



AIR & WASTE MANAGEMENT
ASSOCIATION

SINCE 1907

FINAL PROGRAM

AIR QUALITY MEASUREMENT
METHODS AND TECHNOLOGY
NOVEMBER 14-16, 2023 • DURHAM, NC

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General Information

Conference Overview

One of our most popular specialty conferences, the Air Quality Measurement Methods and Technology Conference provides extensive coverage of all aspects of air measurement methodologies, including associated quality assurance protocols and how to use and interpret data. Sessions will also focus on the assessment of key substances of concern for humans and the environment, including criteria pollutants, greenhouse gases, and air toxics.

Location

Sheraton Imperial Hotel
Raleigh-Durham Airport at Research Triangle Park
4700 Emperor Boulevard
Durham, NC 27703
Phone: 919-941-5050

Registration

Register online at www.awma.org/measurements. Your registration will not be processed without payment.

Conference check-in and badge pickup will be held in the Imperial Foyer at the Sheraton Imperial Hotel during the following hours:

Tuesday, November 14	7:30 am – 5:00 pm
Wednesday, November 15	7:30 am – 5:00 pm
Thursday, November 16	7:30 am – 12:00 pm

Exhibitor move-in on Monday, November 13 will take place from 2:00 pm – 7:00 pm.

Refund Policy

If written notice of cancellation is received on or before October 17, 2023 payment will be refunded, less a \$100 cancellation fee (cancellation fees apply regardless of payment method). Substitutions may be made at any time; payment for any difference is due at the time of substitution. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

Conference Committee

Conference Co-Chairs:

Ingrid George, US Environmental Protection Agency (EPA)
Ned Shappley, US EPA

Technical Program Committee:

Sara Head, Yorke Engineering, LLC
Ray Merrill, US EPA
Rick Osa, ERM
Eric Winegar, Sonoma Technology, Inc.

Presenters' Meeting

Presenters and Session Chairs will meet on the day of their session involvement in the room in which their session will be held to review program details. Presenters should bring their presentations on a memory stick/USB to this meeting, as well as a brief biography.

Conference Proceedings

Conference proceedings will include the secured PDF copies of the slides from presenters who have provided permission. The online proceedings will be posted a few weeks following the conference and attendees will be notified when the slides have been posted to a password-protected website.

Continuing Education Units

Conference attendees may be eligible for continuing education credits and can apply to receive a Certificate of Participation for the sessions attended. Please sign the CEU sign-in sheet available at the registration desk and order your Certificate through the A&WMA Online Store. A&WMA members are eligible for free certificates. For more information, contact Gloria Henning at +1-412-904-6021 or glhenning@awma.org.

Special Accommodations

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Attendees requiring specific equipment, food, or services should contact Cindy Fontanesi at cfontanesi@awma.org to make those needs known in advance. A&WMA will make every reasonable effort to accommodate them.

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Technical Program – Tuesday, November 14

7:30 am – 5:00 pm

Conference Registration
Imperial Foyer

7:30 am – 8:30 am

Continental Breakfast and Presenters' Meeting
Imperial 4567 and Session Rooms

8:30 am – 6:15 pm

Exhibition Viewing
Imperial 4567

Opening Keynote Session

8:30 am – 9:45 am

Imperial 123

Welcome & Opening Remarks

Jordan Haywood, A&WMA President; Ned Shappley, Ingrid George, Conference Co-Chairs

Next Generation Emissions Monitoring in Today's Regulations

Tomás Carbonell, Deputy Assistant Administrator for Stationary Sources, US EPA Office of Air and Radiation (OAR)

9:45 am – 10:15 am

Networking Break, Exhibition Viewing, and Poster Viewing

Imperial 4567 & Foyer

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Tomás Carbonell

Technical Program – Tuesday, November 14, con't.

Session 1A: GHG Monitoring – Landfills

[concurrent with Sessions 1B and 1C]
Imperial 123

Chairs: Roger Green, WM, and Eben Thoma, US EPA

10:15 am – 10:40 am

ME21 Validating the Effectiveness of Drone Based Methane Surface Emission Monitoring in Municipal Solid Waste Using EPA Approved ALT-150

David Barron, Sniffer Robotics

10:40 am – 11:05 am

ME37 An Examination of Temporal and Spatial Variations in Methane Emissions from Landfills

Ali Lashgari, Ryan Brush, Project Canary, PBC

11:05 am – 11:30 am

ME81 Field-deployable Sensor Networks, Rovers and Flux Chambers; Exploring the Utility of Low-cost Air Sensors in Quantifying Surface Methane Concentrations, Hotspot Detection and Surface Emissions at Landfills
Michael Hannigan, Evan Coffey, Helena Pliszka, University of Colorado Boulder, Boulder, CO; Roger Green, Amy Bannister, Amanda Duchesne, WM

11:30 am – 11:55 am

ME114 Using Surface Emissions Monitoring (SEM) Data to Locate Leak Locations and Estimate Methane Emissions Fluxes from Landfills

Tarek Abichou, FAMSU-FSU; Nizar Belhaj Ali, University of Gabès, Tunisia; Roger Green, WM

Session 1B: Advances in Open-path Optical Remote Sensing

[concurrent with Sessions 1A and 1C]
Royal AB

Chairs: Jason DeWees and Jeff Ryan, US EPA

10:15 am – 10:40 am

ME23 Next Generation of BTEX Monitoring Inside Refineries: UCLA's Optical Tent

Jochen Stutz, Fedele Colosimo, Sol Cooperdock, University of California Los Angeles, Los Angeles, CA; Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA

10:40 am – 11:05 am

ME38 Technical Evaluation of an Innovative Open-path Hydrogen Sulfide Air Monitoring System

Eric Stevenson, Argos Scientific, Inc., CA; Donald Gamiles, Argos Scientific, Inc., WA; Cliff Gordon, M&C TechGroup North America, CA; Pawel Kluczynski, AirOptic, Poznan, Poland

11:05 am – 11:30 am

ME103 Using Mobile Optical Remote Sensing for Emission Estimates of Air Pollutants from Stationary Sources: Need for Standard Method Development

Olga Pikelnaya, Jack Porter, Catalina Tsai, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA; Johan Mellqvist, Jerker Samuelsson, Marianne Ericsson, Fluxsense Inc., San Diego, CA

11:30 am – 11:55 am

ME101 Leak Detection from Oil Wells in Los Angeles Using Optical Remote Sensing Mobile Platform: Enhancing Knowledge and Mitigation Strategies

Catalina Tsai, Jack Porter, Pami Mukherjee, Yifan Yu, William Senga, Veudy Cen, Jeremy Huff, Robert Wimmer, Mike Hamdan, Matt Prather, Olga Pikelnaya, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA

Session 1C: Particulate Matter

[concurrent with Sessions 1A and 1B]
Auditorium

Chairs: Tim Hanley and Karoline Barkjohn, US EPA

10:15 am – 10:40 am

ME89 Gravimetric Validation and Spatial Variability of PM10 and Heavy Metals in Two US Fenceline Communities as Part of the HAP-Map Study

Peter DeCarlo, Mina Tehrani, Shivang Agarwal, Amira Yassine, Edward Fortner, Benjamin Werden, Ellis Robinson, Ana Rule, Kirsten Koehler, Johns Hopkins University

10:40 am – 11:05 am

ME92 A Comparison of Trace Metal Composition of PM10 Measurements Potentially Emitted from Playa and Desert Surfaces in the Imperial Valley, California

Maarten D. Schreuder, Hank Dickey, Yohannes T. Yimam, Brian M. Schmid, Formation Environmental, LLC, Sacramento, CA

11:05 am – 11:30 am

ME139 Update on the Ambient PM2.5 Network in the USA

Tim Hanley, US EPA

11:30 am – 11:55 am

ME100 Evaluation of Metals in Ambient Air Using a Field Deployable XRF and Passive Sampling Techniques

Roger West, Kristin Bunker, Traci Lersch, Gary S. Casuccio, RJ Lee Group, Pittsburgh, PA

12:00 pm – 1:00 pm
Lunch for all sessions
Empire Ballroom

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Technical Program – Tuesday, November 14, con't.

Session 2A: GHG Monitoring – Landfills

[concurrent with Sessions 2B and 2C]

Imperial 123

Chairs: Eben Thoma, US EPA, and Roger Green, WM

1:00 pm – 1:25 pm

ME119 Understanding and Reducing Fugitive Landfill Emissions Using Combined Well Performance and Methane Air Monitoring

Melinda Sims, Peter Quigley, Chris Makselon, LoCI Controls, Inc., Wareham, MA; Eben D. Thoma, Megan MacDonald, Wyatt Champion, Susan Thorneloe, US EPA Office of Research and Development (ORD), RTP, NC; Max Krause, US EPA ORD, Cincinnati, OH

1:25 pm – 1:50 pm

ME75 Providing Accessible Data on Landfill Methane Emissions Using Airborne and Satellite Remote Sensing

Tia Scarpelli, Carbon Mapper, Pasadena, CA; Alana Ayasse, University of Arizona, Tucson, AZ; Dan Cusworth, Carbon Mapper and University of Arizona; Riley Duren, University of Arizona, Carbon Mapper, and NASA Jet Propulsion Laboratory, Pasadena, CA; Eben Thoma, Max J. Krause, Daniel Heins, Susan Thorneloe, US EPA

1:50 pm – 2:15 pm

ME133 Large Scale Landfill Emission Measurement Across Canada: Measurement Methods

David Risk, Afshan Khaleghi, Evelise Bourlon, Rebecca Martino, Jordan Stuart, St. Francis Xavier University, Antigonish, Canada

2:15 pm – 2:40 pm

ME105 Application of a Novel Airborne LiDAR Measurement to Quantify Landfill Methane Emissions and Leak Locations

Madjid Delkash, Delkash Consulting; Grant Aivazian, Michael Thrope, Bridger Photonics, Inc.; Paul Imhoff, University of Delaware; Ramin Yazdani, University of California Davis

Session 2B: Advances in Optical Gas Imaging

[concurrent with Sessions 2A and 2C]

Royal AB

Chairs: Gerri Garwood, US EPA, and Tracey Footer, ERG

1:00 pm – 1:25 pm

ME68 Quantifying Emission Rate of Super Emitter with an OGI Camera

Yousheng Zeng, Jon Morris, Al Sanders, Providence Photonics, LLC, Baton Rouge, LA

1:25 pm – 1:50 pm

ME39 Next Generation Image-based Quantification

John Leitel, Konica Minolta Sensing Americas

1:50 pm – 2:15 pm

ME93 Partially Single-Blind Controlled Release Assessment of the Performance of Quantitative Optical Gas Imaging (OQGI) Instrument

Chiemezie Ilonze, Clay Bell, Daniel Zimmerle, Colorado State University, Fort Collins, CO; Jiayang (Lyra) Wang, Arvind P. Ravikumar, University of Texas at Austin, Austin, TX

2:15 pm – 2:40 pm

ME104 Gas Detection and Quantification Methodology Using an Innovative Infrared Hyperspectral Gas Cloud Imaging System

Quan Shen, Junchuan Shi, Aaron Araujo, Robert Kester, Honeywell Process Solutions, Houston, TX

Session 2C: Community Monitoring

[concurrent with Sessions 2A and 2B]

Auditorium

Chairs: Corey Mocka and Rachelle Duvall, US EPA

1:00 pm – 1:25 pm

ME06 Inverse Modeling of Formaldehyde Based on MOOSE Measurements

Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

1:25 pm – 1:50 pm

ME24 Community Monitoring Hexavalent Chromium – The City of Paramount

Randall Baxter, Trinity Consultants

1:50 pm – 2:15 pm

ME58 Hyper Local Community Monitoring With an Integrated Mobile Platform in Sacramento, CA

Justin Coughlin, Abhilash Vijayan, Eric Winegar, Steve Brown, Hilary Hafner, Nathan Pavlovic, Charles Scarborough, Sonoma Technology, Inc., Petaluma, CA; Nick Spada, University of California at Davis, Davis, CA; Janice Lam Snyder, Levi Ford, David Yang, Katherine Chin, Sacramento Metropolitan Air Quality Management District, Sacramento, CA; Anthony Miller, Aurelie Marcotte, Entanglement Technologies, Inc., San Bruno, CA

2:15 pm – 2:40 pm

ME65 Exploring Ways to Communicate Mobile Air Toxics Data to Communities

Jason C. Schroder, Derek Price, Ashley Collier-Oxandale, Natalie Smith, Ezra Levin, Rudra Pokhrel, Colorado Department of Public Health and Environment

2:40 pm – 3:10 pm

Networking Break, Exhibition Viewing, and Poster Viewing

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Session 3A: GHG Monitoring – Landfills

[concurrent with Sessions 3B and 3C]

Imperial 123

Chairs: Ali Lashgari, Project Canary, PBC, and Bryan Staley, Environmental Research & Education Foundation

3:10 pm – 3:35 pm

ME85 Measurements of Fugitive Emissions of Methane Using Modified SOF

Johan Mellqvist, Jerker Samuelsson, John Johansson, Brian Offerle, FluxSense Inc, Huntington Beach, CA; Pontus Andersso, FluxSense Inc and South Coast Air Quality Management District, Diamond Bar, CA

3:35 pm – 4:00 pm

ME07 Gaussian Plume Inverse Modeling of Methane Emissions from Landfills

Eduardo Olaguer, Michigan Department of Environment, Great Lakes, and Energy (EGLE)

4:00 pm – 4:25 pm

ME132 A Controlled Release Experiment For Investigating Methane Measurement Performance at Landfills

David Risk, Colin Vibert, Elise Canning, Pylyp Buntov, Yurii Dudak, St. Francis Xavier University, Antigonish, Canada

4:25 pm – 4:50 pm

ME56 Advances in Data-driven Design of Tracer Dispersion CFD Models for the Purpose of Urban-scale Evolution and Quantification of GHG Emissions

Jorge Guerra, Nathan Eichenlaub, Project Canary, PBC

Session 3B: Remote Sensing of Flares and Stacks

[concurrent with Sessions 3A and 3C]

Royal AB

Chairs: Tracey Footer, ERG, and Gerri Garwood, US EPA

3:10 pm – 3:35 pm

ME29 Hyperspectral Thermal Infrared Imaging of Fugitive Methane Emissions from Flare Stacks

Mark L. Norman, Telops, Inc., Quebec City, Canada

3:35 pm – 4:00 pm

ME69 Precision and Accuracy of the VISR Lite Method for Flare Monitoring

Yousheng Zeng, Jon Morris, Providence Photonics, LLC, Baton Rouge, LA; Tracey Footer, Eastern Research Group, Inc.

4:00 pm – 4:25 pm

ME79 Measurements of Methane, Soot, and NOx from Flares Subjected to Crosswind

Alexis D. Tanner, Milad Mohammadi, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Brian M. Crosland, CanmetENERGY Ottawa, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

4:25 pm – 4:50 pm

ME87 Evaluation of the Potential Accuracy of a UAV-Based Methodology for Flare Combustion Efficiency

Simon A. Festa-Bianchet, Milad Mohammadi, Alexis D. Tanner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada; Gregory A. Kopp, Western University, London, ON, Canada

Session 3C: Community Monitoring

[concurrent with Sessions 3A and 3B]

Auditorium

Chairs: Andrea Clements and Corey Mocka, US EPA

3:10 pm – 3:35 pm

ME90 Combining Fixed Site and Mobile Measurements of VOCs, Metals, and PMs to Quantify Community Exposure and Risk: Results from the HAP-MAP

Peter DeCarlo, Ellis Robinson, Mina Tehrani, Roger Sheu, Carolyn Gigot, Andrea Chiger, Megan Claflin, Ed Fortner, Manjula Canagaratna, Conner Daube, Ben Werden, Rob Roscioli, Jordan Krechmer, Scott Van Bramer, Ana Rule, Kirsten Koehler, Tara Yacovitch, Thomas Burke, Keeve Nachman, Johns Hopkins University

3:35 pm – 4:00 pm

ME71 Evaluation of the Impact Large Scale Pollution Source on a Nearby Public School in an Environmental Justice Community

Hailey Gebhart, Cary Secrest, Argos Scientific, Inc., WA; Michael Lopes-Serrao, Parkrose School District, OR; Jessica Kleiss, Lewis and Clark College, OR; Melisa Crosby, Parkrose Argay Opportunity Coalition, OR

4:00 pm – 4:25 pm

ME99 Overview of an Innovative Community Air Monitoring Program in the SF Bay Area

Marilyn Bardet, Kathy Kerridge, Nancy Lund, David Lindsay, Benicia Community Air Monitoring Program, Benicia, CA

4:25 pm – 4:50 pm

ME49 Overview of the Porter Ranch Community Air Monitoring Project

Tarryn Jubelin, Donald Gamiles, Argos Scientific, Inc., CA; Jochen Stutz, Fedele Colosimo, University of California, Los Angeles, CA; Patty Glueck, Aliso Mom's Alliance, CA; Olga Pikelnaya, Yifan Yu, Andrea Polidori, South Coast Air Quality Management District, Diamond Bar, CA

5:00 pm – 6:00 pm

Networking Reception in the Exhibit Hall

Imperial 4567 & Foyer

Explore our exhibits, learn about their services, and make connections with all conference attendees!

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Technical Program – Wednesday, November 15

7:30 am – 5:00 pm

Conference Registration
Imperial Foyer

7:30 am – 8:30 am

Continental Breakfast and Presenters' Meeting
Imperial 4567 and Session Rooms

7:30 am – 3:30 pm

Exhibition Viewing
Imperial 4567

Session 4A: Oil and Gas Studies

[concurrent with Sessions 4B and 4C]

Imperial 123

Chairs: Melissa Weitz, US EPA, and Ali Lashgari, Project Canary, PBC

Session 4B: Advances in Stationary Source Method

[concurrent with Sessions 4A and 4C]

Royal AB

Chairs: Ray Merrill and Jeff Ryan, US EPA

Session 4C: Emissions from Agriculture

[concurrent with Sessions 4A and 4B]

Auditorium

Chairs: Ian Rumsey and John Walker, US EPA

8:30 am – 8:55 am

ME88 A National-Scale Measurement-Based Oil and Gas Methane Census

Matthew R. Johnson, Bradley M. Conrad, David R. Tyner, Carleton University, Ottawa, ON, Canada

8:55 am – 9:20 am

ME40 Methane Emissions from Abandoned Oil and Gas Wells in Colorado

Anna Hodshire, Stuart N. Riddick, Mercy Mbu, Arthur Santos, Ethan Emmerson, Fancy Cheptonui, Cade Houlihan, Younki Cho, Wendy Hartzell, Dan Zimmerle, Colorado State University, Fort Collins, CO

9:20 am – 9:45 am

ME19 Evaluating Natural Gas Emissions from Upstream Oil and Gas Facilities in West Virginia using Next Generation Measurement Methods

Tracey L. Footer, Eastern Research Group, Inc., Cottonwood Heights, UT; Eben Thoma, US EPA, RTP, NC; Derek Johnson, Nigel Clark, West Virginia University, Morgantown, WV; Scott Herndon, Conner Daube, Aerodyne, Billerica, MA

9:45 am – 10:10 am

ME22 Methane Venting from Production Storage Tanks: Temporal Variability and Implications for Measurement

Simon A. Festa-Bianchet, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

8:30 am – 8:55 am

ME52 Non-nulling Protocols for Fast, Accurate, 3-D Velocity Measurements in Stacks

A. Johnson, I. Shinder, J. Filla, J. Boyd, M. Moldover National Institute of Standards and Technology; M. Gentry, Airflow Sciences Corporation

8:55 am – 9:20 am

ME123 Characteristics of Condensable Particulate Formation in the EPA Method 202 Sampling Train

Paul Van Rooy, Dave Nash, Ned Shappley, Walter Lin, US EPA OAR, RTP, NC; Peter Kariher, US EPA ORD, RTP, NC; Jason Dewees, US EPA OAR and ORD

9:20 am – 9:45 am

ME20 Updates on an Analytical Method for Detecting Per- and Polyfluoroalkyl Substances (PFAS) from Stationary Source Air Emissions – Other Test Method 45 (OTM-45)

Marci Smeltz, Jeffrey Ryan, Stephen Jackson, Erin Shields, US EPA ORD; Raymond Merrill, US EPA OAR, Matthew Allen, Jacobs Technology Inc., Critical Mission Solutions

9:45 am – 10:10 am

ME36 Per- and Polyfluorinated Alkyl Substances (PFAS) Detected in Source Samples Using Thermal Desorption-Gas Chromatography/Mass Spectrometry

M. Ariel Geer Wallace, Stephen Jackson, US EPA ORD, RTP, NC; William Preston, CSS Inc., Durham, NC; Laura Miles, Hannah Calder, Stephen Davies, Markes International, Bridgend, Wales, UK

8:30 am – 8:55 am

ME66 Using Machine Learning to Optimize Hyperparameters for Process-based Models for Estimating Ammonia Emitted from Stored Dairy Manures

Rana Genedy, Jactone Ogejo, Virginia Tech

8:55 am – 9:20 am

ME134 Ammonia Concentrations and Modelled Dry Deposition Across the Snake River Valley

J.T. Walker, J. Bash, US EPA ORD, Durham, NC; A. Leytem, US Department of Agriculture, Kimberly, ID; Z. Wu, RTI International, Durham, NC; G. Beachley, US EPA Office of Atmospheric Protection, Washington, DC; C. Baublitz, US EPA ORD and OAQPS, Durham, NC

9:20 am – 9:45 am

ME74 Interaction Between Increased Animal Welfare and Emissions from Pig Houses

Michael Jørgen Hansen, Pablo Garcia Perez, Lise Bonne Guldberg, Anders Feilberg, Aarhus University; Vivi Aarestrup Moustsen, SEGES Innovation P/S; Yolande Seddon, University of Saskatchewan

9:45 am – 10:10 am

ME106 Insights on Methane Emission from Pig Manure Management by Combining Emission Measurement and Modeling

Sasha D. Hafner, Frederik R. Dalby, Michael J. Hansen, Aarhus University, Aarhus, Denmark

10:10 am – 10:40 am

Networking Break, Exhibition Viewing, and Poster Viewing

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Technical Program – Wednesday, November 15, con't.

Session 5A: GHG Monitoring – ONG

[concurrent with Sessions 5B and 5C]

Imperial 123

Chairs: Chiemezie Illonze, Colorado State University, and Melissa Weitz, US EPA

10:40 am – 11:05 am

ME76 Development and Testing of the Sensit FMD Methane Sensor and Progress Towards Collaborative NGEM Methods

Jason Gu, Jacob Melby, Sensit Technologies, Inc., Valparaiso, IN; Wyatt Champion, Megan MacDonald, Eben Thoma, US EPA ORD, RTP, NC

11:05 am – 11:30 am

ME12 Finding & Quantifying Fugitive Emitters with Novel Quantum Lidar Gas Imaging

Aaron Van Pelt, QLM Technology Ltd.; Andrew Speck, SLB

11:30 am – 11:55 am

ME34 Probabilities of Detection for Aerial Survey of Oil and Gas Setor Methane Emissions

Michael J. Thorpe, Dominic Altamura, Cameron Dudiak, Bridger Photonics, Inc., Bozeman, MT; Bradley M. Conrad, David R. Tyner, Matthew R. Johnson, Carleton University, Ottawa, ON, Canada

11:55 am – 12:20 pm

ME72 Near-Source Safety and Health Risks of Oil and Gas Super Emitters

Kelsey R. Bilsback, Chowdhury G. Moniruzzaman, Jeremy K. Domen, Lee Ann L. Hill, Jessie M. Jaeger, Jasmine Lee, Sebastian T. Rowland, PSE Healthy Energy, Oakland, CA; Daniel Bon, Carbon Mapper, Pasadena, CA; Daniel H. Cusworth, Carbon Mapper, Pasadena, CA, and University of Arizona, Tucson, AZ

Session 5B: Fenceline and Near-source Studies

[concurrent with Sessions 5A and 5C]

Royal AB

Chairs: David Berkowitz and Ray Merrill, US EPA

10:40 am – 11:05 am

ME04 Utilization of Broadband Cavity Ring-down Spectroscopy for Mobile Leak Detection in the Port of Rotterdam

Hugo Bison, DCMR Rijnmond Environmental Service, Schiedam, The Netherlands; Aurelie Marcotte, Anthony Miller, Entanglement Technologies, Inc., San Bruno, CA

11:05 am – 11:30 am

ME122 Advances in Long Path FTIR Monitoring for Ethylene Oxide

Troy M. Boley, Spectrum Environmental Solutions LLC, Austin, TX

11:30 am – 11:55 am

ME14 Assessing Fuel Storage Tank Fugitive Emissions Using Lower-cost Sensors and Triggered Canisters: The Greensboro Storage Tank Assessment with Remote Sensing Technologies (G-START) Project

Wyatt M. Champion, Megan MacDonald, Ingrid George, Eben Thoma, US EPA ORD, RTP, NC; Jacob D. Carpenter, Ryan Brown, Daniel Garver, US EPA Region 4, Atlanta, GA; Brittany Thomas, Jacobs Technology Inc., Tullahoma, TN

11:55 am – 12:20 pm

ME45 Demonstration of a Novel Odor Identification System using Remotely Operated Canister Samplers (ROCS) with an Odor Reporting Tool in Rubbertown

Ingrid George, Rachelle Duvall, William Mitchell, Lillian Alston, US EPA ORD, RTP, NC; Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN; Garrett Wiley, Matthew Collins, Jacobs Technology, Inc., RTP, NC; Sheryl Good, EPA Region 4, Atlanta, GA; Billy DeWitt, Michelle King, Louisville Metro Air Pollution Control District, Louisville, KY; Catherine Seppanen, University of North Carolina at Chapel Hill, Chapel Hill, NC

Session 5C: Emissions from Agriculture

[concurrent with Sessions 5A and 5B]

Auditorium

Chairs: John Walker and Ian Rumsey, US EPA

10:40 am – 11:05 am

ME27 Slurry Funnels with Partial Pit Ventilation and Frequent Flushing as a Strategy to Mitigate Emissions from Sow Farms

Pablo García, Anders Feilberg, Lise B. Guldberg, Michael J. Hansen, Aarhus University, Aarhus, Denmark

11:05 am – 11:30 am

ME137 Engineered Windbreak Wall Can Reduce Odor and Ammonia Emissions from Livestock Barns

Sanjay Shah, Richard Goforth, Jonas Asbill, Praveen Kolar, North Carolina State University, Raleigh, NC

11:30 am – 11:55 am

ME94 Significant Underestimation of Broiler House Emission Rates with Static Chamber-Based Methods

Huan Chen, Clemson University, SC; Changyoon Jeong, Louisiana State University Agricultural Center, Bossier City, LA; Kyoung S. Ro, USDA Agricultural Research Service, SC

11:55 am – 12:20 pm

ME18 Ammonia and Ammonium Concentrations and Deposition in the Near Fields of Poultry Production Facilities

Sam Cherotich, Suraya Akter, Lingjuan Wang-Li, Lingying Zhao, Kenneth Anderson, John Classen, Wei Shi, North Carolina State University, Raleigh, NC

12:20 pm – 1:30 pm

Featured Presentation and Lunch
Empire Ballroom

A Historical Perspective on Black Carbon Aerosols

Dr. Tony Hansen, President, Magee Scientific Co.;
Lawrence Berkeley National Lab (retired)

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FINAL PROGRAM

Technical Program – Wednesday, November 15, con't.

Session 6A: GHG Monitoring – ONG

[concurrent with Sessions 6B and 6C]

Imperial 123

Chairs: Mercy Mbua, Colorado State University, and Paul Van Rooy, US EPA

1:30 pm – 1:55 pm

ME73 Quantifying Emissions from a Small Oil Sands Demonstration Pit Lake using OP-FTIR Measurements Coupled with Vertical Radial Plume Mapping

Youssef Taha, Ignacio Gallardo, Ahmad Kia, Randy Rudolph, AECOM

1:55 pm – 2:20 pm

ME102 Detection, Localization and Quantification of Methane Emissions on Oil and Gas Sites Using Point in Space Continuous Monitoring Systems

Dorit Hammerling, William Daniels, Meng Jia, Colorado School of Mines

2:20 pm – 2:45 pm

ME95 Assessing the Progress of the Performance of Continuous Emission Monitoring Solutions Under a Single-Blind Controlled Testing Protocol

Chiemzie Ilonze, Ethan Emerson, Daniel Zimmerle, Aidan Duggan, Colorado State University, Fort Collins, CO

2:45 pm – 3:10 pm

ME83 A Data-Driven Algorithm for Optimizing Continuous Monitoring Point-Sensor Placement on Oil and Gas Sites

Meng Jia, Troy Sorensen, Dorit Hammerling, Colorado School of Mines

Session 6B: NGEM for Ethylene Oxide

[concurrent with Sessions 6A and 6C]

Royal AB

Chairs: Megan Macdonald and David Berkowitz, US EPA

1:30 pm – 1:55 pm

ME30 Ethylene Oxide (EtO) Field Ambient Method Evaluation (FAME)

Ali Gitipour, Lillian Alston, Ingrid George, US EPA ORD, RTP, NC; Faith Waldron, Preston Burnette, Jacobs Technology, Inc., RTP, NC; Alexia Scott, Eastern Research Group; Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN

1:55 pm – 2:20 pm

ME86 Performance Evaluations of CRDS-Based Ethylene Oxide Monitoring Systems for Workplace and CEMS Applications

J.D. Bent, G. Lucic, D. Miller, J. Avrunin, K. Baumann, K. Skog, Picarro Inc, Santa Clara, CA

2:20 pm – 2:45 pm

ME117 Mobile and Multipoint Process Unit Monitoring of Ethylene Oxide Emissions at a Chemical Facility in EPA Region 7

Eben D. Thoma, Ali Gitipour, Ingrid George, Peter Kariher, Megan MacDonald, Wyatt Champion, US EPA ORD, RTP, NC; Alex Edwards, US EPA Region 7, Lenexa, KS; Josh Childers, Volker Schmid, CleanAir Engineering Inc., Pittsburgh, PA

2:45 pm – 3:10 pm

ME126 Ethylene Oxide Measurements Near a Chemical Facility in Verona, Missouri: Interim Results

Alex Edwards, Andy Hawkins, US EPA Region 7 Air and Radiation Division; Adam Zachary, US EPA Region 7 Laboratory Services and Applied Science Division; Mike Davis, US EPA Region 7 Office of Intergovernmental Affairs; Eben Thoma, Ingrid George, Ali Gitipour, Megan MacDonald, US EPA ORD

Session 6C: Air Toxics/VOC Ambient

[concurrent with Sessions 6A and 6B]

Auditorium

Chairs: Doris Chen, US EPA, and Randy Bower, ERG

1:30 pm – 1:55 pm

ME136 Determination of Ethylene Oxide at Ultra-Trace Concentrations in Ambient Air Using EPA Method TO-15A: Optimization of VOC Preconcentrator and GC/MS Analytical Method Parameters

Tamira Cousett Karen Oliver, Andrew Whitehill, US EPA ORD, RTP, NC; Carlton Witherspoon, Jacobs Technology, Inc., Tullahoma, TN

1:55 pm – 2:20 pm

ME107 A Cryogen Free TO15 Preconcentrator with Reduced Air Background for Measuring Ethylene Oxide at Low Part Per Trillion Levels

Daniel B Cardin, Tom X Robinson, Daniel J Cardin, John Quintana, Entech Instruments, Simi Valley, CA

2:20 pm – 2:45 pm

ME32 Incorporating Ethylene Oxide Into TO-15a. Discussion on the Development of the Analytical Method and Efforts to Achieve the Lowest Possible Detection Limit

Ericka Hackmeister, Markes International Inc, Sacramento, CA; Hannah Calder, Laura Miles, Markes International Ltd, Brigend, UK

2:45 pm – 3:10 pm

ME129 Method TO-15 – Overcoming the Difficulties of Implementing TO-15A in Ambient Air Laboratories

Mitchell Howell, Kyle Rasmus, Julie L. Swift, Donna Tedder, Eastern Research Group, Inc., Morrisville, NC

3:10 pm – 3:40 pm

Networking Break, Exhibition Viewing, and Poster Viewing

Imperial 4567 & Foyer

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Technical Program – Wednesday, November 15, con't.

Session 7A: GHG Monitoring – ONG

[concurrent with Sessions 7B and 7C]

Imperial 123

Chairs: Mercy Mbua and Chiemezie Ilonze,
Colorado State University

3:40 pm – 4:05 pm

ME03 Examining Advancements in
Semiconducting Methane Sensors: Reducing
Moisture Interference in Stationary Methane
Emissions Detection Units

Michael Krenke, Field Geo Services, Inc.

4:05 pm – 4:30 pm

ME05 Comparing Mox and Laser Spectroscopy
Technology in Point Sensor Networks for
Continuous Monitoring of Methane Emissions

*Javier Bilbao, Sensirion Connected Solutions,
Switzerland*

4:30 pm – 4:55 pm

ME46 A New Instrument for Ambient
Atmospheric Methane Measurement

*Matt Walbran, David Bones, Anna Farquhar, Geoff
Henshaw, Aeroqual*

4:55 pm – 5:20 pm

ME50 Comparative Performance Analysis
of Ground-Based Continuous Methane
Measurement Sensors

*Dustin Solomon, Ali Lashgari, William Foiles,
Project Canary, PBC*

Session 7B: Fugitive and Fenceline NGEM

[concurrent with Sessions 7A and 7C]

Royal AB

Chairs: Stephen Jackson and Ali Gitipour, US EPA

3:40 pm – 4:05 pm

ME15 Towards Application-based Automated
Processing of Fenceline Sensor Data

*Megan MacDonald, Eben Thoma, Wyatt
Champion, Ingrid George, US EPA ORD, RTP, NC*

4:05 pm – 4:30 pm

ME33 Strategies for Geospatial Mobile
Monitoring with the DART

Alexia Scott, ERG, Morrisville, NC

4:30 pm – 4:55 pm

ME84 Continuous Community Monitoring of
Air Quality Around Major Refineries in Los
Angeles Area Using Mobile Extractive FTIR and
DOAS

*Jerker Samuelsson, Johan Mellqvist, Antony
Babore, Daniel Ruiz, FluxSense Inc, Huntington
Beach, CA; Olga Pikelnaya, South Coast Air Quality
Management District, Diamond Bar, CA*

4:55 pm – 5:20 pm

ME70 Utilizing Multiple Air Detection Methods
for Effective Leak Detection and Repair at
Refineries

*Eliko Angel, Amir Sagi, Bazan Oil Refiners, Haifa,
Israel; Mark Wicking Baird, Argos Scientific Africa
Inc., Cape Town, South Africa*

Session 7C: Air Toxics/VOC Ambient

[concurrent with Sessions 7A and 7B]

Auditorium

Chairs: Randy Bower, ERG, and Doris Chen, US EPA

3:40 pm – 4:05 pm

ME124 Update on Diffusive Sampling of
Volatile Organic Compounds on CarbopackTM
X and CarbographTM 5TD

*Andrew R. Whitehill, Tamira Cousett, Karen Oliver,
US EPA ORD, RTP, NC*

4:05 pm – 4:30 pm

ME110 Optimizing EPA Method 325 by
Performing Secondary Trapping of TD Tube
Recovered Compound Inside of the GCMS
Oven

*Daniel B Cardin, Daniel J Cardin, Tom Robinson,
Weier Hao, John Quintana, Entech Instruments,
Simi Valley, CA*

4:30 pm – 4:55 pm

ME118 Highly Resolved Formaldehyde
Measurements in Suburban Outdoor
and Indoor Air: Long-term Monitoring of
Concentrations and Emission Rates Suitable for
Model Validations

*Karsten Baumann, Jonathan Bent, Jan Woźniak,
Juan Carlos Guerrero, Kai Skog, Chris Rella, Joel
Avrunin, Picarro Inc., Santa Clara, CA*

4:55 pm – 5:20 pm

ME77 Using Automated Gas Chromatography
for Continuous Monitoring of Ambient Air
Toxics in Communities

*Yifan Yu, Catalina Tsai, Olga Pikelnaya, Andrea
Polidori, South Coast Air Quality Management
District, Diamond Bar, CA; Tsung-Kuan A. Chou,
Tirah Wu, Douglas Chen, Tricornetech Corporation,
San Jose, CA*

5:30 pm – 7:00 pm

Women in Science Networking Event

Imperial 123 & Foyer

Women in Science Now: How to Use Science to Overcome the Remaining Hurdles to Equity

Lisa M.P. Munoz, Author of *Women in Science Now: Stories and Strategies for Achieving Equity*

Moderated by Aurelie Marcotte, Entanglement Technologies

Networking event to follow discussion. All attendees are welcome to join!

FINAL PROGRAM

Technical Program – Thursday, November 16

7:30 am – 12:00 pm
Conference Registration
Imperial Foyer

7:30 am – 8:30 am
Continental Breakfast and Presenters' Meeting
Imperial Foyer and Session Rooms

Session 8A: Advances in Underground NG Leak Detection

[concurrent with Sessions 8B and 8C]
Imperial 123

Chairs: Hannah Halliday and Wyatt Champion, US EPA

Session 8B: Advancement in EtO Measurements

[concurrent with Sessions 8A and 8C]
Royal AB

Chairs: Ali Gitipour and Nealson Watkins, US EPA

Session 8C: Mobile Source Emissions

[concurrent with Sessions 8A and 8B]
Auditorium

Chairs: Eric Winegar, Sonoma Technology, Inc., and Joe Martin, US EPA

8:30 am – 8:55 am

ME09 Methane Emissions Quantification using Advanced Mobile Leak Detection and EQ Platforms

Alnoor Ebrahim, John D. Drumheller, Southern Cross/Sparus Holdings, Norcross, GA

8:55 am – 9:20 am

ME41 Using Controlled Subsurface Releases to Investigate the Effect of Leak Variation on Above-ground Natural Gas Detection

Mercy Mbuu, Stuart N. Riddick, Fancy Cheptonui, Cade Houlihan, Younki Cho, Daniel J. Zimmerle, Colorado State University, Fort Collins, CO; Shanru Tian, The University of Texas, Arlington, TX; Kathleen M. Smits, South Methodist University, Dallas, TX

9:20 am – 9:45 am

ME43 Drastically Reduce Methane Emissions: Accelerate the Detection and Repair of Large Sources

Robby Vaughn, Picarro, Santa Clara, CA

9:45 am – 10:10 am

ME98 Modeling Approach to Quantify a Below Ground Pipeline Leak Using Aboveground Instruments

Fancy Cheptonui, Stuart N. Riddick, Dan Zimmerle, Colorado State University, Fort Collins, CO

8:30 am – 8:55 am

ME57 Cavity Ring-Down Spectroscopy Method Validation and OTM Development

Josh Childers, Clean Air Engineering, Inc., Pittsburgh, PA

8:55 am – 9:20 am

ME97 Applying OE-FTIR for Compliance with Ethylene Oxide Emissions Test Methods

Olivia Madamba, Kelly McPartland, Thermo Fisher Scientific, East Windsor, CT

9:20 am – 9:45 am

ME115 Speciated Volatile Organic Compound and Ethylene Oxide Emissions from Residential Wood and Pellet Stove Appliances

Nina Warren, Oak Ridge Associated Universities, Oak Ridge, TN; Ingrid George, Larry Virtaranta, Edgar Thompson, Peter Kariher, Joseph Martin, Michael Hays, Tiffany Yelverton, Amara Holder, Lillian Alston, US EPA ORD, RTP, NC; Angelina Brashear, US EPA OAQPS, RTP, NC; Diya Yang, Jacobs Technology, Inc., RTP, NC

9:45 am – 10:10 am

ME59 Review of Ethylene Oxide Monitoring and Measurements with AROMA-ETO

Anthony Miller, Jake Margolis, Aurelie Marcotte, Michael Armen, Entanglement Technologies, Inc., San Bruno, CA

8:30 am – 8:55 am

ME48 Personal Exposure to Particle Number Concentration in Various Transport Modes During Rush Hour Along a Fixed Route in Delhi

Akash Kumar Singh, Dudun Mehta, Arun Srivastava, Jawaharlal Nehru University, New Delhi

8:55 am – 9:20 am

ME61 Variability of Light-duty Vehicle Emissions in Utah County

Darrell Sonntag, Amber Allen, Brigham Young University

9:20 am – 9:45 am

ME121 Desorption and Quantification of 6PPD and 6PPD-quinone from Tire Wear Particulate on Quartz Fiber Filters

Joseph Martin, US EPA ORD

9:45 am – 10:10 am

ME116 Unreported VOC Emissions from Road Transport Including from Electric Vehicles

Leslie Silva, Nathan Hoppens, Syft Technologies, Los Angeles, CA; Samuel Cliff, Ally Lewis, Marvin Shaw, James Lee, Stephen Andrews, Jim Hopkins, Ruth Purvis, Amber Yeoman, University of York, York, UK; Michael Flynn, University of Manchester, Manchester, UK

10:10 am – 10:40 am

Networking Break

Imperial Foyer

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Technical Program – Thursday, November 16, con't.

Session 9A: Advancements in GHG Mobile Monitoring Platforms

[concurrent with Sessions 9B and 9C]

Imperial 123

Chairs: Aurelie Marcotte, Entanglement Technologies, and Hannah Halliday, US EPA

10:40 am – 11:05 am

ME42 Towards Understanding Methane Emission Uncertainties from Datasets Simulating UAV-mounted TDLAS In-situ Measurements

Kyle Dawson, Abigail Corbett, Brendan Smith, Peter Barber, Iain Cooper, SeekOps, Inc.

11:05 am – 11:30 am

ME44 Industrial GHG Emissions Monitoring from In-situ Methane and CO2 Concentration Measurements On-board an Unmanned Aircraft Vehicle

Ludovic Donnat, Catherine Juéry, Olivier Ventre, Florent Pineau, Abel Maunoury, Nicolas Galas, Laura Chaussinand, Rachel Levi, Theo Hirth, Caroline Castano Uribe, Nicolas Huet, Total Energies OneTech, France; Lilian Joly, Jean-Louis Bonne, Nicolas Dumelié, Jérémie Burgalat, Nicolas Chauvin, Julien Cousin, Thomas Decarpenterie, Reims University, France

11:30 am – 11:55 am

ME82 Drone Based Measurements of Emissions of CH4 in Industrial Applications

Johan Mellqvist, Vladimir Conde, Chalmers University of Technology, Gothenburg, Sweden; Sumedh Bhandodkar, Samuel Brohede, Pontus Andersson, Brian Offerle, Jerker Samuelsson, FluxSense AB, Gothenburg, Sweden

11:55 am – 12:20 pm

ME138 Resolving Pitfalls in Nitrogen Dioxide Measurements

Charles Odame-Ankrah, Global Analyzer Systems Ltd

Session 9B: Air Shed Measurements and Analysis

[concurrent with Sessions 9A and 9C]

Royal AB

Chairs: Nealson Watkins and Andrew Whitehill, US EPA

10:40 am – 11:05 am

ME60 Observations of Volatile Organic Compounds and Nitrogen Oxides at Carlsbad Caverns National Park: Source Attribution and Impacts on Ozone Formation

Andrey Marsavin, Da Pan, Yong Zhou, Amy P. Sullivan, Lillian E. Naimie, Ilana B. Pollack, Julieta F. Juncosa Calahoranno, Emily V. Fischer, Barkley C. Sive, Jeffrey L. Collett Jr., Colorado State University, Fort Collins, CO; Anthony J. Prenni, Bret A. Schichtel, Colorado State University and National Parks Service Air Resource Division, Lakewood, CO; Katherine B. Benedict, Los Alamos National Laboratory, Los Alamos, NM

11:05 am – 11:30 am

ME64 A Deep Dive into Next Generation BTEX Ambient Air Monitors

Jason C. Schroder, Pamela Rickly, Derek Price, Heather McIntyre, Jon Kinney, Colorado Department of Public Health and Environment

11:30 am – 11:55 am

ME96 Using a Spatial Canister Network to Determine Source Contributions and Local Emission Rates of Methane and Volatile Organic Compounds

Jeffrey L. Collett, Jr., Emily Lachenmayer, Weixin Zhang, I-Ting Ku, Da Pan, Yong Zhou, Colorado State University, Fort Collins, CO; Brent Buck, Morgan Frazier, Ajax Analytics, Fort Collins, CO

11:55 am – 12:20 pm

ME08 Estimating Local-scale Impacts of Air Pollution Sources Using High Time Resolution Measurement Data

Janet Burke, US EPA ORD, Durham, NC; Ronald Henry, University of Southern California (retired), Los Angeles, CA; Will Wetherell, Missouri Department of Natural Resources, Jefferson City, MO; Katherine Haile, Scott Hamilton, US EPA Region 5, Chicago, IL; Charles Scarborough, Crystal McClure, Sonoma Technology, Petaluma, CA; Tim Hanley, Nealson Watkins, US EPA OAR, Durham, NC

Session 9C: Data Quality and Quality Assurance

[concurrent with Sessions 9A and 9B]

Auditorium

Chairs: Joe Martin, US EPA, and Eric Winegar, Sonoma Technology, Inc.

10:40 am – 11:05 am

ME55 Development of an Efficient Method for Trace-level Analysis of Ozone Depleting Substances in Ambient Air

Lilin Zhou, Zhichao Liu, Yujun Hu, Shuai Wu, Qingyu Zhang, Sirong Lin, Gesheng Dai, Nutech Instruments, Inc.

11:05 am – 11:30 am

ME01 An Improved Approach to Analysis of Air Quality Data

David R. Weise, USDA Forest Service, Riverside, CA; Javier Palarea-Albaladejo, University of Girona, Girona, Catalonia, Spain

11:30 am – 11:55 am

ME25 A Remote Calibration Methodology for Urban Air Sensor Networks

Lena F Weissert, Geoff S Henshaw, David E Williams, Aeroqual

11:55 am – 12:20 pm

ME80 Performance Evaluation of VOCS and PM 2.5 Low Cost Sensors in Harris County, TX

Loredana Suci, Bradley Flowers, AECOM Technical Services Inc., Houston, TX

FINAL PROGRAM

Technical Posters

Posters will be on display in the Imperial Foyer to view during breaks throughout the conference!

ME11 Advanced Mobile Monitoring Platform
Paul Wehnert, Heath Consultants

ME16 A Low-Cost Sensor Platform for Mobile Methane Measurements
Jonathan Silberstein, University of Colorado at Boulder, Boulder, CO

ME28 Proactive Emission Monitoring in Petrochemical Industries: An Expanded Application Case for the Extended Use of PAMS
Chung-Laing Tai, Jen-Shuo Hsieh, Tsang-Chin Chen, EPA, Executive Yuan, Taiwan; Chi-Pei Li, Yen-Ting Lu, Tzu-Hao Kuo, Sinotech Engineering Services, Ltd., Taipei, Taiwan

ME31 Characterization of Ambient Hazardous Air Pollutant and Control from Gas Stations
Yung-Chen Yao, Shih-Ru Tsai, Industrial Technology Research Institute, Taiwan, ROC; Chung-Liang Tai, Environment Protection Administration, Executive Yuan, Taiwan, ROC; Wen-Tzu Liu, Chung Yuan Christian University, Taoyuan, Taiwan, ROC

ME35 High-Resolution Mobile Community Air Monitoring in Disadvantaged Communities Across New York State

Joseph Marto, Dominic Moronta, Gavin Lemley, Amanda Teora, New York State Department of Environmental Conservation, Albany, NY

ME53 Simple, Novel High-Precision Cavity Ringdown Spectroscopy for Air Monitoring of CO₂ and CH₄

James N. Hodges, Rebecca Livingston, Brian M. Siller, Process Insights, Horsham, PA

ME78 Defensible Emissions Measurement Methods Are Required to Support Plugging and Abandonment of Orphaned Oil and Gas Wells

David L. Elam, Jr., TRC Environmental Corporation; David Stewart, Greenfield Environmental Solutions

ME91 A Multi-disciplinary Approach to Estimate the Temporal and Spatial Emissions of Fugitive Dust from Desert Area Sources

Maarten D. Schreuder, Yohannes T. Yimam, Brian M. Schmid, Hank Dickey, Formation Environmental LLC, Sacramento, CA; Jessica Humes, Imperial Irrigation District, Imperial, CA

ME111 Reliable Long-Term Sampling into Vacuum Sampling Canisters

Daniel B. Cardin, John Quintana, Entech Instruments, Simi Valley CA

ME112 Advanced Quantification of Methane Emissions Using UAV Curtain Flux Method and Comparison with Flux Chamber Method

Ramin Yazdani, Sajjad Karimi, University of California at Davis; Paul Imhoff, University of Delaware; Madjid Delkash, Delkash Consulting; Mint Kunkel, Michael Thorpe, Bridger Photonics, Inc.; Eladio Knipping, Stephanie Shaw, EPRI

ME123 Characteristics of Condensable Particulate Formation in the EPA Method 202 Sampling Train

Paul Van Rooy, Dave Nash, Ned Shappley, Walter Lin, US EPA OAR, RTP, NC; Peter Kariher, US EPA ORD, RTP, NC; Jason Dewees, US EPA OAR and ORD

ME131 Use and Modifications to the Ambient Ion Monitor for Use in Source Characterization in Agricultural Environments

Philip J. Silva, USDA-ARS, Bowling Green, KY

UPCOMING A&WMA EVENTS

December 6-7, 2023

48th Annual A&WMA Air Information Exchange in Durham, NC

January 23-25, 2024

The Science of PFAS: Chipping Away at the Details in Raleigh, NC

May 14-16, 2024

Odour Management: Embracing Global Perspectives in Toronto, ON

June 24-27, 2024

A&WMA's 117th Annual Conference & Exhibition in Calgary, AB

For more details on our events, visit www.awma.org/conferences.

Thank You to Our Exhibitors

2B Technologies
www.twobtech.com

Booth #20

2B Technologies is dedicated to the development and commercialization of new analytical instruments for atmospheric and environmental measurements. We specialize in miniaturized instruments for measurements of ozone (O3), nitric oxide (NO), nitrogen dioxide (NO2), mercury (Hg), black carbon, PM2.5, and other chemical species in air. Our AQSync Air Quality Monitoring Station is a compact air monitoring solution utilizing a combination of FEM ozone and NO2 measurements with proven near reference grade techniques for measuring CO and PM. The AQSync also provides measurements of NO, CO2, temperature, pressure, relative humidity, wind speed, and wind direction while having the ability to upload data directly to the cloud.

ABB
www.new.abb.com/oil-and-gas/services

Booth #18

ABB Measurement & Analytics group is a global company known for its advanced leak detection systems, including HoverGuard™, a drone-based solution for detecting, mapping and quantifying methane and natural gas leaks. These ABB solutions, which leverage and build on more than two decades of experience providing the highest performance methane analyzers available, produce comprehensive digital reports and maps that summarize the results after each survey. This proven laser-based measurement technology can now be applied to all industries to localize methane leaks and quantify their size.

Aerosol Magee Scientific
www.aerosolmageesci.com

Booth #21

Aerosol Magee Scientific is a leading developer and manufacturer of instrumentation for air quality research and measurement, and a leading organization focusing on research of black carbon and other carbonaceous aerosols and their impact on climate change and human health. It has developed the Aethalometer® AE33, the most widely used instrument globally for real-time monitoring of Black Carbon, the second most important climate forcing agent and the most important indicator of the adverse health effects.

Alliance Technical Group, LLC
www.alliancetechgroup.com

Booth #34

Alliance Technical Group (Alliance), headquartered in Decatur, AL, is an environmental testing, data, and analytics company helping our customers achieve their environmental goals. With more than 950 specialists located in over 38 offices nationwide, Alliance is the strategic and trusted partner recognized as the premier technical solution provider for compliance and risk reduction. Alliance addresses our customers' needs with eight service lines—Stack Testing, Leak Detection & Repair (LDAR), Continuous Emission Monitoring Systems (CEMS), Analytical and Laboratory Services, Ambient Air Monitoring, Software, Combustion, and Environmental Consulting—providing solutions that push the boundaries in environmental compliance.

Ambilabs
www.ambilabs.com

Booth #12

Ambilabs specializes in supplying innovative ambient air monitoring technology solutions. Our experienced staff provide instrumentation, systems and solutions for obtaining valid, accurate, and precise air quality data. We directly supply, install, and train on a broad range of gas and particulate monitoring instrumentation for our customers in Canada, USA, and the Caribbean. Please visit our booth to discuss the latest "Airpointer" which is an EPA FEM & FRM designated air monitoring "station in a suitcase", and also the new AqMesh suite of pollutant monitoring sensors packaged together into a tiny pod that is no larger than a football. Ask about our latest "2WIN" high-precision particulate/haze/visibility monitoring sensor solution.

Argos Scientific, Inc.
www.argos-sci.com

Booth #9

Argos Scientific Inc. is an international company that designs and operates fence-line systems, ambient air monitoring networks and data management systems for industry, communities, and government entities. Our expertise lies in offering comprehensive solutions to assess and monitor air quality, ensuring compliance with environmental regulations as well as determining and reducing community impact. With our advanced technology and extensive experience, Argos Scientific Inc. is a trusted partner for those seeking reliable air quality monitoring services by providing high quality defensible data.

Cooper Environmental
www.sci-monitoring.com

Booth #36

Cooper Environmental is the recognized global leader in metals measurement technology. The company was the first to develop and commercialize near real time measurement of metals using X-ray fluorescence (XRF). Its ambient metals monitor, the Xact 625i, has demonstrated accuracy in numerous studies and peer reviewed journal articles and it is used by researchers, environmental agencies and metal producing industries throughout the world. In addition to its ambient metals monitor the company also makes instruments to measure metals in smoke stacks and water and it offers a complete line of sensor based measurements (Sold under the Sailbri Cooper Inc brand name) for criteria pollutants (SO2, CO, O3, NO2, PM10 and PM2.5), hazardous gases (HCl, Cl2, H2S, HF, NH3) and total VOCs.

Distran USA Corp
www.distran.swiss

Booth #35

With regional offices located in the US, Distran is a global manufacturer of Ultrasound Imaging Cameras. Ultrasonic imaging cameras detect leaks of any type of gases: hydrogen, nitrogen, compressed air, methane, steam, vacuum leaks, and more. Based on the combination of an integrated microphone array with an optical camera, the Distran Ultrasonic Cameras capture ultrasounds and show the accurate locations of the leaks. This technology can not only locate leaks but also quantify the severity of a gas leak within seconds. The real-time leak rate quantification displays on the camera and allows users to make informed decisions regarding their leak detection and repairs (LDAR).

FINAL PROGRAM

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DR DAS LTD

www.dr-das.com

Booth #6

DR DAS LTD is the pioneer in digital data collection. Learn about innovative data acquisition and control solutions for air quality, emissions and property line monitoring. Envistas Ultimate DAS, EnvistaARM and public information products (Websites, Kiosks, Telephony, Mobile Apps) will be on display. Learn why 40+ agencies rely on DRDAS.

ECO PHYSICS, INC.

www.ecophysics-us.com

Booth #4

Formed in 1995 as the US distributor for ECO PHYSICS AG of Switzerland, we offer Chemiluminescence NOx, Ammonia, and Paramagnetic O2 analyzers that display measurements for regulatory compliance. All our analyzers have onboard computers for almost unlimited data storage. We are the leading supplier for combustion and atmospheric research. Heated sample inlet systems for measurement of hot, wet gases and dual inlet analyzers for simultaneous measurement of two separate sample sources are also available. New analyzers are FTIR and TDL analyzers from ETG Resources. Accurate at any concentration, contact us for a quote today!

Ecotec Solutions

www.ecotecco.com

Table #1

Ecotec specializes in high-precision hardware, integrated software, and reporting for greenhouse gas monitoring and measurement – providing customers in methane-related markets with auditable reporting for safe, sustainable operations. At our core, we believe that the combination of instrumentation and software can provide durable solutions to reduce our partners' environmental impact while at the same time increasing efficiencies and profitability within their businesses.

ENMET LLC

www.enmet.com

Booth #11

ENMET manufactures a wide array of environmental and industrial health and safety monitoring instruments. Our new GC-based products offer a new cost-effective approach to benzene trace level detection (sub ppb) at the Fenceline and in the workplace with the ability to provide specific gas analysis in complex mixtures.

Entanglement Technologies, Inc.

www.entanglementtech.com

Booth #16

Entanglement Technologies is a chemical technology and engineering solutions manufacturer focused on designing intelligent analyzers which increase the accessibility and actionability of chemical data on our surroundings. Our flagship instrumentation platform, AROMA-VOC, is a thermal desorption, high-performance broadband cavity ringdown spectrometer (TD-CRDS) which provides part-per-trillion (pptv) detection limits on hazardous air pollutants such as BTEX, 1,3-butadiene, ethylene oxide, TCE, H2S and HCN in ambient air and other complex matrices in the field or from any vehicle. No buildout or expert operator is required. The high stability of the CRDS core facilitates operations for long-term, automated fixed-site deployments in remote locations without sacrificing data-quality or throughput. Visit the booth to learn more or contact us at info@entanglementtech.com.

Entech Instruments, Inc.

www.entechnst.com

Booth #1

Entech Instruments is a leading developer and manufacturer of analytical instrumentation that supports professionals around the world in Environmental Air Monitoring, Soil & Water Testing, Industrial Hygiene, Food Safety, Flavor & Aroma R&D, Material Emissions Testing, Forensic Investigation, and Clinical Analysis. We specialize in the creation of inert air and gas sample collection equipment, chemical extraction and preconcentration technology, as well as GC/MS sample preparation and introduction technologies.

Enthalpy Analytical

www.enthalpy.com

Booth #38

Enthalpy Analytical, LLC ("Enthalpy") has been providing reliable, routine, and specialty testing of air, stack, drinking water, groundwater, waste water, storm-water, soil, sludge and hazardous waste for over 50 years. Ever-growing, with a network of laboratories and service centers across the United States, Enthalpy is well positioned to exceed expectations on any type of analytical program.

Global Analyzer Systems

www.gasl.ca

Booth #23

Global Analyzer Systems Ltd. has been a leader in emissions monitoring for 25 years. We ensure safe and sustainable air by bringing certainty to emissions measurement. Our new product line, Direct Optics, is designed to overcome market limitations by offering improved techniques for a more precise measurement of trace gases. Our dual-channel CRDS-based analyzer offers unmatched speed and accuracy while directly and simultaneously measuring NO2 – NOx – NO. Our patented PhoNOTM enables traditionally utilized technologies to measure True NO2, and our Automated Air Sampler allows users to precisely capture pre-set or triggered pollution events. We are customer-focused solutions experts committed to improving the analysis of pollutants.

Heath Consultants

www.heathus.com

Booth #22

Since 1933, Heath has been a field service provider, manufacturer and distributor of innovative products of advanced leak detection products specifically designed for the identification and quantification of greenhouse gas emissions (GHG), including the Intrinsically Safe RMLD-CS™, the next generation of Hi-Flow Samplers and Discover AMLD™ for mobile survey. Heath's products and services are designed to meet the upstream, midstream and downstream markets. Our services include walking and mobile leak surveys, greenhouse gas emissions programs and underground utility locating.

Intecon

www.intecon.com

Table #2

Intecon is a Global Leader in distributing Environmental and Occupational Health & Safety instrumentation to the worldwide market. Intecon is dedicated to delivering top-quality instruments tailored to each market, accompanied by reliable customer service. At Air Quality Measurement Conference, we are proudly showcasing our OIZOM Air Quality Monitoring Systems. Offering accurate air monitoring solutions is the core focus of Oizom. With our wide range of systems, we are able to monitor various environmental parameters like air quality, polluting gases, odorous/toxic gases, noise, weather conditions, radiation, etc. Using our patented e-breathing technology, Oizom assures the highest accuracy even in extreme conditions.

KASSAY RAM2000 Spectrometerswww.kassay.com

Booth #8

KASSAY is the exclusive supplier of the RAM2000TM (Remote Air Monitor) systems used for fence line monitoring of gas vapors in real-time. RAM2000TM open path spectrometers have patented technology developed in partnership with the US government and accredited by domestic and foreign agencies.

KT Photonicswww.ktphotonics.com

Booth #30

KT Photonics makes cooled OGI infrared detector using its proprietary HOT T2SL MWIR technology. Cantronic Systems makes OGI infrared cameras using KT Photonics detectors. HOT OGI detector technology makes the life of cooled OGI cameras twice as long. Cantronic Systems OGI camera series include handheld V330/V340, permanent mounted M330, and drone payload U330 versions; all offer excellent VOC and methane gas imaging capabilities, and great features at affordable prices.

Met One Instruments, Inc.www.metone.com

Booth #28

Met One Instruments Inc. provides reliable, affordable, precision instrumentation for monitoring ambient & indoor air quality and controlled environments. We also have a full Meteorological line of precision instrumentation. We engineer and manufacture products from our facilities located in Oregon, New York, and Maryland. Our customer service, including ongoing after-the-sale service support, is the best in the industry. All our products are made in the USA. We are an ISO9001:2015 certified company.

Nikira Labswww.nikiralabs.com

Booth #5

Nikira Labs is an innovator in the areas of air quality high-performance gas sensing, natural gas emissions and leak detection, and the semiconductor FAB trace gas analysis. "Quality scientific measurements anywhere, anyone" is our mission to become an indispensable partner for a healthier environment.

Nutech Instruments, Inc.www.nutechinst.com

Booth #15

Nutech Instruments a World leading supplier of Air VOC testing products headquarters in Dallas, Texas USA. Some of our products are: Preconcentrators (LN2 8910 and LN2 free 6600), Auto Samplers 3610, Direct loop injection 3606, Dynamic and Static Diluters 2203, Canister Clean Systems 2104,2108, Fence Line Systems (TVOC, PAMS, Full Range, Complete Shelters) 6300,6500, 6600,6700, Automatic air sampling timers 2701, 2703, Multifunctional Automatic Air Sampling System 2600ST, Carry-on Automatic Multifunctional Sampling System 2600GT Portable TVOC analyzer 3000, Custom Designs to meet your unique requirements. We also run a full-service air VOC testing laboratory. Contact us for more information at: kevin@nutechins.com

Opgal Optronic Industrieswww.opgal.com

Booth #19

With 40 years of experience in the field of electro-optics, Opgal is a global producer of ground-breaking industrial thermal imaging cameras for various applications in the oil & gas industry. Opgal's technology gives you the ability see beyond the visible to test, measure, and inspect large areas and identify hidden problems fast, saving valuable resources and increasing productivity across a multitude of industrial applications. Our industrial product line includes a range of Optical Gas Imaging solutions for finding fugitive emissions gas leaks, and gas quantification software. Enabling companies to increase productivity while reducing emissions.

Orsatwww.orsat.com

Booth #17

Since 1994, Orsat has customized the installation and maintenance of hardware and software to produce a robust application for continuous unattended field measurement of VOCs in ambient air for Photochemical Assessment Monitoring Stations (PAMS). Orsat's services encompass all aspects of site operation and quality control from deployment to operator training.

Picarrowww.picarro.com

Booth #3

Picarro is a leading provider of solutions to measure greenhouse gas (GHG) concentrations, criteria pollutants and hazardous air pollutants (HAPs) in many industrial and research applications. Picarro analyzers and systems are simple to deploy and operate, they deliver parts-per-trillion (ppt) sensitivity in real-time, and are designed for continuous monitoring with minimal maintenance. Visit our Air Quality and Ethylene Oxide Resource Centers to learn more about how our products are used to address indoor and outdoor air quality measurement needs.

QuantAQwww.quant-aq.com

Booth #32

QuantAQ provides air quality monitoring networks to groups aiming to gain truly actionable and local air quality data. Founded by atmospheric chemistry PhDs who combined their expertise with the latest in IoT hardware, machine learning, and user-friendly software design, the company has developed durable, professional-grade sensors that can detect a range of gases and particulate matter with more convenience and at a fraction of the cost and complexity of traditional monitoring solutions.

SENSIT Technologieswww.gasleaksensors.com

Booth #33

SENSIT Technologies' products protect life, property, and the environment from hazardous gases. SENSIT's product line includes handheld and portable detection equipment for methane, VOCs, and air quality. Recent product releases include FMD (fixed-point methane detector), SPOD (VOC emission monitor), RAMP (air quality platform), and Gas-Trac® LZ (remote laser methane detectors). All include dashboards and remote data analytic tools. Part of the Halma group of life-saving technology companies, SENSIT Technologies is headquartered in Valparaiso, Indiana.

FINAL PROGRAM

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Sonoma Technology, Inc.
www.sonomatech.com

Booth #25

Sonoma Technology, Inc. (STI) is an employee-owned firm that delivers innovative, science- and technology-based solutions for our clients' environmental needs worldwide. Our services include air quality research, atmospheric measurements, air quality and smoke forecasting, atmospheric modeling and analysis, instrumentation and data system development, software development, decision support systems, and outreach.

Spectrum Environmental Solutions
www.spectrumenvsoln.com

Booth #29

Spectrum Environmental Solutions is a technology leader in optical analytical techniques. We provide customized solutions using Fourier Transform Infrared (FTIR) spectroscopy, ultraviolet (UV), tunable diode laser (TDL), and quantum cascade laser (QCL) devices. Our solutions are always customized to the client's unique issues and challenges. Optical measurements provide dynamic, near real-time insight into plant operations. We deliver FTIR analytical devices in both open path and extractive configurations. Our environmental consulting services include world class expertise in the areas of industrial flares and hazardous waste combustion. We have specific experience and proven technology in providing real-time emissions monitoring solutions for fence line monitoring networks.

Sunset Laboratory
www.sunlab.com

Booth #31

Sunset Laboratory has been leading the way for Organic/Elemental Carbon Aerosol (OCEC) measurements since 1984. We remain the market leader in OCEC instrumentation and analysis for filters with our Laboratory-based OCEC analyzer and in ambient monitoring with our Semi-Continuous OCEC aerosol analyzer. Our instrumentation has the ability to easily perform a variety of official analysis methods, such as NIOSH Method 5040, Improve-A, STN, EUSAAR2, as well as others.

Syft Technologies
www.syft.com

Booth #24

Syft is the world leader in real-time, direct injection mass spectrometry with more than 20 years of SIFT-MS expertise. Syft instruments support a broad range of industries worldwide including pharma and CDMOs, environmental protection, consumer goods, food, flavor and fragrance, semiconductor manufacturing and many more. Continually developed and proven in high stakes commercial environments, you can be assured of operational robustness, speed and support. Syft has offices throughout the world offering 24/7 service and support including those in New Zealand, Korea, Taiwan, Singapore, Germany and the U.S.

Teledyne API
www.teledyne-api.com

Booth #26

Teledyne API designs and builds a complete line of precision air quality monitoring instrumentation at its headquarters and factory in San Diego, California. These instruments utilize proven measurement principles and comply with the U.S. Environmental Protection Agency, European Union and other requirements for ambient air quality monitoring, continuous emissions monitoring, and a number of other applications.

Terra Applied Systems
www.tasysllc.com

Booth #14

The TAS mission is to be a premier bridge between manufacturers and end users of emerging and maturing technologies providing applications and integrated systems.

Tisch Environmental, Inc.
www.tisch-env.com

Booth #13

Tisch Environmental is a family business founded to develop and manufacture air pollution monitoring instruments. The Tisch family has produced nearly half a million devices for the air pollution monitoring community over the last 60 years. TEI is looking into the future needs of today's air monitoring professionals.

TricornTech
www.tricorntech.com

Booth #2

As a VOC monitoring expert, TricornTech offers a wide product range from portable precision instruments to online systems and comprehensive air quality monitoring software applications. In addition to our superior gas analysis technology used for monitoring airborne molecular contamination (AMC) in semiconductor applications and volatile organic compounds (VOCs) in the surrounding environment, complete solutions for detecting LNAPL/DNAPL (light/dense non-aqueous phase liquid) contaminants are also available. We are committed in offering solutions and services to our clients which are critical in the achievement of their success. Please stop by our booth to find out more about how we can create the perfect monitoring package tailored to your specific budget and testing requirements.

Trinity Consultants
www.trinityconsultants.com

Booth #27

Founded in 1974, Trinity Consultants helps organizations overcome complex, mission-critical challenges in EHS, engineering, and science through expertise in consulting, technology, training, and staffing. We support clients in geographies worldwide and across a broad range of sectors including industrial, energy, manufacturing, mining, life sciences, and commercial/institutional.

URG Corporation
www.urgcorp.com

Booth #7

URG is helping to ensure the air we breathe is the best it can be by creating the Ambient Ion Monitor (AIM) for the time-resolved, direct measurement of gas (hydrogen chloride, nitric acid, nitrous acid, sulfur dioxide, ammonia) and artifact-free particulate matter (nitrate, sulfate, nitrite, phosphate, chloride ammonium, sodium, calcium, potassium, magnesium) air pollutants. We specialize in Teflon-coated cyclones with various cut-points and flow rates, and stainless steel cyclones for diesel emissions.

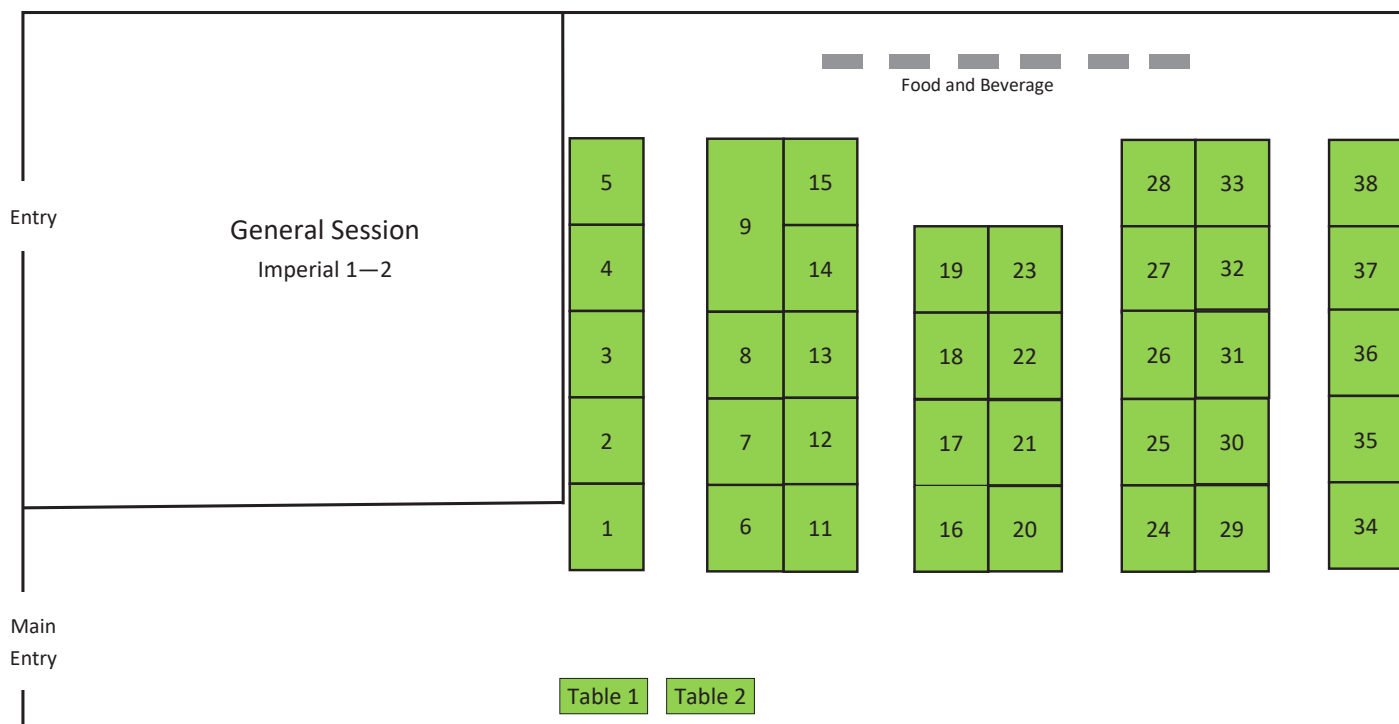
Wilbur Technical Services, LLC
www.jjwilbur.com

Booth #37

The J.J. Wilbur Company and Wilbur Technical Services provide instrumentation and analytical solutions for environmental monitoring applications to a variety of clients with a focus on state-of-the-art ambient air monitoring solutions. Recent work includes several mobile monitoring systems custom designed and built for real-time collection of various pollutants using the latest instruments and technology available. The company currently has fourteen employees with offices in Mont Vernon NH, Farmington CT, and Raleigh NC.

Exhibit Hall Floor Plan

Imperial 4567



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Thank you for attending!

AIR QUALITY MEASUREMENT

METHODS AND TECHNOLOGY

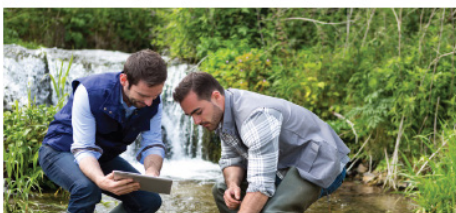
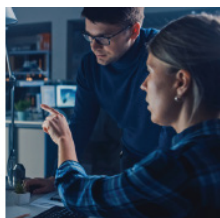
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