

Air & Waste Management Association

# Air Quality Measurement Methods and Technology 2005

April 19-21, 2005  
San Francisco, California, USA

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

76 A. - +, !%\* \$( & !( - &' .

# TABLE OF CONTENTS

Tuesday, April 19, 2005

## Session 1 - General

- 1 **San Francisco Bay Area Community Air Risk Evaluation (CARE) Program**  
**J. Stromberg, P. Hess, E. Stevenson**  
Bay Area Air Quality Management District
- 8 **Proposed Management Plan for MSW OF Amman City and its Role in Greenhouse Gases Reduction**  
**T. Al Abbadi**  
Municipality of Greater Amman, Jordan
- 18 **Model Fusion for Reliable Estimation of Particulate Matter Loading in the Lower Troposphere**  
**D. Sarigiannis, A. Gotti**  
European Commission
- N/A **Characterization of Emissions From a Flowering of the Titan Arum Amorphophallus Titanum Using GC/MS-Time of Flight, GC/MSQuadrupole, GC/SCD, and GC/PFPD**  
**E. Winegar**  
Applied Measurement Science  
**E. Sandoval**  
University of California, Davis Botanical Conservatory  
**W. Bontempo**  
Air Toxics Limited
- 32 **Residential Cooking Emissions: Literature Review and Analysis**  
**A. Wilson**  
WE Associates

## Session 2 - Point Source

- 52 **Particle Size Distributions in Method 5 Stack Samples Determined by Microscopical Methods**  
**T. Vander Wood**  
MVA Scientific Consultants
- 62 **Method Comparison Between a Cyclone/Impinger and a Dilution Tunnel for the Characterization of Particulate Matter from a Ferrous Metal Foundry**  
**S. Sheya, C. Glowacki, A. Prabhu**  
Technikon, LLC  
**O. Chang, J. Chow, J. Watson,**  
Desert Research Institute
- 77 **Extractive FTIR Measurement of Uncontrolled Combustion Emissions at the Federal Fire Research Center**  
**T. Dunder**  
GE Energy
- 85 **Continuous Flue Gas Monitoring of Coal Fired Boilers**  
**M. Nelson**  
Air Quality Analytical, Inc
- 101 **Using the Radial Plume Mapping Method for Emissions Monitoring at Petrochemical and Refinery Facilities**  
**M. Modrak, R. Hashmonay, R. Varma, R. Kagann**  
ARCADIS

### Session 3 - Ambient

- 106 **Issues in Ammonia and Nitric Acid Measurements: Experiences in the Midwest**  
**D. Kenski**  
Lake Michigan Air Directors Consortium, Des Plaines, IL  
**D. Gay**  
Illinois State Water Survey
- N/A **Examining Comparability between Thermal/Optical Elemental Carbon and Time-Integrated Light-Absorption Measurements**  
**J. Chow**  
Desert Research Institute
- 115 **Dioxins, Furans, PCBs, and Brominated Diphenyl Ethers in Ambient Air from Urban California Locations**  
**K. Gill, K. Mongar**  
California AirResources Board
- N/A **Collection and Characterization of Coarse, Fine and Ultrafine Particulate Matter using an Innovative Passive Aerosol Sampler**  
**J. Wagner**  
California Dept. of Health Services  
**T. Merrifield**  
BGI Instruments
- 127 **Evaluation of Weather Conditions for Methyl Bromide Ambient Air Monitoring in Monterey, Santa Cruz, and Kern Counties in year 2000**  
**L. Li**  
Department of Pesticide Regulation, Environmental Monitoring Branch
- 146 **Field Validation of Passive Samplers to Measure Tropospheric Ozone in “La Plana de Castellon” Area**  
**Gary Casuccio**  
RJ Lee Group, Inc.  
**J. Delgado-Saborit, M. Querol-Balaguer, V. Esteve-Cano**  
Universitat Jaume I, Castellon Spain  
**J. Amigó-Descarrega**  
Universitat de València, Burjassot, Spain

### Session 4 - Using Source/Receptor Data to Develop Control Strategies for PM<sub>2.5</sub> SIPs

- N/A **Requirements and deadlines for control strategies for PM<sub>2.5</sub> SIPs**
- N/A **PM<sub>2.5</sub> chemical speciation data, both ambient and source, needed for source/receptor studies**  
– IMPROVE data  
– PM<sub>2.5</sub> chemical speciation data  
– Source profiles
- N/A **The different types of receptor models – how they function and the types and amount of data needed**  
– CMB  
– PMF, UNMIX
- N/A **The advantages and disadvantages of source/receptor models**
- N/A **Using source/receptor analyses in developing a control strategy**  
– Obtaining missing critical elements  
– Comparing results with emission inventories

## Session 5 - Vapor Intrusion

- 166 **A Comparison of EPA Methods 8260B and TO-14A/15 for the analysis of VOCs in Soil Gas Application to Upward Vapor Intrusion Risk Studies**  
**J. Picker**  
H&P Mobile GeoChemistry
- 176 **Evaluating Leaks in a Soil Gas Sample Train**  
**W. Bontempo, D. Benton**  
Air Toxics Limited
- 181 **A Comparison Between EPA Compendium Method TO-15 and EPA Method 8260B for VOC Determination in Soil Gas**  
**H. Hayes, S. Grewal, J. Mough, L. Soohoo, D. Benton**  
Air Toxics Limited
- 192 **Quality Control Considerations for Gas-Phase Measurements in Vapor Intrusion Studies**  
**B. Eklund, D. Burrows**  
URS
- 203 **Assessing Potential Air Pathway Impacts to Occupants in Structures in Cold Climates Using Predictive Modeling and Surface Flux Measurements on Undeveloped Sites**  
**M. Stelljes**  
SLR International Corp  
**C.E. Schmidt**  
Environmental Consultant
- 224 **Dealing with Confounding Background Indoor Air Concentrations**  
**K. Kiefer, M. Jones, M. Shibata, H. Olsen, S. Steinmacher**  
MWH  
**J. Case**  
U.S. Air Force

## Session 6 - Data

- N/A **Comparison of IMPROVE and St. Louis – Midwest Supersite Measurement Platform Data for Ambient Particulate Matter**  
**N. Deardorff, J. Turner**  
Washington University  
**M. Bae, J. Schauer**  
University of Wisconsin  
**J. Chow, J. Watson**  
Desert Research Institute
- 237 **A New Method for Estimating Ecological Risk of Ambient Air Pollution**  
**D. Sarigiannis**  
European Commission  
**N. Soulakellis**  
University of the Aegean
- 252 **Background Concentrations of 18 Air Toxics In The Northern Hemisphere**  
**M. McCarthy, H. Hafner**  
Sonoma Technology Inc.  
**S. Montzka**  
National Oceanic and Atmospheric Administration
- 257 **Trends in Air Toxics Concentrations in California: Putting Concentrations in Perspective**  
**M. McCarthy, H. Hafner**  
Sonoma Technology Inc.

- 262 **PM<sub>2.5</sub> Chemical Speciation Trends Network (STN): Examination of Geographic and Temporal Trends in Species Concentrations**  
**J. Flanagan, E. Rickman, L. Andrews, R. Jayanty**  
RTI International
- 269 **XRF: PM<sub>2.5</sub> Deposit Uniformity and its Effect on Concentration Uncertainties**  
**R. Sarver**  
Chester LabNet

#### **Session 7 - Method Validation**

- 289 **In-Injection Port Thermal Desorption and Subsequent GC-MS Analysis of PAHs, Alkanes, Hopanes, and Phthalates in Atmospheric Aerosol Samples**  
**J. Yu, S. Ho**  
Hong Kong University of Science & Technology, Hong Kong, Hong Kong Special Administrative Region of China
- 297 **Feasibility of a New Diffusive Sampler to Measure Sub-Ppb Levels of VOCs**  
**L. Coyne**  
SKC Inc.
- 303 **Can We Measure Carbon, Nitrogen and Oxygen from Teflon Membrane Filter**  
**O. Carvacho, C. Castaneda, L. Ashbaugh, R. Flocchini, J. Singh, J. Lam**  
University of California
- 309 **Comparison of Four Methods used to Characterize Odorous Compounds**  
**J. Campbell, M. Taday, K. Chen,**  
Columbia Analytical Services, Inc.
- 319 **Fine Particulate Matter Nitrate Measurements by Flash Volatilization: Results from the St. Louis Midwest Supersite**  
**C. Reid, J. Turner**  
Washington University  
**S. Hering**  
Aerosol Dynamics, Inc.
- 336 **Direct SPME-Gas Chromatography Development for Monitoring of PM<sub>2.5</sub> Organic Tracers for Source Apportionment**  
**I. Lin, B. Grover, M. Lee, D. Eatough,**  
Brigham Young University
- 345 **Application of an On-Sorbent Derivatization Sampling and In-Injection Port Thermal Desorption Method for Identification and Quantification of C<sub>1</sub>-C<sub>10</sub> Ambient Carbonyls**  
**J. Yu, K. Lam**  
Hong Kong University of Science & Technology, Hong Kong, Hong Kong Special Administrative Region of China

#### **Session 8 - U.S. EPA's Environmental Technology**

- 353 **ETV Program Overview and Accomplishments**  
**E. Hartzell**  
U.S. EPA
- N/A **Collaboration: Key to Successful Technology Verifications**  
**K. Riggs**  
Battelle
- 357 **Evaluation of Technologies for Ambient Air Monitoring at Concentrated Animal Feeding Operations**  
**J. Hatfield**  
USDA-ARS

- 367 **Dioxin CEMs - Status and Testing**  
**B. Gullett, R. Segall, T. Logan, R. Fuerst**  
U.S. EPA
- N/A **Verification Testing of Mercury Continuous Emission Monitors**  
**K. Cowen, T. Kelly, K. Riggs**  
Battelle

#### Session 9 - Canisters

- 372 **Practical Guidelines for Cleaning Ambient Air Canisters**  
**C. Stewart**  
Restek Corporation
- 378 **Evaluation of the Stability of Volatile Organic Compounds in Siltek® Canisters at Low Concentrations (<50 pptv)**  
**M. Wheeler**  
STL Burlington
- N/A **Time Integrating Canister Samplers for Achieving Low Part Per Trillion Blank Levels**  
**C. Casteel, T. X. Robinson, D. B. Cardin**  
Entech Instruments Inc.
- N/A **If You Don't Steam, You Don't Clean**  
**R.A. Rasmussen**  
OHSU, OGI, EBS
- 390 **Measurement of Carbonyls using Summa Canisters, DNPH Derivatization and Water Impinger Methods**  
**S. Parmar, A. Davidson, E. Heeb, and E. Aldea-Cruz**  
AAC, Inc.

#### Session 10 - Continuous Measurements

- 398 **Measurement of PM<sub>2.5</sub> Semi-Volatile and Nonvolatile Organic Material with a New Sunset Laboratory Carbon Aerosol Monitor**  
**D. Eatough, B. Grover, N. Eatough,**  
Brigham Young University  
**R. Cary**  
Sunset Laboratory Inc.  
**D. Smith, Sunset**  
Laboratory Inc.
- 403 **Measurement of Air Contaminants During and After Wildfires**  
**J. Lake**  
Judith Lake Consulting
- 412 **Evaluation of Met One BAM-1020 and E-BAM Beta Attenuation Monitors for Real-Time Particulate Monitoring Applications in Smoke Sensitive Communities of the Southern Sierra Nevada Re**  
**R. Cisneros**  
USDA Forest Service, Sierra National Forest  
**T. Procter**  
USDA Forest Service, Sequoia National Forest  
**K. Savig**  
Air Resource Specialists
- 418 **New Techniques for the Real-time Characterization of PM<sub>2.5</sub> Mass and Composition**  
**W. Wilson**  
Environmental Protection Agency, Research Triangle Park, NC  
**D. Eatough, B. Grover, N. Eatough,**  
Brigham Young University, Provo, UT

- 430 Using Automation and Remote Operation of Monitoring Stations to Improve Efficiency and Data Quality**  
**J. Craig**  
 San Luis Obispo County APCD
- 439 Semi-Continuous Ambient Air Monitoring for Benzene Using an Automated Gas Chromatograph**  
**B. Cochran**  
 URS Corporation
- 449 Active and Passive FTIR Applied to Flare Efficiency Monitoring and SO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub> Detection**  
**R. Spellicy**  
 Industrial Monitor & Control Corp.

#### **Session 11 - Remote Sensing**

- 466 Remote Measurement of Sulfur Dioxide in a Volcanic Plume Using Multi-Axis Differential Optical Absorption Spectroscopy (MAX-DOAS)**  
**Y. Kim, C. Lee, H. Lee, C. Hong, Gwanju**  
 Institute of Science and Technology  
**H. Tanimoto**  
 National Institute for Environmental Studies
- 477 Use of Digital Imaging/Processing as a New Method for Opacity Compliance Monitoring**  
**S. Rasmussen, D. Stone, G. Palmer, Hill**  
 Air Force Base  
**J. Bosch, B. Parke, T. Logan**  
 U.S. Environmental Protection Agency
- 493 High Precision Measurement of Fine and Ultra-Fine Particles Using Satellite Data**  
**D. Sarigiannis, A. Gotti**  
 European Commission  
**N. Sifakis**  
 National Observatory of Athens  
**K. Schaefer**  
 Forschungszentrum Karlsruhe, Garmisch-Partenki
- 508 Satellite-Assisted Optimization of Ambient Air Quality Monitoring Networks**  
**D. Sarigiannis, M. Saisana**  
 European Commission
- N/A Development of an EPA Protocol for Characterizing Emissions from Non-Point Sources Using the Radial Plume Mapping Technique**  
**R. Hasmonay**  
 ARCADIS

#### **Session 12 - Chemical Speciation**

- 525 Source Apportionment of VOCs in the Los Angeles Area Using Positive Matrix Factorization**  
**S. Brown, A. Frankel, H. Hafner**  
 Sonoma Technology, Inc
- 537 Comparison of STN and Improve OC/EC Analysis Results When Optical Transmittance is Used to Determine Split Time**  
**M. Peterson, J. Flanagan, M. Richards**  
 RTI International

- 538** **Elemental and Ionic Characterization of Size Fractioned Airborne Tropospheric Particulate at a Mediterranean Coastal Site**  
**M. Querol-Balaguer, J. Delgado-Saborit, V. Esteve-Cano**  
Universitat Jaume I  
**J. Amigó-Descarrega**  
Universitat de València
- 543** **Field Validation of Passive Samplers to Measure Nitrogen Dioxide at a Mediterranean Coastal Area**  
**J. Delgado-Saborit, M. Querol-Balaguer, V. Esteve-Cano**  
Universitat Jaume I  
**J. Amigó-Descarrega**  
Universitat de València
- 559** **The Use of SEM and EDX for PM10 Particle and Source Characterisation**  
**D. Shooter, C. Chang, M. Jovanovic**  
The University of Auckland, Auckland
- 567** **Improve XRF Analysis of STN Filters Used in STN's Round Robin EPA Acceptance Tests**  
**P. Wakabayashi, C. McDade, W. White**  
University of California  
**J. Flanagan, W. Gutknecht, A. McWilliams**  
Research Triangle Institute
- 574** **PM2.5 Chemical Speciation Results for Texas**  
**R. Tropp, J. Chow, J. Watson, S. Kohl**  
Desert Research Institute  
**R. Countess**  
Countess Environmental  
**E. Michel**  
Texas, Commission on Environmental Quality