



AIR & WASTE MANAGEMENT
ASSOCIATION

FINAL PROGRAM

The Science of PFAS

Chipping Away at the Details

January 23-25, 2024 • Raleigh, NC

Sponsored by:



FINAL PROGRAM

GENERAL INFORMATION

CONFERENCE OVERVIEW

The research around per- and polyfluoroalkyl substances (PFAS) continues to inch forward through the talents of all sectors working together. A&WMA continues this premier conference to bring together scientists, researchers, academics, practitioners, regulators, and the regulated community to further the conversation on the current state of PFAS science and solutions for the future. Conference sessions will explore health effects, current regulatory approaches, forensics, and guidance for PFAS in water, soils and biosolids, landfills and leachate, and air, as well as methods for their measurement, treatment, destruction, and disposal.

LOCATION

Sheraton Raleigh Hotel

421 South Salisbury Street
Raleigh, NC 27601
(919) 834-9900

Find hotel information on the conference website at www.awma.org/PFASlocation.

REGISTRATION AND REFUND POLICY

Register online at www.awma.org/PFASregistration. Full conference registration includes technical sessions, continental breakfast, coffee breaks, lunches, and the evening reception, plus the attendee list and online proceedings following the conference. On site registration will be located in the Foyer outside of the Oak Forest Ballroom, 2nd Floor, and be open during the following hours:

Monday, January 22:	2:00 pm - 5:00 pm
Tuesday, January 23:	7:30 am - 5:00 pm
Wednesday, January 24:	7:30 am - 5:00 pm
Thursday, January 25:	7:30 am - 3:00 pm

If written notice of cancellation is received on or before December 18, 2023, payment will be refunded, less a \$100 cancellation fee. 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 fee(s) paid.

SPECIAL ACCOMMODATIONS

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

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.

CONFERENCE COMMITTEE

Conference Co-Chairs:

Michele Karnes, Coterie Environmental
Lara Phelps, US EPA, Office of Research and Development (ORD),
Center for Environmental Measurement and Modeling (CEMM)

Committee Members:

- Stephanie Bolyard, NC DEQ
- Ivan Cooper, CEC Environmental
- Kavitha Dasu, Battelle
- Elizabeth Denly, TRC Companies
- Michael Devito, US EPA, ORD, CCCTE
- Craig Divine, Arcadis
- Adam Driscoll, Barr Engineering
- Beau Hodge, Geosyntec Consultants
- Mel Keener, Coalition for Responsible Waste Incineration
- Jonathan Krug, US EPA
- Johnsie Lang, Arcadis
- Mingming Lu, University of Cincinnati
- Loren Lund, Jacobs
- Martha Maier, Montrose Environmental
- James McCord, US EPA
- Jeff McDonough, ERM
- Taryn McKnight, Eurofins
- Ray Merrill, US EPA
- John Offenbergh, US EPA, ORD, CEMM
- Michael Pjetraj, NC DEQ
- Phillip Potter, US EPA
- Jeff Ryan, US EPA, ORD, CEMM
- Erin Shields, US EPA
- Matt Traister, Ramboll
- Bill Troxler, Focus Environmental

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. Members are eligible for free certificates. For more information, please contact Gloria Henning at +1-412-904-6021 or glhenning@awma.org.

TECHNICAL TOUR

Monday, January 22, 11:00 am – 2:30 pm ET

This visit to the EPA facilities in Research Triangle Park will provide tours and demonstrations of several of the PFAS research laboratories, test facilities, and PFAS research platforms. All tour participants must travel via the group bus to the EPA unless they are an EPA employee. **Registered participants should meet in the hotel lobby no later than 11:00 am for an 11:10 departure.** Lunch will be on your own prior to departing the hotel.

TECHNICAL AGENDA – Tuesday, January 23

Registration
7:30 am – 5:00 pm
Oak Forest Foyer

Continental Breakfast
7:30 am – 8:30 am
Oak Forest Foyer

OPENING KEYNOTE PLENARY

PFAS Regulation and Science Initiatives in Federal and State Agencies

8:30 am – 10:00 am

All conference sessions will be in the Oak Forest Ballroom

Welcome and Introduction

Lara Phelps, US EPA, Office of Research and Development (ORD), Center for Environmental Measurement and Modeling (CEMM), and Michele Karnes, Coterie Environmental
James Walker, A&WMA President, Consumers Energy

Plenary presenters include:



Elizabeth Biser
Secretary, North Carolina
Dept. of Environmental
Quality



Chris Frey, Ph.D.
Assistant Administrator
for Research and
Development, US EPA



Abigail Hendershott
Executive Director,
Michigan PFAS Action
Response Team



Sushma Masemore
Asst. Secretary for
Environment, North
Carolina Dept. of
Environmental Quality

Keynote sponsored by:



10:00 am – 10:20 am
Networking Break and Exhibition Viewing
Oak Forest Foyer and Ballroom

All breaks are sponsored by
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SESSION 1: PFAS FORENSICS – USING SCIENCE TO IDENTIFY SOURCES

Co-Chairs: Elizabeth Denly, TRC, and Lara Phelps, US EPA, ORD, CEMM

10:20 am – 10:40 am
A Forensic Approach for PFAS Source Tracking Using High Resolution Mass Spectrometry Tools
Dr. Kavitha Dasu, Battelle

10:40 am – 11:00 am
PFAS Source Identification: Tips for Forensics Evaluations
Elizabeth Denly, TRC

11:00 am – 11:20 am
On the State of PFAS Forensics
Mark J. Benotti, Ph.D., and Trever Schwichtenberg, Ph.D., NewFields

11:20 am – 11:40 am
Using High Resolution Mass Spectrometry for Environmental Forensics for New and Emerging PFAS from Industrial Production and Use Sites
Mark Strynar, Ph.D., US EPA

11:40 am – 12:00 pm
Recent Technical Advances in Continuous Real-Time Optical Field Monitoring of Volatile PFAS and Breakdown Products
Curtis Laush, Ph.D., Spectrum Environmental Solutions

12:00 pm – 12:10 pm
Question and answer period

Lunch sponsored by:

12:10 pm – 1:20 pm
Conference Lunch

(Lunch buffet will be in the foyer with seating in the Oak Forest Ballroom, Willow Oak, and Pin Oak Rooms)



FINAL PROGRAM

TECHNICAL AGENDA – Tuesday, January 23, con't.

SESSION 2: PFAS HEALTH EFFECTS

Co-Chairs: Loren Lund, Ph.D., Jacobs, and Mike Devito, US EPA, ORD, CCTE

1:20 pm – 1:40 pm

PFAS Toxicity and Health Effects – Regulatory Updates

Loren Lund, Ph.D., Jacobs

1:40 pm – 2:00 pm

Comparison of Approaches for Evaluating Relative Toxicity and Risk of PFAS Mixtures

Barrie Selcoe, Jacobs

2:00 pm – 2:20 pm

Status of Michigan PFAS Exposure and Health Study (MiPEHS)

Joost van 't Erve, Ph.D., Michigan Department of Health and Human Services (MDHHS)

2:20 pm – 2:40 pm

Development of Transcriptomic Points of Departure for EPA's Transcriptomic Assessment Product (ETAP)

Leah Wehmas, Ph.D., US EPA ORD

2:40 pm – 2:50 pm

Question and answer period

2:50 pm – 3:10 pm

Networking Break and Exhibition Viewing

SESSION 3: PFAS MEASUREMENT METHODS AND TECHNIQUES

Co-Chairs: Bill Troxler, Focus Environmental, and Erin Shields, US EPA

3:10 pm – 3:30 pm

Overview of OTM-50

Stephen Jackson, Ph.D., US EPA

3:30 pm – 3:50 pm

Tracking Organic Fluorine by Plasma-based Mass Spectrometry

Kaveh Jorabchi, Ph.D., Georgetown University

3:50 pm – 4:10 pm

Novel Extraction and Analysis Methods for the Measurement of 44 Diverse PFAS in Fish and Benthic Macroinvertebrate Tissues

Jill Kerrigan, Ph.D., 3M

4:10 pm – 4:30 pm

Belgian Experiences with OTM-45

Jelle Hofman, Ph.D., VITO NV

4:30 pm – 4:50 pm

PFAS Analysis: Insights from the Belgian Frontline

Griet Jacobs, VITO NV

4:50 pm – 5:00 pm

Question and answer period

5:15 pm – 6:15 pm

Networking Reception in the Exhibit Area

Join our exhibitors, sponsors, presenters, and colleagues for an informal reception to build relationships in the industry. Drink ticket included with full conference registration.

The reception is brought to you by our Gold Sponsors:



Exhibits will be located in the Oak Forest Ballroom and Foyer. These industry-leading companies will be on site displaying their products and services at the conference. Stop by during one of the breaks, lunches, or the reception to learn more.

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TECHNICAL AGENDA – Wednesday, January 24

Registration
7:30 am – 5:00 pm

Continental Breakfast
7:30 am – 8:30 am

12:00 pm – 1:15 pm
Conference Lunch

Lunch sponsored by:


SESSION 4: PFAS IN WATER

Co-Chairs: Jeffrey McDonough, ERM, and Phillip Potter, Ph.D., US EPA

8:30 am – 8:50 am
PFAS Contaminated Groundwater and Chronic Condition Incidence Among Medicare Beneficiaries in California
Lloyd Hill, US EPA ORD

8:50 am – 9:10 am
PFAS Fate and Transport (In Situ)
Dr. Ian Ross, CDM Smith

9:10 am – 9:30 am
PFAS Fate and Transport in Wastewater
Dr. Matt Reeves, Western Michigan University

9:30 am – 9:50 am
State Agency Perspective on Quantifying PFAS in Waters of the State and Potential Mitigation of Sources
Julie Grzyb, Deputy Director, Division of Water Resources NCDEQ

9:50 am – 10:00 am
Question and answer period

10:00 am – 10:20 am
Networking Break and Exhibition Viewing

SESSION 5: APPLIED BIOSOLIDS – POTENTIAL IMPACTS AND RISKS

Co-Chairs: Matt Traister, Ramboll, and Poonam Giri, NC DEQ

10:20 am – 10:40 am
Michigan's Interim Strategy Approach to Reduce Sources of PFAS to Municipal Biosolids and Mitigate Potential Risks
Sydney Ruhala, Michigan EGLE

10:40 am – 11:00 am
PFAS Impacted Biosolids — Who Has Legal Liability?
Brad De Vore, J.D., Jimmy Kirkland, Grace Hearn, Womble Bond Dickinson

11:00 am – 11:20 am
Measurement of PFAS in a Pyrolysis System Treating Sewage Sludge
Max Krause, Ph.D., US EPA ORD

11:20 am – 11:40 am
Practical Implications of PFAS in the Waste Industry
Jeremy Labbe, P.E., Casella Waste Systems

11:40 am – 11:50 am
Question and answer period

SESSION 6: MANAGEMENT OF PFAS IN LANDFILL LEACHATE

Co-Chairs: Ivan Cooper, Civil & Environmental Consultants, Inc, and Stephanie Bolyard, NC DEQ

1:15 pm – 1:20 pm
Intro to PFAS Sources to Landfills and Strategies for Short- and Long-term Reduction
Ivan Cooper, P.E., BCEE, Civil & Environmental Consultants, Inc.

1:20 pm – 1:50 pm
Discussion Panel: PFAS Removal from Landfill Liquids
Panelists include:

Reverse Osmosis: *Bernie Rieder, Rochem*
Foam Fractionation: *Rob Rappold, Allonnia*
FluoroSorb—Surface Modified Clay for PFAS Adsorbance: *Matt Geary, CETCO*

1:50 pm – 2:20 pm
Discussion Panel: PFAS Destruction from Leachate Residuals
Panelists include:

Supercritical Water Oxidation (SCWO): *Sudhakar (Sunny) Viswanathan, 374 Water*
Plasma: *Daniel Cho, Onvector*
Electrochemical Oxidation: *Chad Felch, Lummustech*

2:20 pm – 2:50 pm
Discussion Panel: Implementation Strategy
This panel will include perspectives from State Regulators and Waste Management companies with a focus on leachate treatment strategies and how to implement these technologies, permitting processes, and lessons learned. Speakers include:

Michael Scott, Director of NCDEQ Division of Waste Management
Matt Einsmann, P.E., Team Environmental Manager, Republic Services

2:50 pm – 3:00 pm
Question and answer period

3:00 pm – 3:20 pm
Networking Break and Exhibition Viewing

FINAL PROGRAM

TECHNICAL AGENDA – Wednesday, January 24, con't.

SESSION 7: PFAS IN AIR

Co-Chairs: John Offenberg, US EPA, ORD, CEMM, and Mingming Lu, University of Cincinnati

3:20 pm – 3:40 pm

Modeling Sensitivity Analysis for PFAS Emissions From a Surface Coating Operation

Matt Traister, Ramboll

3:40 pm – 4:00 pm

Assessing PFAS Exposure Indoors: Measurement of PFAS in Paired Samples of Indoor Air, Dust, and Blood

*Heather Stapleton, Ph.D., Ronie-Richele Garcia-Johnson
Distinguished Professor, Nicholas School of the Environment*

4:00 pm – 4:20 pm

Air Deposition Pathway to PFAS Groundwater Contamination

Evan Christianson, Barr Engineering

4:20 pm – 4:40 pm

High-Resolution Chemical Ionization Mass Spectrometry Methods for Real-Time Measurement of Airborne PFAS

Dr. Jason Surratt, University of North Carolina

4:40 pm – 5:00 pm

Risk Assessment Challenges Associated with Atmospheric Transport of PFAS

Rachel Velthuisen, Ph.D., TRC

5:00 pm – 5:10 pm

Question and answer period

TECHNICAL AGENDA – Thursday, January 25

Registration

7:30 am – 3:00 pm

Continental Breakfast

7:30 am – 8:30 am

SESSION 8: PFAS DISPOSAL AND DESTRUCTION

8:00 am – 10:00 am

Co-Chairs: Mel Keener, Coalition for Responsible Waste Incineration, Kavitha Dasu, Battelle, and Jonathan Krug, US EPA

8:00 am – 8:20 am

Thermal Decomposition of PFAS: Insights into the Formation of PICs

Dr. Nathan Weber, US EPA ORD

8:20 am – 8:40 am

Charting a Sustainable Path: Exploring PFAS Disposal and Destruction Best Practices and Guidance

Shalene Thomas, Battelle

8:40 am – 9:00 am

Thermal Decomposition of Fluorinated Polymers Used in Plasticized Explosives and Munitions

Dr. Jimmie Oxley, University of Rhode Island

9:00 am – 9:20 am

Characterizing PFAS Thermal Treatment Using Online Mass Spectrometry

James Mattila, Ph.D., US EPA

9:20 am – 9:40 am

Full-Scale Operation of SCWO on Landfill Leachate, AFFF and Industrial Wastewater

Trevor Whitson, Revive Environmental

9:40 am – 10:00 am

Question and answer period

SESSION 9: MANAGING PFAS TREATMENT RESIDUALS

Co-Chairs: Johnsie Lang, Arcadis, and Max Krause, US EPA

10:20 am – 10:40 am

Managing PFAS Residuals from Water Treatment and Destruction Technologies

Baxter Miatke, P.E., Arcadis

10:40 am – 11:00 am

Thermal Destruction of PFAS During Full-Scale Reactivation of PFAS-Laden Granular Activated Carbon (GAC)

Rebecca Distefano, Calgon Carbon Corporation

11:00 am – 11:20 am

Onsite Electrochemical PFAS Destruction of Foam Fractionate and Reverse Osmosis Concentrate

Katie Henderson, Ovivo

11:20 am – 11:40 am

Electrochemical Rods at the End of their Useful Life

Chad Felch, Lummustech

11:40 am – 12:00 pm

Question and answer period

Lunch sponsored by:

12:00 pm – 1:10 pm
Conference Lunch



TECHNICAL AGENDA – Thursday, January 25, con't.

SESSION 10: PFAS INVESTIGATIONS AND REGULATIONS AT THE STATE LEVEL

Co-Chairs: Taryn McKnight, Eurofins, and Adam Driscoll, Barr Engineering

1:10 pm – 2:40 pm

Hear from practitioners at the States on the collection and evaluation of PFAS data along with the development of policy and regulations.

Speakers include:

- **Anthony (Tony) Bollasina, P.G.**, New York State Department of Environmental Conservation
- **Natalie Johnson, Ph.D.**, Section Chief, Technical Support and Site Discovery, Northeast Region, Massachusetts Department of Environmental Protection
- **Frannie Nilsen, Ph.D.**, Environmental Toxicologist, Secretary's Office, North Carolina Department of Environmental Quality
- **Jennie Willemsen, Ph.D.**, Research Scientist, New Jersey Department of Environmental Protection

2:40 pm – 3:00 pm

Networking Break and Exhibition Viewing

SESSION 11: PFAS REGULATION, COMPLIANCE, AND CONTROL UNDER FEDERAL REGULATORY PROGRAMS

Co-Chairs: Taryn McKnight, Eurofins, Adam Driscoll, Barr Engineering, and Aaryn Jones, US EPA

3:00 pm – 3:20 pm

PFAS Roadmap Overview – Office of Water and Office of Air and Radiation Updates

Aaryn Jones, EPA Region 4, Office of the Regional Administrator

3:20 pm – 3:40 pm

Office of Land and Emergency Management Updates

Schatzi Fitz-James, EPA OLEM Office of Superfund Remediation and Technology Innovation, and Brian Schlieger, EPA OLEM Office of Emergency Management

3:40 pm – 4:00 pm

Office of Enforcement and Compliance Assurance Updates

Erik R. Hanselman, J.D., OECA, Office of Site Remediation Enforcement

4:00 pm – 4:20 pm

Office of Chemical Safety and Pollution Prevention Updates

Jeff Dawson, Office of Chemical Safety and Pollution Prevention, US EPA

4:20 pm – 4:30 pm

Question and answer period

4:30 pm – 4:40 pm

Closing Remarks and Conference Adjourns

Lara Phelps, US EPA, ORD CEMM

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Axine Water Technologies is a provider of an innovative industrial wastewater treatment technology that destroys toxic organic contaminants including per- and polyfluoroalkyl substances (PFAS), active pharmaceutical ingredients (APIs), and other emerging contaminants on-site using electrochemical oxidation. With over a decade of treatment experience and more than 130,000 hours of commercial run-time, Axine is helping industrial manufacturers meet discharge permit requirements, eliminate off-site disposal costs and bottlenecks, and reduce litigation risk. www.axinewater.com



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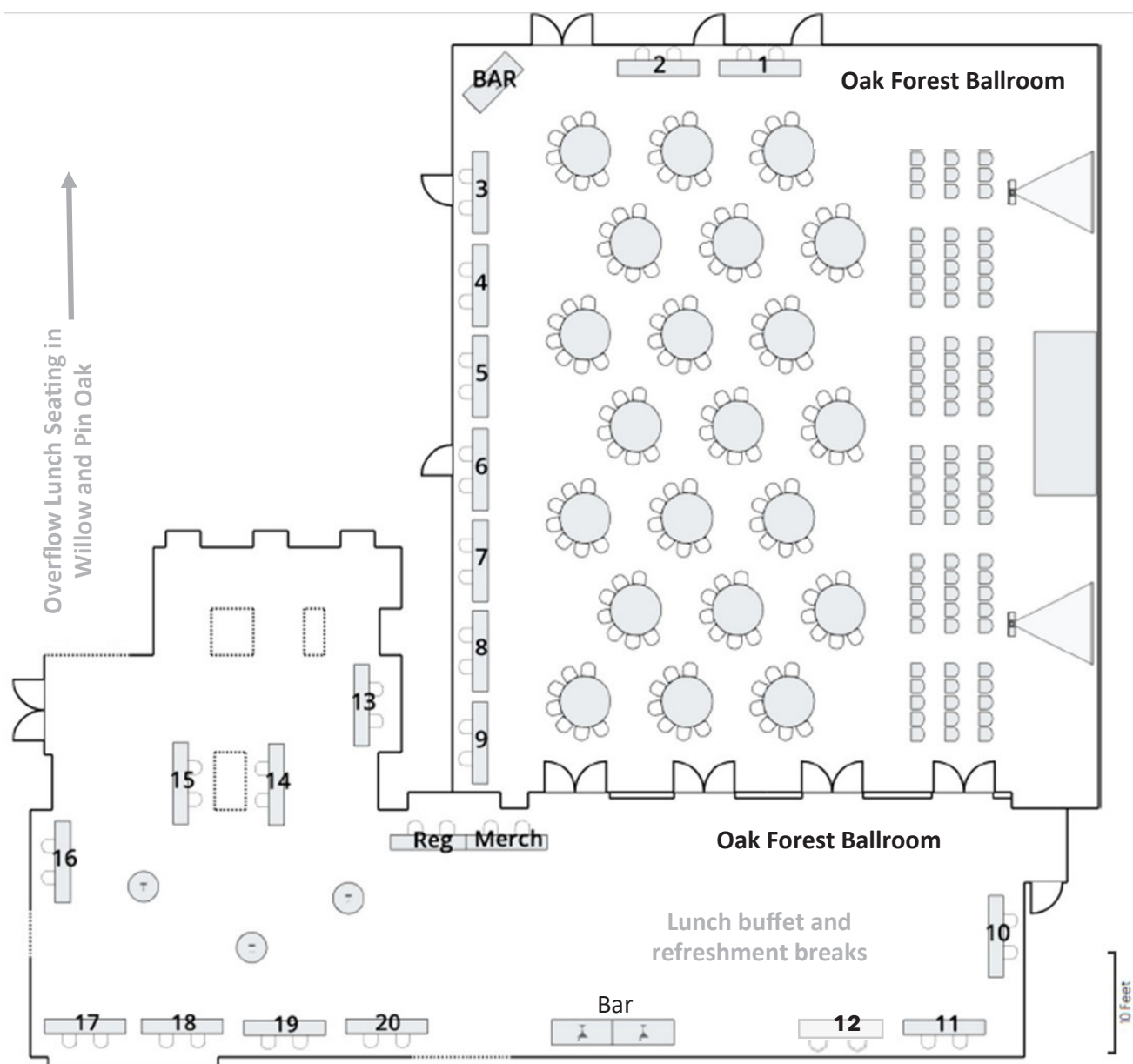
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Buckeye Fluid Solutions	13	Pace Analytical Services, LLC	3
CETCO	10	Ramboll	6
ECT2	8	SPL	7
Entech Instruments	16	Stantec ChemRisk	4
Enthalpy Analytical	9	SynTerra	2
GEL Laboratories & Engineering	19	TRS Group	17
Hart & Hickman, PC	20	Waters Corporation	5



Air & Waste Management Association's 117th Annual Conference & Exhibition

Emissions Reductions for Sustainable Energy Futures

June 24 – 27, 2024 • Calgary, AB, Canada

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The Canadian Prairies region a hotspot for emissions reductions and technological innovations and Calgary is excited to host ACE 2024, bringing industry, academia, and policymakers together to learn, collaborate, and improve environmental knowledge and decision-making in this unique landscape which is at the forefront of global change. Conference highlights include:

- An expert-level keynote to kick off the conference on Tuesday, June 25
- Three days of technical sessions and panels on the hottest environmental topics
- The 54th Critical Review on Atmospheric Reduced Nitrogen
- Technical tours of Calgary facilities and professional development courses on current topics
- Networking opportunities with exhibitors, speakers, and colleagues throughout the week.

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ABOUT THE AIR & WASTE MANAGEMENT ASSOCIATION



The Air & Waste Management Association is a not-for-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking opportunities, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. For more information, please visit www.awma.org.

NOTES

THANK YOU FOR ATTENDING!