. Emission estimates attributable to the default profile are tracked

separately, as an aid to defining the uncertainty in the interim toxic emission inventory. The improved interim toxic emission inventory should be viewed as a first estimate of toxic emissions. Processing of the improved interim toxic emission inventory is under way and should be complete by the end of 1993. Analysis and documentation will occur during the first six months of 1994, and results of this work will be conveyed in this Newsletter.

For further information, contact Bill Benjey at EPA, (919) 541-0821. ♣

— BULLETIN BOARD NEWS —

Have You Tried Fax CHIEF? – If you want a paper copy of part or parts of AP-42, pick up the phone handset on your fax machine and place your order! Fax CHIEF, EIB's newest high tech information tool, contains some of our most often requested material. Users may select from sections of AP-42 Volumes I (Stationary Sources) or II (Mobile Sources), as well as memos, guidance, and other technical material related to air pollutant emissions. More documents will be added in the future. With Fax CHIEF, you can be sure of getting the latest version of the documents you need.

Fax CHIEF has been on line for a very short time, but caller requests are already averaging over 400 per month. Just call in to Fax CHIEF, follow the voice instructions on making selections, and immediately get the needed material transmitted back to your facsimile machine. It operates 24 hours a day, 7 days a week.

All that's required is a fax machine with an attached telephone. Call (919) 541-5626/0548 from the telephone attached to your fax machine. As directed, use the telephone keypad to enter your document request, and Fax CHIEF does the rest. You may select up to two documents per phone call. Your only costs are for fax paper and telephone charges.

A few "unsuccessful" tries have been tabulated. At the end of your call, the system will prompt you to listen for the "tone", press the "send" key, then hang up. Look for your

machine's indication of a successful connection/transmission before hanging up the phone.

New! SWAMI SPEAKS – A new section entitled SWAMI SPEAKS has been added to the BB. The "Swami" will introduce topics pertinent to emission inventories and factors and will invite public comment and discussion via "Public Messages". Select <A> from the Main menu for more information. This pilot effort is being tried as a result of our asking focus groups about EPA/state/local agency communication issues. If our users will submit issues and questions to the "Swami", and communication thereby improves, it should provide some relief from day-to-day stresses, and we will continue the service. For assistance, or to talk with the SWAMI, contact Steve Bromberg at the Newsletter, (919) 541-1000.

SPECIATE – Two corrections have been made to the SPECIATE program. Profiles 1101, 1203, and 1204, pertaining to light duty gasoline vehicles (LDGV), have been deleted from the system because they are superseded by the more comprehensive data in recently added profiles 1306 and 1313. Be sure to use these more recent profiles when trying to speciate LDGV emissions. Also, the data quality for profiles 1301-1315 has been upgraded to a "B" rating by EPA's Office Of Mobile Sources. Users should download the revised ZIP files from the "EF Guidance" section to update existing SPECIATE installations.

(BB News cont. over)



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; phone (919) 541-5493.

The contents of THE CHIEF 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. ♣

BB News (cont.):

TANKS – Troubleshooting documentation on **TANKS** has been added to the BB under the "Emission Estimation Software" section. Some errors in the previous version have been corrected in the new Version 2.0, now available. Some frequently asked questions and suggestions for using the **TANKS** program are presented.

Factor And Inventory Documents – A new protocol document for equipment leak emission estimation is now on the BB in the "Emission Factor Guidance" section.

Be sure to look for the memorandum to EPA Regions from Robert Kellam, Acting Director of the Technical Support Division, encouraging the use of **AIRS** to store toxics inventories, on the BB under "Important Memos". Please note the **AIRS** capabilities for storing these data, but be aware too of EPA's current lack of resources to assist in this effort.

The Agency has developed an "Interim Emission Inventory" to be used until state/local data submission to **AIRS** is completed. A summary of this interim inventory is available on the BB in "Emission Inventory Guidance".

Under "Important Memos/Letters", you will find generic documentation for use by emission inventory preparers in relation to their "biogenics" data and "nonroad inventory" data.

U. S. EPA recommendations for estimating VOC emissions from bread bakeries have been added to the BB under "EF Guidance/Q&A-Policies-Recommendations". The file **BAKERIES.TXT** may be viewed on the screen. This material will appear in the next AP-42 update, and it is now considered to be in effect.

AP-42 Supplement F – AP-42 section files available from the "AP-42 by Chapter" area of the BB have been updated to incorporate revisions made in supplements *D, E & F*.

The complete text of sections published in *Supplement F*

is on the BB in "Published Supplements". Altogether, there are 4 ZIP files, and they are quite large. If you want only one or two sections, it will be faster to download them from the "AP-42 by Chapter" area of the BB.

New AP-42 Sections – Draft AP-42 Section 5.19 on "Synthetic Fibers" and Section 8.6, "Portland Cement", have been added to the BB under the AP-42 menu in "Draft Sections Under Review". Please comment on this new materia. by BB E-mail or by phone. Other sections are being added frequently.

Downloading From The BB – The BB has upgraded to a newer version of the archiving/dearchiving software, **PKZIP/PKUNZIP**. In the future, compressed files added to the **CHIEF** will use this new software. Instructions and a downloadable copy of the software are both available on the BB. The licensing agreement makes this operation legal.

Document Ordering Module – Remember the BB module for quick ordering of any of the *Locating And Estimating* series on toxic substances. You may access this module from the "FACTOR and INVENTORY INFO" section of the Main menu. Your requests through this module will go directly to our library services staff for shipment to you. For assistance or more information, call the *Info CHIEF* at (919) 541-5285.

Bulletin Board activity continues to be brisk, now with over 1100 registered **CHIEF** users logging in more than 4000 times per month. Always remember, after checking current "Alerts", to review old alerts to make sure you're up to date. Alerts stay current for at least a month before they are moved to the "old" list.

We like hearing from you. E-mail any ideas and suggestions you have for the bulletin board to Michael Hamlin, **CHIEF** BB System Operator, here at the Newsletter. If you prefer, write or phone us with your comments. To register for the BB, contact Michael here at the Newsletter, (919) 541-5232. ♣

⌘ PERSONNEL NOTES

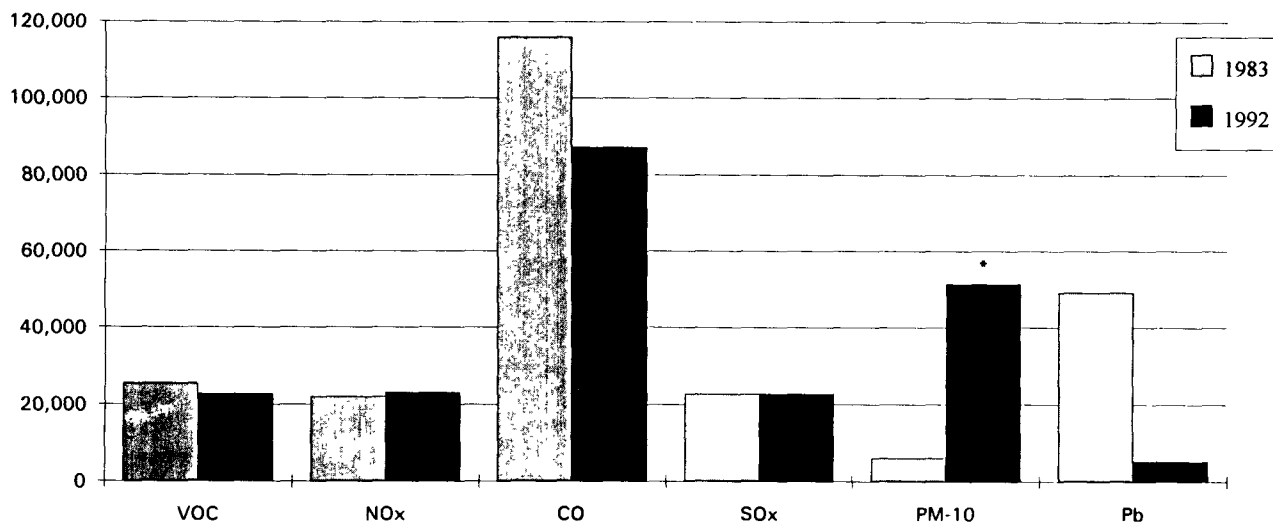
⌘ — As of 19 November, **Jim Southerland** began a 120-day rotation in Raleigh with the North Carolina Dept. Of Environmental Health And Natural Resources, where he will assist the state's air pollution control efforts in several areas. This assignment will give Jim a good look at how EPA's tools and other assistance are used in a state agency and how they might be improved.

During this time, we welcome **Bill Lamason** as Acting Chief of the Emission Factor And Methodologies Section of EIB. Bill comes over from the Air Quality Management Division's Permits Programs Branch, where he worked on New Source Review. He has been with EPA for 14 years, including several years' work on AP-42 and inventory guidance. Bill has an engineering degree from Duke and a Master Of Engineering degree from Florida. During his assignment, Bill looks forward to renewing old acquaintances and forming new ones, as the work continues here.

⌘ — **Dat Giap** has joined our Branch, where he is working on various data analysis tasks. He was born in Viet Nam and came to the U. S. in 1981. He says he is learning much about EPA, preferably from single female teachers. Dat is pursuing a degree in Mechanical Engineering at NC State University in Raleigh, and he enjoys basketball, racquetball, volleyball and tennis in his spare time. We welcome him to the Emission Inventory Branch. ♣

CRITERIA POLLUTANT TRENDS – 1983, 1992

(10⁶ TONS)



*1992 PM-10 estimate includes fugitive dust from agricultural and construction activities.

⑧ QUIZ CORNER ⑧

Get out the calculators. Here's another challenge, by Keith Baugues and Tom Pierce, which requires knowledge of biogenic emissions. This puzzle appeared in an earlier Newsletter, but there were glitches in the mailing. Since we didn't hear from the Quiz Regulars, we're assuming they didn't get their copies. (Is that presumptuous? Do we still have Regulars?) Respond to Whit Joyner at the Newsletter, phone (919) 541-5493.

A dearth of replies to this Quiz Corner will mean that more than these trees will get the ax! Also, any presumed holiday/tree connections may or may not be politically correct. Rely on your consciences, but don't lean on anybody else's.

< 🌳 🌳 HUG-A-TREE SPECIAL 🌳 🌳 >

- 1) How many full grown oak trees does it take to emit one ton/hour of biogenic hydrocarbons, in full sun, at 75° F?
- 2) *Ceteris paribus*, how many @ 95° F?
- 3) How many full grown pine trees will emit one ton/hour of biogenic hydrocarbons, in full sun, at 75° F?
- 4) Ditto @ 95° F?
- 5) How many full grown corn stalks will emit one ton/hour of biogenic hydrocarbons, in full sun, at 75° F?
- 6) Ditto @ 95° F?
- 7) How many full grown tobacco plants will emit one ton/hour of biogenic hydrocarbons, in full sun, at 75° F?
- 8) Ditto @ 95° F?

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

HEADQUARTERS INVENTORY CONTACTS

November 1993

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— 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
	Toxics	Anne Pope	5373
	Lead	Dennis Shipman/Ron Myers	5477/5407
	General information, Newsletter, Bulletin Board, <i>FIRE</i> , <i>SPECIATE</i> , <i>Air CHIEF</i> CD, Publications, <i>Fax CHIEF</i>	<i>Info CHIEF</i>	5285

— EMISSION INVENTORIES —

1990 O ₃ /CO SIP Inventory Status	Sharon Nizich	2825
O ₃ /CO Periodic Inventories	Bill Kuykendal	5372
Biogenic Inventories	Steve Bromberg	1000
Emission Statements	Mary Ann Warner	1192
PM-10/Lead Inventories	Bill Kuykendal	5372
Toxics Inventories	Anne Pope	5373
Emission Trends	Sharon Nizich	2825
Emission Projections	Mary Ann Warner	1192
Quality Assurance	Bill Kuykendal	5372
AIRS Area And Mobile Subsystem (AMS)	Lee Gabele	5292
AIRS Facility Subsystem (AFS)	Steve Bromberg	1000
AIRS/AFS Emission Data Quarterly Report	Lee Gabele	5292

— PM-10 SIPS —

OAQPS/AQMD	Larry Wallace	0906
OAQPS/SSCD	Chris Oh	(202) 308-8732

— O₃/CO SIPS —

OAQPS/AQMD	Laurel Schultz (O ₃)/Carla Oldham (CO)	5511/3347
OAQPS/SSCD	Vishnu Katari	(202) 308-8717
Office Of Mobile Sources	Mark Wolcott	(313) 668-4219

— LEAD SIPS —

OAQPS/AQMD	Laura McKelvey	5497
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PUBLICATIONS FROM:

EMISSIONS AND MODELING BRANCH
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REPORTS

Reports with NTIS numbers are available, for a fee, from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Telephone (800) 553-6847.

Walid Ramadan, *et al.*, *Methodologies For Estimating Air Emissions From Three Non-traditional Source Categories: Oil Spills, Petroleum Vessel Loading And Unloading, And Cooling Towers*, EPA-600/R-93-063, April 1993. (NTIS No. PB93-181592) (Sue Kimbrough)

Teresa M. Lynch, *et al.*, *Economic Growth Analysis System: Reference Manual*, EPA-600/R-93-067a, April 1993. (Sue Kimbrough)

Randy Randolph, *Economic Growth Analysis System: User's Guide*, EPA-600/R-93-067b, April 1993. (Sue Kimbrough)

Stanley Sleva, *et al.*, *Identification And Characterization Of Five Non-traditional Source Categories: Catastrophic/Accidental Releases, Vehicle Repair Facilities, Recycling, Pesticide Application, And Agricultural Operations*, EPA-600/R-93-045, March 1993. (NTIS No. PB93-166973) (Sue Kimbrough)

John S. Kinsey, *Characterization Of PM-10 Emissions From Antiskid Materials Applied To Ice- And Snow-covered Roadways*, EPA-600/R-93-019, January 1993. (NTIS No. PB93-150209) (Chuck Masser)

Susan Stamey-Hall, *Evaluation Of Nitrogen Oxide Emissions Data From TVA Coal-fired Boilers*, EPA-600/R-92-242, December 1992. (NTIS No. PB93-138865) (Julian Jones)

Dan Bowman, *et al.*, *Revised Emissions Estimation Methodologies For Industrial, Residential, And Electric Utility Stationary Combustion Sources*, EPA-600/R-92-239, December 1992. (NTIS No. PB93-135663) (Sue Kimbrough)

David Winkler, *et al.*, *Review And Evaluation Of Current Methods And User Needs For Other Stationary Combustion Sources*, EPA-600/R-92-224, November 1992. (NTIS No. PB93-127801) (Sue Kimbrough)

Dan Bowman, *et al.*, *Combustion Area Sources: Data Sources*, EPA-600/R-92-197, October 1992. (NTIS No. PB93-106623) (Sue Kimbrough)

C. E. Burklin, *et al.*, *Oil And Gas Field Emissions Survey*, EPA-600/R-92-083, May 1992. (NTIS No. PB92-184977) (Chuck Masser)

L. G. Modica and J. R. McCutcheon, *Development Of Seasonal And Annual Biogenic Emissions Inventories For The U. S. And Canada*, EPA-600/7-91-006, November 1991. (NTIS No. PB92-126796) (Chris Geron)

James H. Wilson, Jr., *Proceedings Of Two Highway Vehicle Emission Inventory Workshops*, EPA-600/9-91-007, March 1991. (NTIS No. PB91-168492) (Ted Ripberger)

RECENT PAPERS

These papers, sponsored by EMB, were presented at the EPA/AWMA Specialty Conference, *Emission Inventory Issues In The 1990s*, Durham, NC, September 9-12, 1991.

Mark Saeger, *et al.*, *Solvent Use Emissions Estimation Methodologies: Future Implications*. (Jeff Chappell)

William Battye, *et al.*, *Research And Development Efforts To Develop Improved Inventory Methodologies For Area Source Solvent Emissions*. (Jeff Chappell)

The following papers were sponsored by EMB and presented at the second EPA/AWMA International Conference on Emission Inventory Issues, October 19-22, 1992, Durham, NC.

T. M. Lynch, *et al.*, *Design And Development Of The Economic Growth Analysis System (E-GAS)*. (Sue Kimbrough)

W. R. Barnard, *et al.*, *Development Of A Prototype System For Tracking Reasonable Further Progress Under the Clean Air Act Amendments*. (Sue Kimbrough)

J. W. Jones, *et al.*, *AEERL's Hazardous Air Pollutant Emissions Research Under JEIOG: A Status Report*. (Julian Jones)

A. J. Hayes, *et al.*, *Motor Vehicle Activity Factor Determination Through Fuel Consumption Analysis: Atlanta, Georgia*. (Ted Ripberger)

D. P. Eversmann, *et al.*, *Repetitive Analysis Of In-use Vehicle Emissions Under Load*. (Ted Ripberger)

J. P. Childress, *et al.*, *Motor Vehicle Modeling Using Modal Data*. (Ted Ripberger)

M. D. Meyer, *et al.*, *A Study Of Enrichment Activities In The Atlanta Road Network*. (Ted Ripberger)

The following papers were presented at other conferences, as noted.

C. D. Geron, *et al.*, "An Alternative Method For Estimating Biogenic VOC Emissions In EPA Region I", EPA/AWMA International Conference On *Tropospheric Ozone: Nonattainment And Design Value Issues*, Boston, MA, October 28-30, 1992. (Chris Geron)

J. Cleland, *et al.*, *Fuzzy Logic Control Of AC Induction Motors*, IEEE International Conference on Fuzzy Systems, San Diego, CA, March 8-12, 1992. (Jeff Chappell)

EMISSION INVENTORIES! — THE KEY IN '93

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