12th Annual Emission Inventory Conference:

Emission Inventories- Applying New Technologies

Courses: April 28, 2003
Conference: April 29 - May 1, 2003
Holiday Inn on the Bay - San Diego, California

Sponsored by:

Emission Factor and Inventory Group
Emissions Monitoring and Analysis Division
Office of Air Quality Planning & Standards

Emission Inventory Improvement Program

Message from the General Conference Chair

The U.S. Environmental Protection Agency (U. S. EPA) invites you to the twelfth annual Emission Inventory Conference, "Emission Inventories - Applying New Technologies," to be held April 28 - May 1, 2003, in San Diego, California. The conference is being organized by EPA's Office of Air Quality Planning and Standards (OAQPS), and the Emission Inventory Improvement Program.

The conference begins with a full day of training courses on several aspects of emission inventory preparation and use (see Training Schedule). The second day will be kicked off with the keynote address by Patrick Garvey, U.S. Environmental Protection Agency, Director, Network Steering Board and Molly O'Neill, Environmental Council of the States (ECOS), Director, Network Steering Board, followed by a panel discussion, "Harnessing New Information Technologies to Integrate Emissions Data". Two and one half days of three concurrent technical sessions will be held, covering a variety of topics of interest to the participants. In addition to learning about the latest developments in the world of emissions data, this is a great opportunity to make new contacts (and renew previous ones) with other emission inventory professionals from federal/state/local and international regulatory agencies, tribal governments, industry, and academia.

Plan to come early, or stay late, to enjoy spring in San Diego, my hometown. You can attend a free concert in Balboa Park or take in the world famous San Diego Zoo. More information on local activities will be available at the conference. The conference will be located in downtown so you will have easy access to other activities in the San Diego area. To cover some of the basic costs of the conference, we will begin to charge a registration fee of $50, but this still makes this event one of the best values around. We hope to see you at the Emission Inventory Conference in San Diego in April!

Philip A. Lorang
Office of Air Quality Planning & Standards
Emission Factor and Inventory Group

Schedule at a Glance

Time	Session	Time	Session
Mon, April 28		**Wed, April 30**	
8:00 - 5:00	Courses (See Preliminary Program)	10:00 - 11:30	Session 4- Area Sources (Cont'd)
Tue, April 29			Session 5 - Point Sources (Cont'd)
8:30 - 9:30	Keynote Address		Session 6 - PM Fine (Cont'd)
9:30 - 10:00	Break	11:30 - 1:00	Lunch (On Your Own)
10:00 - 11:30	Panel Discussion - National Environmental Information Exchange Network	1:00 - 3:00	Session 7 - Greenhouse Gas
11:30 - 1:00	Lunch (On Your Own)		Session 8 - Mobile Sources
1:00 - 3:00	Session 1 - Air Toxics		Session 9 - EI Validation/Quality Assurance
	Session 2 - Fugitive Dust	3:00 - 3:30	Break
	Session 3 - Data Management	3:30 - 5:30	Session 7 - Greenhouse Gas (Cont'd)
3:00 - 3:30	Break		Session 8 - Mobile Sources (Cont'd)
3:30 - 5:30	Session 1 - Air Toxics (Cont'd)		Session 10 -EI Preparation for Modeling
	Session 2 - Fugitive Dust (Cont'd)	**Thur, May 1**	
	Session 3 - Data Management (Cont'd)	8:00 -10:00	Session 10 - Emission Inventory Preparation for Modeling (Cont'd)
6:00 - 8:00	Poster Session and Exhibitors Reception		Session 11 -Tribal Emission Inventories
Wed, April 30			Session 12 - Mexican Emission Inventories
8:00 - 9:30	Session 4 - Area Sources	10:00 - 10:30	Break
	Session 5 - Point Sources	10:30 - 12:00	Session 10 - Modeling (Cont'd)
	Session 6 - PM Fine		Session 13 - Regional Planning Org
9:30 - 10:00	Break		Session 12 - Mexican Emission Inventories (Cont'd)

Keynote Speakers

Patrick Garvey is a Special Assistant in the U. S. EPA's Office of Information Collection. In his current position, Mr. Garvey is the Staff Director to the Network Steering Board for the EPA members. In this role, Mr. Garvey is providing technical guidance and advice to the EPA Central Data Exchange project, the Facility Registry System integration development effort, and the Agency-wide Integrated Error Correction/Data Quality initiative. Pat has been recognized through numerous awards including the Federal 100 from Federal Computer Week. Projects that Pat has managed have also been chosen as a finalist in the E-Gov Best Practices program in January, 2001 and was recognized by Government Computer News in November 2000 for an Agency Excellence Award.

Molly O'Neill serves ECOS as the Executive Program Manager for the Network Steering Board. As Executive Program Manager, Ms. O'Neill is responsible for coordinating, supporting and leading the efforts of more than 35 state environmental department participants, and interfacing with EPA counterparts and other partners. Prior to joining ECOS, she spent 14 years working as an environmental management consultant. She started her career working as an environmental biologist performing ecological risk assessments and as a multi-media environmental regulatory analyst. The last eight years of her consulting experience were spent working closely with Executive Management of State environmental departments on organizational and performance assessments, performance measures, business process reengineering, and large-scale information management system implementation projects.

Session 1 Air Toxics

Chairs: Larry Biland, U.S. EPA, Region IX
Leonardo Ceron, U.S. EPA, Region IV

1:00 pm "Comparison of HAP Emission Estimates Developed Using Top-Down and Bottom-Up Techniques for New Haven, Connecticut," R. F. McConnell, and M. B. Smuts, US EPA, Region I: M. Weil, New Haven City Plan Department**.**

The results of the bottom-up emissions inventory prepared by the city of New Haven are compared to those derived by scaling down county level emission estimates contained in EPA's national emissions inventory database to the city level. The results indicate that for some pollutants and source categories a substantial difference exists in the emission estimates prepared using these two techniques. We shall show that the expenditure of time and effort to prepare local level bottom-up emissions inventories can yield important information to agencies considering local HAP mitigation programs.

1:30 pm "Development and Evaluation of an Air Toxics Emission Inventory in Jacksonville, Florida," L. Tilley, City of Jacksonville, Florida.

Description of the efforts undertaken to develop a hazardous air pollutant inventory for the city of Jacksonville, Florida and a comparison of the inventory data to the ambient monitoring data.

2:00 pm "Wilmington Air Quality Study: Emission Inventory Development and Evaluation," T. Sax, T. Sicat, V. Isakov, California Air Resources Board.

The Wilmington Air Quality Study is a comprehensive air modeling study designed to study the cumulative impacts of air pollutants on a neighborhood scale. To support local scale models such as ISC, we develop spatially resolved emissions inventories that account for point and mobile sources. Our goal is to compile as representative and robust an inventory for local scale modeling as possible, and to evaluate the quality and performance of this inventory to support local scale modeling and risk assessment. Results from our evaluation will be used to improve inventory and modeling methodologies for neighborhood assessment.

2:30 pm "Mapping and Analysis Tools for Emissions on the Internet: Community Health Air Pollution Information System (CHAPIS) for Toxics and Criteria Pollutants," M. B. Schwehr, California Air Resources Board. **(Also in Poster)**

The California Air Resources Board (CARB) is designing the Community Health Air Pollution Information System (CHAPIS) to provide interactive, visual access to emission inventory information over the Internet, using both dynamic maps and tabular data. CHAPIS uses current Geographic Information System (GIS) tools for Internet applications. This presentation will demonstrate the functionality and design of the CHAPIS system, and will touch on considerations that arise in identifying and collecting the data needed for such a tool, particularly for air toxics sources.

3:00 pm **BREAK**

3:30 pm "The Great Lakes Regional Air Toxic Emissions Inventory: Point and Area Sources and Assessment of Mercury Emissions for 1999," O. Cabrera-Rivera, WI DNR; D. Asselmeier, IL EPA J. Bates, IN DEM; G. Baker, MI DEQ; C. Y. Wu, MN Pollution Control Agency; R. Bielawa, S. Alam, NY DEC; T. Velalis, OH EPA; R. Altenburg, PA DEP; P. Wong, J. Georgakopoulos, Ontario Ministry of Environment, CANADA; K. Yam, Great Lakes Commission.

The eight Great Lakes states and the province of Ontario, with the coordination of the Great Lakes Commission, have developed an air toxic emissions inventory of point and area sources for calendar year 1999. This is the 4th inventory completed for the Great Lakes Region. It includes emission estimates for 197 out of 213 target pollutants, with emphasis on mercury. This paper presents the inventory results and an assessment of mercury emission estimates in the region.

4:00 pm "A Comparison of Hazardous Air Pollutant Concentrations and Emission in El Paso, Texas and Camden, New Jersey," R. Oommen, D. Wilson, R. Billings, G. Brooks, H. Perez, and D. Dayton, J. Switft, Eastern Research Group.

Monitoring sites in El Paso, Texas and Camden, New Jersey participated in the 1996 and 1999 Urban Air Toxics Monitoring Program (UATMP). For both of these urban areas, HAP emissions inventory source data are also available during the same years. Using statistical, geographic information systems (GIS) technology, and HAP validation analysis, source emission and ambient concentration trends at each of these sites are compared. The comparison will be provided to identify ambient HAPs for which emissions have not been calculated, as well as missing ambient HAPs for which emissions were estimated.

Session 1 Air Toxics (continued)

4:30 pm "A Comparison of Local and National Air Toxics Emissions Estimates: Regional Importance of Selected Source Categories," J. T. Kelly, Olympic Regional Clean Air Agency (ORCA).

The Olympic Region Clean Air Agency (ORCAA) in western Washington State recently performed a comprehensive inventory of air toxics emissions from point, onroad mobile and several important area and nonpoint source categories within its six county jurisdiction . Aggregated emissions estimates for Residential Wood Combustion were found to be four to five times higher than estimates for this category in the NEI. Total emissions of air toxics from forestry slash burning exceeded the total emissions from all known point sources in the region. The two Chemical Pulp facilities in the region are most likely among the largest point sources of HAPs in ORCAA's jurisdiction, yet detailed emissions estimates for these facilities have not been developed to date. The differences found between the bottom-up and top-down approaches are discussed in relation to development of local risk assessments for air toxics.

5:00 pm "Emissions Characterization for a Community-Scale Risk Assessment," S. Thompson, and J. York, US EPA, Region VI. **(Also in Poster)**

The emissions characterization component of a community-scale risk assessment can be broken down into six primary elements: 1) Identifying and obtaining sources of emissions data in electronic format; 2) Extracting data for sources reporting non-zero actual emissions; 3) Performing quality checks on the extracted data for completeness and duplication; 4) Implementing an emissions tracking database (ETD) system; 5) Geo-correcting emission source locations as necessary; and 6) Exporting geo-corrected source data to an air model. This presentation will use case study specific examples to go through each of these elements and identify limitations and uncertainties in the emissions characterization process. It will also cover the sensitivity of risk assessment results to emission inventory model input parameters and possible solutions to reduce overall uncertainty.

Session 2 Fugitive Dust

Chairs: Bill Kuykendal, U.S. EPA
Duane Ono, Great Basin Unified Air Pollution Control District

1:00 pm "Reconciling Fugitive Dust Emission Inventories with Ambient Measurements," R. Countess, Countess Environmental.

The impact of fugitive dust emissions on ambient air quality at downwind receptor sites is significantly less than emission inventory estimates due to deposition losses of particles caused by impaction with obstructions as well as gravity settling. The transportable fraction for fugitive dust emissions on an urban scale as well as a neighborhood scale is quantified based on an assessment of measurements from a large scale regional PM10 monitoring network. A major finding of this assessment was that the ratio of fugitive dust in the PM2.5 size fraction to that in the PM10 size fraction was much lower than that published by EPA for different fugitive dust source categories. This is due to the fact that the elements associated with geological material have different size distributions such that the relative abundance of the two major elements associated with geological material, silicon and aluminum, are approximately a factor of two to three lower in the PM2.5 size fraction compared to the PM10 size fraction.

1:30 pm "Reconciling Fugitive Dust Emissions with Ambient Measurements: Along the Unpaved Road," V. Etyemezian, D. Nikolic, J. Gillies, H. Kuhns, , Desert Research Institute; G. Seshardi, J. Vernath, University of Utah.

This presentation will focus on two preliminary attempts to account for the near-field removal of PM10 fugitive Dust. At present, it is believed that fugitive dust emissions are overestimated because no account of particle deposition is made within the first several hundred meters of the source. The model and field results suggest that in some cases the correction for particle deposition may be trivial while in others, it may be substantial.

2:00 pm "Evaluation of Fugitive Deposition Dust Rates Using Lidar," D. Fitz, D. Pankratz, University of California, Riverside; R. Philbrick, G. Li, The Pennsylvania State University.

This paper investigates the use of Lidar to more accurately measure PM deposition rates from fugitive dust sources.

2:30 pm "Vehicle-Based Road Dust Emissions Measurements," H. Kuhns, J. Gillies, V. Etyemezian, J. Watson, M. Green, Desert Research Institute; M. Pitchford, National Oceanic and Atmospheric Administration.

TRAKER is a vehicle-based method for measuring road dust emissions. Particulate matter is sampled in front and behind a vehicle's tire and the difference in PM concentration (TRAKER signal) is related to emissions.

Session 2 Fugitive Dust (Continued)

3:00 pm **BREAK**

3:30 pm "Quantifying Particulate Matter Emissions from Wind Blown Dust Using Real-Time Sand Flux Measurements," D. Ono, S. Weaver, Great Basin Unified Air Pollution Control District; K. Richmond, MFG, Inc.
A method was developed to measure wind blown PM-10 using real-time measurements of sand flux over a 135 sq. km area. PM-10 emissions were estimated using the relationship, PM-10 = sand flux x Kf. CALPUFF model predictions using these hourly emission estimates closely matched monitored PM-10 concentrations over a 30-month period.

4:00 pm "Determining Fugitive Dust Emissions from Wind Erosion," G. E. Mansell, ENVIRON International Corporation; P. G. Fields, M.E. Wolf, Eastern Research Group; J. Gillies, Desert Research Institute; W. Barnard, MACTEC Engineering & Consulting; M. Omary, University of California Riverside; M. Uhl, Clark County, Nevada.
This paper discusses the characterization of vacant lands subject to wind erosion and the development of PM_{10} and $PM_{2.5}$ emission factors for windblown dust. The emission inventory estimation methodology is described and preliminary results are presented.

4:30 pm "Computing Agricultural PM10 Fugitive Dust Emissions Using Process Specific Emission Rates and GIS," P. Gaffney, H. Yu, California Air Resources Board. **(Also in Poster)**
In this paper, we discuss how these new emission factors were used to develop a statewide inventory of PM_{10} emissions for all agricultural land preparation and harvest activities in California. A key element in this process was working closely with stakeholders to assign a limited number of emission factors to the many operations and crops that do not have specific emissions data. The agricultural emission estimates were further refined by temporally allocating the emissions based on representative crop calendars, and spatially allocating the emissions using detailed electronic crop maps and geographic information systems (GIS).

5:00 pm "Empirical Method for Determining fugitive Dust Emissions from Wind Erosion of Vacant Land: The MacDougall Method," C.R. MacDougall, M..F. Uhl, Clark County, Nevada..
This empirical method for determining fugitive dust emissions from wind erosion of vacant land relies heavily on emission factors developed using wind tunnels. The availability of wind tunnel results for the types of vacant land being assessed must be considered when deciding to use this method for a given application. This methodology primarily relies on results from wind tunnel studies based on the use of portable wind tunnels in a field study setting.

Session 3 Data Management

Chair: Lee Tooly, U. S. EPA

1:00 pm "An Overview of EPA's System of Registries (SoR)," M. Pendleton, U. S. EPA; K. Ostergaard, Science Applications International Corp..
The Environmental Protection Agency's (EPA) System of Registries (SoR) provides a gateway and search capability to several registries and repositories residing in EPA's Office of Environmental Information (OEI). The registries provide identification information for objects of interest to EPA, Network, trading partners, including states and tribal entities, and the public. These registries comprise a critical link in EPA's information architecture and are a vital component to the National Environmental Information Exchange Network (Network).

1:30 pm "The Challenge of Meeting New EPA Data Standards and Information Quality Guidelines in the Development of the 2002 National Emission Inventory Point Source Data for Hazardous Air Pollutants." A. Pope, U.S. EPA; S. Finn, D. Wilson, Eastern Research Group.
The Environmental Protection Agency (EPA) has established new uniform data standards and the Office of Management and Budget (OMB) has established new information quality guidelines that will affect the development of the National Emission Inventory for hazardous air pollutants. In order to comply with the new data standards and the information quality guidelines, the EPA has revisted its NEI for HAPs database management system for point sources.

2:00 pm "Addressing a Bottleneck in Data Integration Using Automated Learning Techniques," E. Hovy, J. Ambite, A. Philpot, University of Southern California.
A new research project that addresses the problem of mapping data across institutions. Given the wide range of geographic scales and complex tasks the Government must administer, its data are stored in numerous formats, which makes it very difficult to integrate, share, or compare. Unfortunately, all approaches to create mappings across comparable datasets require manual effort, which is expensive and time-consuming.

Session 3 Data Management (Continued)

2:30 pm "Web Inventory Implementations in Pennsylvania-Reducing Burden, Increasing Quality, and Changing Business," B. E. Lane, Ciber, Inc.; C. Eastman, Pennsylvania Department of Environmental Protection.

The Pennsylvania Department of Environmental Protection Bureau of Air Quality continues to pursue automated approaches to collecting and reporting emission inventory data. Over the past several years the Bureau has successfully set a solid foundation for implementing Web-based and other automated data management solutions. The prevailing goal of the solutions is to reduce burden on the regulated community and Bureau staff, increase efficiency and effectiveness of inventory management, and further ensure the quality of the Commonwealth's data.

3:00 pm **BREAK**

3:30 pm "EPA's National Emission Inventory Data System Functions for Streamlining Data," S. Boone, D. McKenzie, E. H. Pechan; R. Thompson, U.S. EPA. **(Also in Poster)**

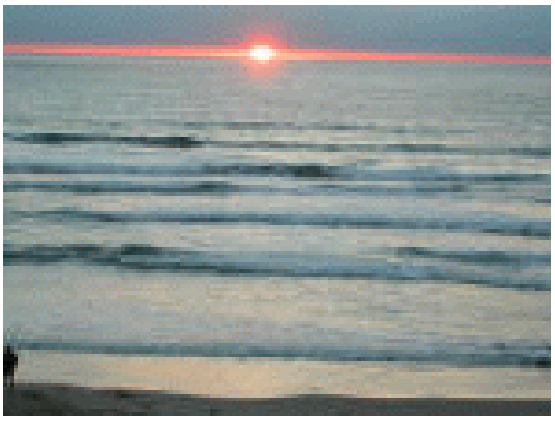
The Emission Factor and Inventory Group (EFIG) of the United States Environmental Protection Agency's (EPA) Emissions Monitoring and Analysis Division (EMAD) compiles the National Emission Inventory (NEI) on an annual basis. For inventory data processed up through the 1999 base year, the final production criteria pollutant NEI data reside in an Oracle database on an EMAD Unix-based server. Data are submitted to EPA in various NEI input formats (NIF) by State, local, and tribal agencies. To improve data quality, data integrity, increase data security and facilitate data analysis, the data undergo a multi-step process that involves data merging, processing, validating and updating.

4:00 pm MoEIS: Missouri's Implementation of EIIP Phase Data Model for Collecting Annual Emission Inventories," R. Raymond, Missouri Air Pollution Control Program.

Examination of the development process of Missouri Air Pollution Control Program's annual emission inventory data system using the Emission Inventory Improvement Program's Phase I Data Model as the basis. The paper will explore the things that went well and not so well in the three year journey from the desktop system to a networked, client/server, department-wide product. The paper will also describe the particulars of Missouri's system, such as: integration of the emission fees subsystem; internet web application data collection; training CD-ROM development; human resource factors.

4:30 pm "Applications of an IT Tool, OMS, on Real-Time Emission Inventory," K.Li, A. Singh, H. Heilein, T. Shah, L. Zhou, H.H. Lou, Lamar University; P. Nix, PDC.

An OMS (operation, maintenance, and EHS) Lab has been set up at Lamar University to study the feasibility of a real-time emission inventory in a chemical plant. The OMS Lab is a computer network that contains a DCS (distributed control system), a process dynamic simulator, an air model, an AMS (asset management solution), and an EIMS (environmental information management system).



Poster Session 6:00 pm - 8:00pm

"GHG and NH3 Emission Inventories for Agroecosystems: Role of GIS and Process-based Models in Developing Site Specific Emission Factors, Assessing Variability, and Providing Uncertainty Estimates," W. Salas, Applied Geosolutions, LLC; C. Li, University of New Hampshire.

"1981 - 2000 Emission Trends and the Influence by Economics Crisis in Korea," Y. Jang, S. Choi, K. Kim, J. Hong, Suwon University; J. Hong, National Institute of Environmental Research, KOREA.

"A Comparison of Emission Inventory Processing with EMS-2001 and SMOKE," E. E. Zalewsky, C. Hogrefe, W. Hao, J. Y. Ku, G. Sistla, New York State Department of Environmental Conservation.

"Advances in Emissions Modeling of Airborne Substances," T. Pierce, W. Benjey, J. Ching, D. Gillete, A. Gilliland, S. He, M. Mebust, G. Pouliot, US EPA.

"Emissions Characterization for a Community-Scale Risk Assessment," S. Thompson, J. York, US EPA.

"Mapping and Analysis Tools for Emissions on the Internet: Community Health Air Pollution Information System (CHAPIS) for Toxics and Criteria Pollutants," M. Beth Schwehr, California Air Resources Board.

"Air Toxics Profiles in Pinellas County, Florida," P. -S. Liu, D. Price, Pinellas County Air Quality Division.

"Computing Agricultural PM10 Fugitive Dust Emissions Using Process Specific Emission Rates and GIS," H. Yu, P. Gaffney, California Air Resources Board.

"Determination of Emissions from the Mineral Extracting Industry," R. Wales, A. DeSalvio, Mojave Desert Air Quality Management District.

"An Inventory of Nitrous Oxide Emissions from US Agricultural: A Comparison of IPCC and DNDC Process Model Results," C. Li, University of New Hampshire; W. Salas, Applied Geosolutions, LLC; S. Boles, University of New Hampshire.

"PM10 Emission Factors for Harvest and Tillage of Row Crops," T. Cassel, K. Trzepla-Nabaglo, R. Flocchini, University of California, Davis.

"Emission Inventories in Indian Country, Past, Present and Future," S. Kelly, Institute for Tribal Environmental Professionals at Northern Arizona University; B. Ramirez, Salt River Pima-Maricopa Indian Community; O. Barber, Fort McDowell Yavapai Nation.

"Testing Flare Emission Factors for Flaring in Refineries," J. Martin, EHS Repsol-YPF; J. Lumbreras, M. E. Rodriguez, Universidad Politécnica de Madrid, SPAIN.

"Prototyping the Texas Emissions Inventory Preparation System for the SMOKE System," S. Kim, D. W. Byun, University of Houston.

"PM Fine Database and Associated Visualization Tool," S. Boone, F. Divita, Jr, B. Eisemann, E. H. Pechan and Associates, Inc; V. Rao, US EPA.

"Emissions Processing for an Air Quality Forecasting Model," G. Pouliot, T. Pierce, J. Godowitch, National Oceanic and Atmospheric Administration.

"How a State Agency Accounts for Underestimating Base-year Point Source Emissions: An Alternative to Existing EPA Guidance," B. Betterton, L. L. Bunn, South Carolina Department of Health & Environmental Control.

"Environmental Resource Optimization, Theory and Practice." R. Emigh, C. Prostko-Bell, Ennovation, Inc.

"Instrumentation for Measurement of Agricultural Tractor Exhaust Gas Emissions During Normal Field Operations," N. McLaughlin, Eastern Cereal and Oilseed Research Centre; M. Layer, Environment Canada. CANADA.

"NONROAD-AT: A Database Tool for Managing Off-Road Emissions Scenarios Created with EPA's NONROAD Model," T. Stoeckenius, C. Lindhjem, ENVIRON Corporation.

Poster Session (Continued)

"National Greenhouse Gas Inventories: Application of the Principles of Transparency, Consistency, Comparability, Completeness and Accuracy," S. Todorova, R. Lichte, A. Olsson, C. Breidenich, UNFCCC Secretariat.

"Using the Geographic Information System Tool for Emission Inventory Quality Assurance and Visualization," A. Eyth, Carolina Environmental Program; P. Pai, K. Hanisak, MCNC Environmental Modeling Center.

"An Estimate of the Emissions of Gas-Phase Toxic Compounds from Heavy-Duty Diesel Powered Vehicles," X. Zhu, K. Johnson, D. R. Cocker III, K. Johnson, J. W. Miller, J. M. Norbeck, University of California Riverside.

"Updates and Improvements to the SPECIATE Data and Program," W. Hodan, Pacific Environmental Services.

"Historical Comparison of Hazardous Air Pollutant Emissions from Aircraft, Commercial Marine Vessel, Locomotive and Other Nonroad Emission Sources Included in the National Emission Inventory," R. Billings, R. Mongero, R. Chang, Eastern Research Group; L. Driver, C. Scarbro, R. Cook, US EPA.

"Investigation of the Formation of NH_3 Emissions as a Function of Vehicle Load and Operating Conditions," T. Huai, T. D. Durbin, J. W. Miller, J. T. Pisano, C. G. Sauer, S. H. Rhee, J. M. Norbeck, University of California Riverside.

"Global Gridded Emission Inventories of B-hexachlorocyclohexane," Y. F. Li, Environment Canada; M. T. Scholtz, B. J. van Heyst, Canadian ORTECH Environmental.

"Factors Influencing the Contributions of Diesel and Gasoline Exhaust to PM-2.5 Emission Inventories," Joseph H. Somers, Office of Transportation and Air Quality, US EPA.

"Correlating Particulate Matter Mobile Source Emissions to Ambient Air Quality," Kevin N. Black, Federal Highway Administration

"Air Emissions from Range Operations," Richard Rehm, Pacific Environmental Services, Inc ; Tamera Rush, Booz, Allen & Hamilton, Inc.

"Ammonia and ROG Measurements at a Central California Dairy," Charles Krauter, Matt Beene, and Dave Goorahoo, California State University; Teresa Cassel, University of California-Davis.

"Link-Based Calculation of Motor Vehicle Air Toxin Emissions Using MOBILE 6.2," B. Stein, D. Walker, Metro (Travel Forecasting Section); R. Cook, C. Bailey, US EPA.

"The Quality System Assurance (QSA) in the German Emission Inventory using the MESAP-CalQlator." U. Doring, Federal Environmental Agency (UBA), GERMANY; U. Schellmann, C. Schlenzig, Seven2one Information Systems Inc.

"An Overview of the Community Modeling and Analysis System (CMAS) Center as a Resource for Supporting Models-3," Z. Adelman, R. Imhoff, A. Hanna, M. Houyoux, A. Eyth, R. Mathur, K. Hanisak, Carolina Environmental Program.

Session 4 Area Sources

Chairs: Roy Huntley, U. S. EPA
Rob Sliwinski, New York State DEC

8:00 am "Developing a Consistent Methodology to Calculate VOC and HAP Evaporative Emissions for Stage I and Stage II Operations at Gasoline Service Stations for the 1999 NEI (Draft V2.0)," G. T. Johnson, Pacific Environmental Services, Inc. (a MACTEC Company).
Development of an independent and consistent methodology for estimating Stage I and Stage II VOC and toxic emissions (eight HAPs) on a State and county level for the entire U.S.

8:30 am "Development of an Improved Product Based Approach for the Calculation of NMVOC Emissions from Solvent Use and Uncertainly Analysis," J. Theloke, and R. Friedrich, University of Stuttgart, GERMANY.
An improved product based approach for the calculation of NMVOC emissions from solvent use is discussed, as it has been developed for Germany, disaggregated to source groups and speciated to substance classes. The method can in principle also be used for other OECD countries. Furthermore, a method for the quantifications of uncertainties is introduced.

9:00 am "Observation of Weekday-Weekend Activity Patterns for Area Sources in the Los Angeles Area." D.L. Coe, L.R. Chinkin, C.A. Gorin, and P.A. Ryan, Sonoma Technology, Inc.
During summer 2002, the authors expanded on research into weekday-weekend emissions activity patterns that initially began in early fall 2000. The results of these data collection efforts, including weekly and diurnal temporal profiles for various types of residential and commercial activities and discuss qualitatively the implications of our findings with respect to weekday-to-weekend differences in emissions and ozone air quality in the South California Air Basin (SoCAB).

9:30 am **BREAK**

10:00 am "Use of Remotely-Sensed Data in the Development and Improvement of Emission Inventories," S. M. Roe, and J. Hearne, E. H. Pechan & Associates, Inc.; T. Summers, R. Sedlacek and D. Jenkins, Arizona Department of Environmental Quality.
This paper explores the use of satellite imagery and aerial photography in the development and improvement of emission inventories. E. H. Pechan & Associates, Inc and the Arizona Department of Environmental Quality have used remotely-sensed data in the development of emission inventories for particulate matter less than 10 micron (PM10) and in the development of border area inventories for toxic and criteria air pollutants.

10:30 am "TCE: A Calculation Tool Optimized for the Development and Management of Non-Point Emission Inventories," R. Altenburg, Pennsylvania Department of Environmental Quality; R. Emigh, Windsor Technologies, Inc.
Pennsylvania Department of Environmental Protection Bureau of Air Quality in partnership with Windsor Technologies is developing an emission inventory system based on RAPIDS (Regional Air Pollutant Inventory Development System) core, but optimized for the development of non-point emission inventories, tracking the progress of inventory development, and electronic reporting of the data.

11:00 am "A National Methodology and Emission Inventory for Residential Fuel Combustion," B. H. Haneke, Pacific Environmental Services, Inc.
In response to a lack of consistency among States in reporting residential fuel combustion emission estimates, an innovative methodology was developed to calculate consistent residential fuel combustion criteria pollutant emissions on a national, state, and county level.

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Session 5 Point Sources

Chairs: Anne Pope, U.S. EPA
Bob Betterton, So Carolina DHEC

8:00 am "PM Augmentation Procedures for the 1999 Point and Area Source National Emission Inventory," R. Strait, D. McKenzie, E. H. Pechan & Associates, Inc.; R. Huntley, US EPA.
This paper explains the procedures developed to populate the National Emission Inventory with primary PM10 and PM2.5 emissions using state/local/tribal data in conjunction with particle size specific emission factor data presented in AP-42 and the Factor Information Retrieval (FIRE) data system, the PM Calculator, and technology transfer. Also explained are the databases developed to support the procedures and that state/local/tribal agencies may use in developing their 2002 base year inventories.

8:30 am ""Benefits, Trials and Tribulations of Building an Emission Inventory Point Source Inventory Software Integrated with Permits and Compliance Needs," J. H. Southerland, A. Hall, H. Hawkins, S. Macieira, T. Manning, S. Moser, T. Sabetti, C. Walker, J. Sheppard, North Carolina Division of Air Quality.
The North Carolina Division of Air Quality has used a proprietary point source emission inventory development and storage software package for several years. This paper addresses some of the design criteria, the development of data models that enable the communication between modules, development of business rules to integrate the various functions of other program aspects which are on a different schedule for software development, adoption of "simple as possible" codes tables, putting a web-based module on the Internet for direct entry by sources, management and labor saving advantages of integrated on-line systems, compromises faced during these developments.

9:00 am "An Electronic Data Entry System for Point Sources," S. Ehrhardt, St. Louis County Air Pollution Control.
St Louis City and St. Louis County developed a software program in MSAccess to enable our point sources to submit their emission inventory data electronically. The objective of the program is to make the annual emission inventory submittal as painless as possible for the industry personnel, and still collect all the necessary data. We addressed industry concerns about confidentiality, integrity of the data as submitted, and user friendliness.

9:30 am **BREAK**

10:00 am "i-Steps Development for State and Local Agencies," L. Williams, Pacific Environmental Services.
This paper will discuss how agencies that own i-STEPS are working with PES to develop a software package that fits their needs. The paper will give examples of how this development provides applied new proof-of-concept technologies for air emissions estimation and meets the data management challenges such as data standards and emission inventory system integration.

10:30 am "Improved Point Source Inventory - Demonstration of the New Reporting Software for Consolidated Reporting of Criteria and Toxic Emissions," N. Meskal, Ecotek, MST Solutions, Inc; K. Remillard, X. Vu, T. Chico, Z. Pirveysian, South Coast Air Quality Management District.
This demonstration will illustrate the use of the new South Coast Air Quality Management District Annual Emissions Reports (AER) reporting software for consolidated reporting of criteria and toxic emissions.

11:00 am "Determination of Emissions from the Mineral Extracting Industry," R. Wales, A. DeSalvio, Mojave Desert Air Quality Management District.
Federal and State laws require air agencies to prepare and maintain a current and accurate emissions inventory of all point and area sources. To assist in achieving this goal the Mojave Desert Air Quality Management District has prepared a guidance document and Excel spreadsheets for the determination of emissions from the Mineral Extracting Industry (quarries and surface mining operations).

Session 6 Particles and Precursors

Chairs: Phil Lorang, U.S. EPA
Patrick Gaffney, California Air Resource Board

8:00 am "Emission Scenarios for Particulate Matter Research and Policy Assessment in Finland," M. Johansson, N. Karvosenoja, P. Porvari, Finnish Environment Institute; K. Kupiainen, Nordic Envicon Oy. FINLAND.

The Finnish Regional Emission Scenario (FRES) model was developed as part of the integrated PM model to assess the sectoral and spatial emissions and future abatement potential. Total emissions and the aerosol formation potential of TSP, PM10, PM2.5, PM1, SO2, NOx NH3 and VOC in 1990, 2000 and 2010 with three energy scenarios are shown. The sectoral division, spatial distribution and comparison with national and international emission inventories are discussed. Total biogenic VOC emissions and carbonaceous (black and organic) emissions are briefly presented.

8:30 am "A GIS Based Emissions Estimation System for Wildfire and Prescribed Burning," N. Clinton, J. Scarborough, Y. Tian, P. Gong, University of California, Berkeley.

Emissions from wildfires and prescribed burning are difficult to measure, yet contribute a large amount of particulate and gaseous pollutants to California air basins. This paper describes an Emissions Estimation System (EES) for the quantification and spatial allocation of wildland fire emissions based on spatial inputs and an existing fire effects model.

9:00 am "Simultaneous Measurements of Military Aircraft Engine PM Emissions with the EPA Method 5 and the SMPS Method," X. Li-Jones, Anteon Corporation; E. L. Douglas, Naval Air Dept.

We have performed concurrent measurements of particulate from military aircraft and other military vehicles with the EPA Method 5 and the scanning mobility particle sizer (SMPS). The possible causes of the discrepancies found will be discussed.

9:30 am **BREAK**

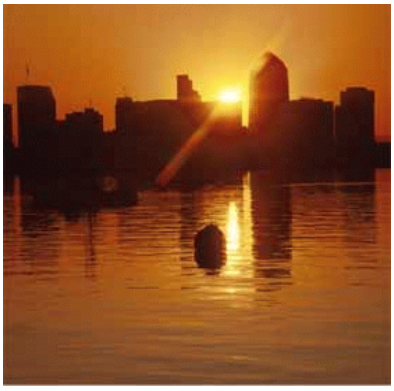
10:00 am "PM Fine Database and Associated Visualization Tool," S. Boone, F. Divita, Jr, B. Eisemann, E. H. Pechan and Associates, Inc; V. Rao, US EPA

10:30 am "Ammonia Emissions from Dairy Farms: Development of a Farm Model and Estimation of Emissions from the United States," R. W. Pinder, N. J. Anderson, R. Strader, C. I. Davidson, P. J. Adams, Carnegie Mellon University.

This paper will discuss the research to develop an emission inventory for dairy farms that accounts for both seasonal and geographical variation in emission factors and uncertainty.

11:00 am "Ammonia Flux Profiles for Various Soil and Vegetation Communities in California," C. Krauter, D. Goorahoo, California State University; C. Potter, S. Klooster, NASA-Ames Research Center.

The objective of this study was to determine the relationship between atmospheric ammonia and the soil and vegetation associated with a particular location.



Session 7 Greenhouse Gases

Chairs: Wiley Barbour, Environmental Resources Trust, Inc
Jill Gravender, California Climate Action Registry

1:00 pm "State-of-the-Art Greenhouse Gas Emission Inventory Guidance and Tools," A. Choate, P. Groth, R. Freed, M. Stanberry, ICF Consulting; A. Denny, US EPA.

The U.S. EPA's State and Local Climate Change Program (SLCCP) is releasing an updated *Emission Inventory Improvement Program Volume VIII: Estimating Greenhouse Gas Emissions*, a guidance manual for state greenhouse gas emission inventory development. For the first time, the *State Tool for Greenhouse Gas Inventory Development*, a user-friendly inventory spreadsheet tool, will accompany the guidance. The inventory guidance reflects the latest information on data sources and provides emission factors and methodologies consistent with the *Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance* and the *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. The spreadsheet tool drastically reduces the staff time and cost necessary for successful application of the inventory guidance, thereby encouraging the use of consistent emission estimation methods, facilitating state inventory development, and encouraging states to update inventories.

1:30 pm "Advanced Methods for Estimating Uncertainty in National Greenhouse Gas Emission Inventories - the Case of Finland," S. Monni, S. Syri, I. Savolainen, VTT Technical Research Centre of FINLAND.

This contribution presents the first Tier 2 greenhouse gas emission inventory uncertainty analysis performed in Finland. Examples of uncertainty estimates are presented, as well as the resulting uncertainties by sector and gas. The greenhouse gas emissions and trends in Finland, together with national circumstances are also presented to give an insight into the factors affecting the total uncertainty most.

2:00 pm "Consistency in Greenhouse Gas Emissions Estimation for Oil and Gas Industry Operations - A Non-Trivial Pursuit," K. Ritter, American Petroleum Institute; S. Nordrum, ChevronTexaco; T. Shires, URS Corporation; M. Lev-On, The LEVON Group, LLC.

In response to continued interest by its member companies about consistency in greenhouse gas emissions estimation, the American Petroleum Institute (API) developed a *Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry* in April 2001. This paper discusses outreach activities and results from special studies undertaken to understand and reconcile differences in emission factors and calculation techniques. The paper also addresses ongoing efforts to improve global comparability of the oil and natural gas industry emission estimates.

2:30 pm "Modeling Emissions of High Global Warming Potential Gases," D. S. Godwin, US EPA; M. M. VanPelt, K. Peterson, ICF Consulting.

The authors will present the methodology used by the U.S. Environmental Protection Agency in determining historical and projected annual emissions of Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs). The authors will also review the methodologies employed in different industrial sectors and what data are required to accurately estimate emissions. Techniques for correlating results from "bottom-up" modeling with "top-down" information will be discussed. Suggestions will be offered on how the methodology can be applied to determine emissions regionally within the U.S. and for other countries.

3:00 pm **BREAK**

3:30 pm "Development of an Emissions Model to Estimate Methane from Enteric Fermentation in Cattle," J. Mangino, US EPA; K. Peterson, H. Jacobs, ICF Consulting.

In order to more accurately characterize and quantify methane emissions from cattle enteric fermentation, EPA has recently implemented an enhanced version of the Intergovernmental Panel on Climate Change (IPCC) Tier 2 method for estimating methane emissions from cattle. The modified methodology uses regional diet characterizations and corresponding digestible energy and methane yield values to implement the IPCC Tier 2 net energy and methane emission equations in an animal growth calculation model that tracks and estimates emissions for cattle population sub-categories on a monthly basis.

4:00 pm "Improvements to the U.S. Wastewater Methane and Nitrous Oxide Emission Estimates," E. Scheehle, US EPA.

The paper will discuss the methane emission factor for domestic wastewater, including the impact of septic tanks. It will also report on experience gathered as a result of developing first-time U.S. emission estimates for significant industry categories from annual production data, wastewater composition and treatment data, as well as input from industry experts. It will detail the effort to develop a comprehensive compounded estimate of nitrous oxide from wastewater accounting for direct emissions from the plant processes, as well as for previously unaccounted additional nitrogen loadings from garbage disposals, bath and laundry wastewater.

Session 7 Greenhouse Gases (Continued)

4:30 pm "An Assessment of the GHG Emissions from the Transportation Sector," W. Cowart, ICF Consulting; V. Pesinova, S. Saile, US EPA.
The transportation sector accounts for 27 percent of total U.S. greenhouse gas emissions and is the fastest-growing. Understanding the nature of these emissions is essential for developing efficient strategies to reduce them.. The paper complements the existing inventory by describing emissions from the following perspective: 1) by the GHG "intensity" of the transport sector; 2) by trip purpose and economic activity area; 3) within the context of the full lifecycle of transportation emissions.

5:00 pm "Greenhouse Gas Inventory Information System," T. Temertekov, J. Grabert, R. Ishmukhametov, V. Lalieu, United Nations Framework Convention on Climate Change (UNFCCC) Secretariat.
This paper presents information on the Greenhouse Gas Inventory Information system developed by the UNFCCC secretariat. The main purpose of the system is to store national GHG inventories from Parties, support the inventory review process for Annex I Parties to the Convention, facilitate provision of data to the conferences of the Parties and provide information to the public through the Internet. This paper also describes a brief history of the development and the current status of the system, which consists of several databases and software applications.

Session 8 Mobile Sources

Chairs: Laurel Driver, U.S. EPA
Joe Pedelty, U.S. EPA

1:00 pm "Development of a 1999 National Air Toxics Inventory for Highway Mobile Sources Using MOBILE6.2," R. Cook, L. Driver, US EPA; M. Mullen, E. H. Pechan and Associates Inc.; R. Baker, B. Limsakul, ERG, Inc.
This paper will describe data sources and methods used to compile fuel parameters and input data for additional hazardous air pollutants, and how these data are used in conjunction with MOBILE6.2 to develop a nationwide county-level air toxic inventory for highway mobile sources.

1:30 pm "Consistency in On-Road Mobile Source Activity Modeling, with an Application to Parked Passenger Cars," H. Michaels, D. Brzezinski, S. Kimbrough, US EPA.
This paper describes an internally consistent approach to modeling highway mobile source activity and applies it to area-wide inventory calculations.

2:00 pm "MOBILE6 Validation Study Results," A. K. Pollack, C. Tran, T. Stoeckenius, C. Lindhjem, ENVIRON International Corporation.
This paper describes several comparisons of real-world data to emissions estimates based on MOBILE6.

2:30 pm "Design and Implementation of MOVES: EPA's New Generation Mobile Source Emission Model," J. Koupal, M. Cumberworth, H. Michaels, M. Beardsley, D. Brzezinski, C. Hart, C. Baily, R. Giannelli, US EPA.
EPA's Office of Transportation and Air Quality (OTAQ) is currently working on a new modeling system termed MOVES, ultimately intended to replace MOBILE6 and NONROAD. MOVES will be a modeling framework which can be applied from very fine scales (e.g., intersections) to national-scale inventories for generating estimates of precursor, criteria, greenhouse, and toxic pollutants from on and off-road mobile sources. This paper gives an overview of the MOVES design and discusses implementation approaches proposed for the model.

3:00 pm **BREAK**

Session 8 Mobile Sources (Continued)

3:30 pm "Evaluation and Recommendation of a Modal Method for Modeling Vehicle Emissions," H. C. Frey, A. Unal, J. Chen, S. Li, North Carolina State University.

The National Research Council recommends a modeling approach that can be used for mesoscale as well as macroscale applications. Therefore, MOVES will be based upon second-by-second data. To establish a methodology for the emission rate estimator portion of MOVES, the following questions were addressed: (1) how should second-by-second data be used to estimate emission rates?; (2) what explanatory variables should be selected to refine the emission rates?; (3) what averaging time is preferred?: (4) what emission factor units should be used?; (5) what weighting approach should be used, when comparing time-, vehicle-, and trip-weighted?; (6) how should variability and uncertainty be characterized?; and (7) how should the conceptual model be validated and what are the results of validation exercises? This presentation will briefly summarize the answers to these questions.

4:00 pm "Comparison of Nonroad Hazardous Air Pollutant Emissions Included in the National Emission Inventory," R. Chang, R. Billings, H. Perez, Eastern Research Group; L. Driver, C. Scarbro, R. Cook, US EPA.

This paper discusses the methods used and improvements made to estimate emissions for "other" and portable commercial and institutional equipment in the National Emission Inventory (NEI). New HAP emission factors and speciation profiles were developed for the different fuels and "other"nonroad engine and equipment types considered in the NEI. This paper compares the emission estimates between each of the individual "other" nonroad engines, identifying the most significant sources of the HAPs included in the NEI.

4:30 pm "EPA's Newest Draft Nonroad Emission Inventory Model," C. Harvey, P. Carey, J. Warila, US EPA.

The EPA is developing a mobile source emissions inventory model for nonroad equipment (NONROAD). This paper describes the recently revised draft model that results in substantially different emission inventory projections for key pollutants from earlier draft versions of the NONROAD model. This model will provide a tool for EPA, States, regional air pollution organizations, and local air pollution control agencies to use in estimating pollution from nonroad equipment for State Implementation Plans (SIPs), as required by the 1990 Clean air Act Amendments, and other regulatory needs.

5:00 pm "NONROAD-AT: A Database Tool for Managing Off-Road Emissions Scenarios Created with EPA's NONROAD Model," T. Stoeckenius, C. Lindhjem, ENVIRON Corporation.

User's of EPA's off-road emissions model, NONROAD, often have a need to easily store and retrieve information from multiple scenarios corresponding to different regulatory strategies, time periods, and locations. NONROAD-AT is a software tool developed by ENVIRON for the state of Texas to assist in the development, documentation, and archiving of multiple non-road emissions scenarious.

Session 9 Emission Inventory Validation/Quality Assurance

Chairs: Rhonda Thompson, U.S. EPA

1:00 pm "Developing a QA/QC Program for a Local Agency Annual Emission Inventory," L. M. Artates, Nashville and Davidson County, Tennessee.

This paper will focus primarily on the Nashville quality assurance point source inventory procedures, and will also identify procedures applicable to area, mobile and non-road mobile sources.

1:30 pm "Does Your Emission Inventory Make Sense? Checking Your Inventory for Errors," R. Huntley, US EPA.

Obviously a review of the NEI by the State and Local Agencies is critical, but how best to review? What are some tips to help a reviewer focus his/her limited time and gain the most benefit? This paper attempts to answer this question and offers suggestions on how interested parties, particularly state, local, and tribal agencies, could conduct their review.

Session 9 Emission Inventory Validation/Quality Assurance (Continued)

2:00 pm "Quality Assurance and Estimation of Emissions Activity Data in the National Emissions Inventory," A. Bollman, H. Chelf, R. Strait, E. H. Pechan & Associates, Inc., Leif Hockstad, US EPA.

This paper describes attempts to compile industrial boiler/IC engine fossil fuel consumption activity estimates from Version 2.0 of the NEI. These emissions activity data are often missing from the NEI. Therefore, Pechan developed a decision tree of procedures for estimating missing emissions activity values. The procedures also include methods for identifying suspect NEI emission activity, emission factor, and control information and replacing the NEI information with more reasonable default values. This paper describes the decision tree of rules and procedures that were developed in this study and compares the NEI-based fossil fuel consumption estimates with estimates reported by the Department of Energy.

2:30 pm "The Quality System Assurance (QSA) in the German Emission Inventory using the MESAP-CalQlator." U. Döring, Federal Environmental Agency; U. Schellmann, C. Schlenzig, Seven2one Information Systems Inc.GERMANY. (**Also in Poster Session**)

The requirements for national and international reporting of emissions (IPCC, UNECE) are increasing steadily concerning the structural differentiation and the spatial distribution. The latest international agreements increase also the requirements in estimating and reporting uncertainties. Uncertainty estimates will be an essential element of future emission inventories in order to fulfil the objectives of transparency, consistency, comparability, completeness and accuracy. As part of the implementation of the German "National System of Emissions" (NaSE), a master plan "Quality System Assurance for Emissions" (QSA) was set up to strengthen quality assurance and quality control (QA/QC) in the process of generating the German emission inventory.

Session 10 Emission Inventory Preparation for Modeling

Chairs: Madeleine Strum, U.S. EPA
Mike Jay, U.S. EPA, Region VII

3:30 pm "The Use of SMOKE to Process Multipollutant Inventories - Integration of Hazardous Air Pollutant Emissions with Volatile Organic Compound Emissions," M. Strum, L. Driver, G. Gipson, US EPA; W. Benjey, National Oceanic and Atmospheric Administration, R. Cook, US EPA; M. Houyoux, C. Seppanen, Carolina Environmental Program; G. Stella, Alpine Geophysics.

The Sparse Matrix Operator Kernel Emissions (SMOKE) modeling system is being updated to process multi pollutant (criteria, particulate and toxics) emissions. SMOKE will be able to accept both criteria and hazardous air pollutant (HAP) inventories, combine them, and output model-ready emissions that contain all emissions selected for modeling by the user. The resulting system will be able to process the 1999 criteria and HAP National Emission Inventories as separate inventories fed into SMOKE. These efforts will also allow SMOKE to support air quality modeling of criteria and toxic pollutants with the Community Multiscale Air Quality (CMAQ) model and the Regulatory Modeling System for Aerosols and Deposition (REMSAD). This paper addresses a particular design issue that has arisen in the first phase of this project, which allow the HAP emissions from mobile source categories in the HAP NEI to be used with the criteria emissions from mobile source categories in the criteria NEI.

4:00 pm "SAMAA: A Software for Air Quality Modeling and Analysis," C. Gueguen, O. Sanchez, A. Mangin, ACRI-ST, FRANCE; E. Zarate, A. Clapier, Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

In order to provide to decision makers an operational tool to help define mitigation measures and to anticipate their qualitative and quantitative effects on air quality. ACRI-ST has developed a user friendly integrated modeling system called SAMAA (System for Air Modeling And Analysis), including a GIS based emission module called AIREMIS. This system allows one simulate air pollution events at medium and regional scale in order to better understand the evolution of air pollution in cities and their surroundings, and to improve air quality by selecting efficient emission control strategies.

4:30 pm "An Alternate Approach to VOC Speciation Reporting," M. D. Moran, D. R. Niemi, P. A. Makr, T. Mah, Environment Canada, CANADA.

This paper will describe in more detail the methodology to create the specified VOC list, NPRI guidelines for speciated VOC reporting, and the changes required to emissions processing systems to process NPRI VOC emissions.

5:00 pm "Design, Application, and Recommendations for Including Inventory Uncertainties in Emission Inventory Preparation for Modeling," M. Houyoux, Carolina Environmental Program; C. Frey, D. Loughlin, North Carolina State University; A. Holland, MCNC; G. Cano, Formerly of MCNC.

The air quality modeling community widely acknowledges large uncertainties in emission inventories used for modeling, but these uncertainties are typically ignored for air quality modeling applications. Three reasons for ignoring the uncertainties are (1) a lack of data to quantify these uncertainties, (2) no available emissions data processor that can handle such data if it were available, and (3) lack of a methodology for addressing the previous two issues. This paper describes a methodology for integrating uncertainty into emissions data processing, the application of that methodology to an air quality modeling case, the impact of the uncertainties on the modeling results, and recommendations for inventory collection efforts if one wishes to better quantify emissions and air quality modeling uncertainties.

Session 10 Emission Inventory Preparation for Modeling (Continued)

8:00 am "Use of the NEI 1999 Inventory for Regional and Continental Scale Chemical Transport Modeling of Particulate and Regional Haze," M. Jannsen, LADCO.

This paper will outline the steps taken to use the National Emissions Inventory (NEI) for regional scale modeling. This will include new methos in EMS-2002 to read NIF 2.0 files. New methods of problem identification in the inventories will be discussed. Inventory methods available for temporal, and spatial allocation will be reviewed, including the availability of national datasts. Finally, a critique of the NEI's usability for national and regional scale modeling will be included.

8:30 am "Preparation of Emission Data for Modeling with CMAQ from Spanish Emission Inventories and Emission Projections," R. Borge, J. Lumbreras, M. E. Rodriguez, Universidad Politénica de Madrid (UPM); J. G. Abascal. SPAIN.

The "Universidad Politécnica de Madrid" (UPM) is currently studying the different alternatives to reduce air pollution in Spain. The base data are the emission inventory for Spain up to 2000. The CORINAIR methodology has been used and the associated nomenclature called SNAP (Selected Nomenclature for Air Pollution) has been selected to complete the inventory. This inventory considers all the pollutant sources declared in CORINAIR'94.

In order to evaluate the alternatives to improve air quality, the emissions for 2010 and 2020 have been projected. Once the projections are finished it is necessary to obtain the air quality values through an air quality model. In this case, the selected air quality model is the US EPA CMAQ (Linux version 2.1 platform). Both the projections and the modeling provide a very useful tool for policy assessment and decision-making.

The aim of the study is to manage the emission inventory (EI) data and to link them with US EPA data sets. The emission source data have been adapted according to the standards required for the CMAQ modeling. This requires the use of the specific EPA nomenclature and a specific methodology has been developed for this purpose.

9:00 am "Modeling Area, Line and Point Source for ISC Model: Methodology, Computer Interface and Case Study," C. Trozzi, E. Piscitello, F. Lena, Techne Consulting srl, ITALY.

In this paper a methodology for preparing air pollutant emissions to input for EPA ISC model will be presented. Next, a specific computer tool to interface emission inventory data base with ISC model will be introduced. Finally, case studies will be discussed.

9:30 am **BREAK**

10:00 am "Emission Inventory Preparation for Air Quality Modeling in the Pacific Northwest," J. W. Boulton, M. Gauthier, X. Qiu, M. Lepage, RWDI West, Inc.; C. diCenzo, Environment Canada.

An initiative is underway to set up and test an air quality modelling environment consisting of the MC2 meteorological model, the SMOKE emission processing system and the CMAQ photochemistry transport model to support the evaluation of impacts attributed to Canadian and U.S. emissions, from man-made and natural sources, on ozone (O3), fine particulate matter (PM2.5) and visibility within the Pacific Northwest. This paper is an overview of the work accomplished to date. The initial model set up and base case modelling has been completed. Model results compare well with observed data for ozone and fine particulate matter (PM2.5) at both 12-km and 4-km model resolutions. Additional modelling is currently underway to address the affects of a winter episode and a number of emission scenarios.

10:30 am "Creating an Emission Inventory for Modeling Global Climate Change Effects on Regional Air Quality," W. G. Benjey, Ellen Cooter, A. Gilliland, National Oceanic and Atmospheric Administration; A. E. Grambsch, E. L. Wright, C. D. Geron, C. Gage, D. Winner, US EPA.

This paper will address the methodologies and progress in generation of an inventory for 2050.

Session 10 Emission Inventory Preparation for Modeling (Continued)

11:00 am "The MIMS Spatial Allocator: A Tool for Generating Emission Surrogates Without a GIS," A. Eyth, Carolina Environmental Program.

The Multimedia Integrated Modeling System (MIMS) Spatial Allocator was developed at MCNC and sponsored by the EPA Office of Research and Development to provide a tool for performing emission surrogate generation and other types of spatial allocation without a Geographic Information System (GIS). The drawbacks of using a GIS to generate surrogates are that GISs can cost thousands of dollars and are complex software systems that can be difficult to use. The MIMS Spatial Allocator is a comparatively small piece of software, written in C, that can run efficiently on Windows or Unix systems. It is provided for free from EPA, and reads its input data from ESRI Shapefiles - a standard in the GIS industry.

11:30 am "Development of a Criteria Pollutant Emissions Inventory for Sources in the Gulf of Mexico," D. Wilson, R. Billings, J. Fanjoy, Eastern Research Group, Inc.

This paper discusses the methodologies used in developing an emission inventory for all oil and gas producitons-related sources in the Gulf of Mexico. Utimatley, State agencies will use this information to perform modeling for ozone and regional haze for use in their State Implementation Plans.

Session 11 New Developments in Emission Inventories for Mexico

Chairs: Paula Fields, Eastern Research Group
Adrián F. Bremauntz, Instituto Nacional de Ecología

8:00 am "Mexico National Emissions Inventory: A New Tool for Decision Making," A. F. Bremauntz, A. G. Garcia, V. G. Bravo, Instituto Nacional de Ecologia, MEXICO.

Championed by Mexico's National Institute of Ecology (INE) and sponsored by the United States EPA, the Western Governors' Association (WGA) and the North American Commission for Environmental Cooperation (NACEC), this project started out in 1995 with the initial purpose of developing a methodology and an Execution Plan to complete Mexico's National Emissions Inventory. Its products so far have been several manuals for the development of emissions inventories in Mexico and training material, as well as the Mexicali Emissions Inventory. The project is currently in Phase II of three, which comprises the compilation of existing databases owned by Mexico's Federal and State Environmental Authorities, as well as specific private entities. The inventory for the six bordering states is expected to be completed by mid 2003, whereas the full product should be concluded by 2004.

8:30 am "Developing a National Emissions Inventory for Mexico Phase II: Northern States Emissions Inventory," P. G. Fields, M. E. Wolf, Eastern Research Group, Inc.; G. Acosta-Ruiz, Acosta y Asociaos; R. Halvey, Western Governors' Association; W. Kuykendal, US EPA.

This paper provides results of the data collection efforts pertaining to point, area, off-road mobile, and natural sources. (Results pertaining to the on-road mobile sources are presented in the next paper.) Preliminary emissions estimates will be presented as available.

9:00 am "Developing a National Emissions Inventory for Mexico On-Road Mobile Source Emissions Inventory," M..E. Wolf, P. G. Fields, Eastern Research Group, Inc., S. González-Ayala, International Communities Research Center.

The development of on-road mobile source activity data (i.e., vehicle kilometers traveled [VKT]) for Mexico is challenging because of data scarcity within Mexico, and due to the large amount of data needed on a national-level. As a result, a unique methodology was developed which used modeled traffic volumes and congestion levels at representative urban areas for seven different city size categories to generate daily per capita emission rates.

9:30 am **BREAK**

Session 11 New Developments in Emission Inventories for Mexico (Continued)

10:00 am "The Emission Inventories and SMOKE Modeling Efforts Used to Support the BRAVO Study," H. Kuhns, Desert Research Institute; J. M. Vukovich, Carolina Environmental Program.

Mexican and United States emissions inventories have been processed through the Sparse Matrix Operator Kernel Emissions (SMOKE) modeling to support the Big Bend Regional Aerosol and Visibility Observational (BRAVO) study. The generation of the inventory, the supporting model input data, and the issues encountered during the SMOKE modeling effort are presented.

10:30 am "Preliminary Atmospheric Emissions Inventory of Mercury in Mexico," G. Acosta-Ruiz, Acosta y Asociados, MEXICO; B. Powers, Powers Engineering.

A preliminary inventory of atmospheric emissions of mercury (Hg) from stationary sources in Mexico was prepared for the year of 1999. This inventory was build upon two previous studies of mercury air emissions in Mexico: the 1997 Electric Pacific Research Institute (EPRI) study coordinated by Bill Powers of Powers Engineering and the May 2000 draft study coordinated by the *Dirección de Materiales Tóxicos* (Toxic Materials Directorate) of the *Instituto Nacional de Ecología*, *INE* (National Institute of Ecology).

11:00 am "Dioxins, Furans and Hexacholobencene Emissions Inventory for Mexico," A. Garcia-Gutierrez, National Institute of Ecology, MEXICO.

This paper will discuss the Mexican Emissions Inventory conclusions made in using the same industrial categories, the same emission factors and the same estimation method as the US Dioxin emissions inventory for the year 2000 that was drafted by the US. EPA for they ear 1998.

Session 12 Tribal Emission Inventories

Chairs: Sara Kelly, ITEP
Bob Ramirez, Salt River Pima-Maricopa Indian Community

8:00 am "Creating a Tribal Source and Emissions Inventory Out of Thin Air: A Comprehensive Approach Using Primary and Secondary Data," T. Richards, Bishop Paiute Tribe.

Tribes and other entities sometimes face considerable difficulty assembling necessary information for a source and emissions inventory. This paper offers a comprehensive approach to describing the air quality for a tribe's airshed or region addressing both on- and off-reservation sources using existing databases. The approach is general and straightforward. The result is a useful, high quality picture of the air quality for a region.

8:30 am "First Native Alaskan Baseline Emissions Inventory: The 125-year-old Native Village of Noatak, Alaska," D. C. Jones, Tribal Environmental Consultant; F. Chin, Maniilaq Association.

In the summer of 2002, the Noatak Environmental Director expressed interest in having a baseline emissions inventory for the Village. During August 2002, the authors visited the Village and initiated the baseline survey and data gathering. The inventory was completed during the next few months and only includes the Village's major emission sources. These sources are: wood-burning stoves; diesel-powered generators; fuel-oil furnaces; gasoline-powered ATVs and snowmobiles (off-road); gasoline- and diesel-powered motor vehicles; and gasoline- and diesel-powered motorboats.

9:00 am "GIS-Integrated Emissions Inventory Software Solution," J. L. Thé, M. Johnson, S. Koo, M. Hilverda, C. Thé, Lakes Environmental Software, Inc, CANADA.

The Trial Emissions Inventory Software Solution (TEISS) provides a graphical, user-friendly application for creating and maintaining a comprehensive emission inventory. The system includes an integrated GIS platform providing all users with the tools to visualize and query inventory data within a spatial environment.

9:30 am **BREAK**

Session 13 Regional Planning Organizations

Chair: Rosalina Rodriguez, US EPA
Mark Janssen, LADCO

10:00 am "Emissions Characterization Near Western Class I Visibility Areas," A. K. Pollock, G. E. Mansell, ENVIRON Corporation; L. Alter, Western Regional Air Partnership.

This paper will describe geographic information systems (GIS) and other data sources and methods used to portray the dominant activites and emission sources surrounding each western Class I area. The paper will also discuss methods used to classify the area according to magnitude, trend, seasonality, and dominant type of emission source(s). The paper will show examples from web pages showing the emissions and activities around each Class I area. The paper will also show examples of more detailed analyses of emission inventory sources, magnitudes, and trends for a subset of the WRAP Class I areas.

10:30 am "VISTAS 2002 Emission Inventory Development," P. Brewer, VISTAS; E. Sabo, B. Barnard, MACTEC Engineering and Consulting, Inc; M. Mullen, K. Thesing, E. H. Pechan and Associates, Inc; S. Holman, L. Boothe, North Carolina Department of Environmental and Natural Resources.

The organization Visibility Improvement - State and Tribal Association of the Southeast (VISTAS) is a collaborative effort of the ten southeastern States and participating Tribes for planning activities associated with the management of regional haze and other air quality issues. VISTAS is developing a 2002 base year emissions inventory in cooperation with the state and local air quality agencies and with technical support from E.H. Pechan and Associates, Inc. and MACTEC Engineering and Consulting, Inc.

11:00 am "Gathering Open Burning Activity Information and the Limitations of EIIP Methodologies," S. Baumann, Mid-Atlantic Regional Air Management Association; S. M. Roe, K. Thesing, E. H. Pechan and Associates, Inc.

The pressure is intensifying for states to gather accurate activity data in preparation for the submittal of the 2002 National Emissions Inventory (NEI). Open burning is a source of a significant fraction of the PM2.5 emissions in the Northeast and Mid-Atlantic. Significant uncertainty exists in this part of the inventory. The Mid-Atlantic-Northeast Visibility Union (MANE-VU) currently has a contract with E.H. Pechan and Associates to help states develop activity data and emission inventories for the open burning categories of municipal solid waste and yard waste.

11:30 am "Visualization of 1999 National Emission Inventory as a Prelude to 2002 National Emission Inventory for MANE-VU Regional Haze Modeling Efforts," S. Kayin, C. Devi, Mid-Atlantic Regional Air Management Association.

This paper will: (i) Summarize 1999 point, area, highway, and non-road PM10, PM2.5, SO2, NOx, VOC, and NH3 emissions for the Mid-Atlantic and Northeast states, (ii) Compare the emission levels with 1996 NEI inventory, (iii) Include county level emission density maps for those four major source groups and a number of source categories that are important for the region, and (iv) identify source categories to which special attention should be given when preparing 2002 inventory to eliminate gaps, abnormalities, and other potential problems.