



# **WEF Odors and Air Pollutants Conference 2023**

**May 16-19, 2023**

**Charlotte Convention Center,  
Charlotte, North Carolina, USA**

## **Technical Program**

*(last updated March 29, 2023)*

## **Pre-Conference Workshop**

*Additional fees apply*

### **Workshop A: Odor Fundamentals - Let's Start At the Beginning!**

**Tuesday, May 16, 2023**

**1:30 p.m. – 5:00 p.m.**

**Coordinator:** Richard Pope, Hazen and Sawyer

**Presenters:** Ryan McKenna, Hazen and Sawyer; Vaughan Harshman, Evoqua Water Technologies; Chris Hunniford, V&A Engineering; Diederik Apgar, King County; Randy Nixon; Ray Porter, Porter Odor Science

The goal of this session is to provide attendees who are new to the odor field and those who are hazy and simply want to brush up on their fundamentals an opportunity to start from the beginning and learn the abc's of odor assessment and control and how to communicate with the number one driving force behind odor control implementation – the community. There are currently very few references that provide a thorough understanding of the basics of odors. One of the better references is the WEF Manual of Practice # 25 - Odor Emissions and Control for Collection Systems and Water Resource Recovery Systems – Second Edition (2020). In addition, we are unaware of any higher level of learning classes either in person or on-line that teach to this topic. As a result, where else will the odor uninformed turn to learn about the field of odor? This session is an opportunity to learn about the fundamentals from experienced professionals who have spent most of their careers doing odor and odor-related work.

The following topics will be covered in this session:

- Odor Formation and Corrosion – Learn where, how, and what conditions enhance the formation of odors within the collection system and the Water Resource Recovery Facilities
- Field Monitoring – Learn about how to set up an odor monitoring plan and what equipment is needed to implement that plan
- Chemical Addition – Learn about the 5 different categories of chemicals that are used today to reduce wastewater sulfide levels
- Vapor Phase Technologies – Learn about the most commonly used vapor phase odor control technologies today and how and where they work most effectively and efficiently
- Odor Dispersion Modeling – Learn how to use odor dispersion models as a tool to determine what plant unit operations need to be controlled to mitigate off-site odors.
- Community Outreach – Learn various approaches, from simple to more engaging, to communicate with the neighborhood residents.

**Opening General Session**  
**Wednesday, May 17, 2023**  
**8:30 a.m. - 10:00 a.m.**

More information about the Opening General Session is coming soon! It will feature the presentation below for an international perspective, as well as other local and national presentations to be announced soon.

**Survey on Odor Management in Water Resource Recovery Facilities in Spain with more than 10,000 Inhabitants**

Carlos Diaz Jimenez, Ambiente et Odora; Asier Lopez-Etxebarria, Consorcio Aguas Bilbao Bizkaia; Lidia Sauco-Bozic, DAM Aguas; Javier Climent, Sociedad de Fomento Agrícola Castellonense S.A. (FACSA)

**10:00 a.m.    Session adjourns for networking break in exhibit hall**

**Session 01: Measuring and Mitigating Greenhouse Gas Emissions from  
Wastewater Treatment**

**Wednesday, May 17, 2023**

**10:45 a.m. - 11:45 a.m.**

**10:45 a.m. To Measure or Not to Measure, That is the Question! Optical Remote Sensing of Greenhouse Gas Emissions from Wastewater Treatment**  
Ke Du, Mostafa Mehrdad, Bo Zhang, University of Calgary

**11:15 a.m. Sustainability within Collection Systems: Methane Mitigation as a Result of Odor or Corrosion Prevention Programs Utilizing Calcium Nitrate**  
Danielle Arney, Quinn Moss, Vaughan Harshman, Calvin Horst, Evoqua Water Technologies; David Hunniford, V&A Consulting Engineers, Inc.; Nickolas Wagner, Manatee County Utilities

**11:45 a.m. Session adjourns for networking luncheon in exhibit hall**

**Session 02: Community Relations and Odor Complaints**

**Wednesday, May 17, 2023**

**10:45 a.m. - 11:45 a.m.**

**10:45 a.m.      Community-Based Odor App: A Tool to Engage the Community in Solving Odor Problems**

Ted Bowie, Rachel Han, Emma Lupoff, Shari Libicki, Charlie Libicki, Ramboll

**11:15 a.m.      Knocking the Foul Odors Out of the Ballpark: Solving a Stinky Collection System Problem Through Field Investigation and Ventilation Modeling**

Roland Gutierrez, San Antonio Water System; John Siczka, Jacobs

**Alternate      Addressing Odor Complaints Through Investigation, Modeling and Public Outreach**

Scott Keddy, City of St Petersburg

**11:45 a.m.      Session adjourns for networking luncheon in exhibit hall**

## **Session 03: You Can't Manage What You Can't Measure**

**Wednesday, May 17, 2023**

**1:30 p.m. - 4:45 p.m.**

- 1:30 p.m.      Odor Testing Meets Molecular Odor Analysis**  
Michael McGinley, Charles McGinley, St Croix Sensory
- 2:00 p.m.      An Odor Attribution Study to Determine the Relative Contribution from Three Closely Located Facilities**  
Scott Cowden, Jacobs; Mel Suffet, UCLA; Bart Kraakman, Jacobs; Jerry Bovee; Peter Zemek, Montrose Environmental Group
- 2:30 p.m.      Impact of Flux Chambers Design for the Measurement of Volatile Gases from Area Sources**  
Lisha Liu, Ruth Fisher, Richard Stuetz, The University of New South Wales
- 3:00 p.m.      Networking break**
- 3:45 p.m.      An Evaluation of Masked Nuisance Odors from a Source by Chemical and Sensory Analyses**  
Yubin Zhou, UCLA; Tadeo Vitko, Orange County Sanitation District; Mel Suffet, UCLA
- 4:15 p.m.      The New E&T&C Certification, a Methodology to Rate Engagement, Transparency, and Communication in Water Resource Recovery Facilities: When the Odor Unit is Not Enough**  
Carlos Diaz Jimenez, Cyntia Izquierdo, Ainhoa Anton, Ambiente et Odora
- 4:45 p.m.      Session adjourns for networking reception in exhibit hall**

**Session 04: International Guidance on Odor Dispersion Modeling**  
**Wednesday, May 17, 2023**  
**1:30 p.m. – 3:00 p.m.**

**Session Coordinator:** Ray Porter, Porter Odor Science

**Presenter:** Phyllis Diosey, Hazen and Sawyer

Odor dispersion modeling is a complex subject. This session is intended to provide attendees with the resources needed to understand the issues related to odor modeling. Odor modeling is a critical tool for determining the impact of odors on the surrounding community. Thus, the degree to which odor management methods need to be applied to protect the community for adverse odor impacts can have a critical consequence. As odor practitioners, we need to apply best practices to our work products when recommending odor management strategies to our clients. Thus, understanding the best modeling approaches that lead to those recommendations is imperative.

**Technology Spotlight I**  
**Wednesday, May 17, 2023**  
**3:45 p.m. - 4:45 p.m.**

*The three exhibitors listed below will each be holding the same 18-minute presentation three times in a row at their exhibit booth. Participants are invited to join a different presentation at each of the times listed below. Presentations kickoff concurrently at: **3:50 p.m.**, **4:08 p.m.**, and **4:26 p.m.** in each of the five booths.*

3:45 p.m.      Technology Spotlight Introduction at entrance to exhibit hall  
3:50 p.m.      3 Simultaneous Presentation A  
4:08 p.m.      3 Simultaneous Presentation B  
4:26 p.m.      3 Simultaneous Presentation C

**Booth tbc      Hydraulic Odor Control in Sewer Drops**  
Kerry Koressel, IPEX USA, LLC

**Booth tbc      SulFeLox: Field Results from a New Low-Hazard Option for Collection System Sulfide Control**  
Samuel Kohl, USP Technologies

**Booth tbc      Everyone is Getting High on Oxygen**  
Allison Trollier, Eco Oxygen Technologies, LLC



**Session 05: Collaborative Improvements: Owner, Vendor, and Consultant Perspectives on Optimizing a System Wide Collection System Odor and Corrosion Control Program**

**Thursday, May 18, 2023**

**8:30 a.m. - 10:00 a.m.**

**Session Coordinator:** Dave Hunniford, V&A Consulting Engineers

**Presenters:** Nickolas Wagner, Manatee County, Florida; Vaughan Harshman, Evoqua Water Technologies; David Pickard, Premier Magnesia

**8:30 a.m. History and Current Status of the Manatee County Utilities (MCU) Odor & Corrosion Program**

- **Odor Control Program –Pre 2018**
- **Transition to Odor & Corrosion Control Program (OCCP) –2018-2020**
- **Refining OCCP –2021-2023**

Nickolas Wagner, Manatee County, Florida

**8:45 a.m. Interactive Polling**

**8:55 a.m. Identifying the Low Hanging Fruit in Implementing MCU OCCP**

- **System Wide Factors**
- **H2S response vs investment**
- **Reducing H2S release and Leveraging ventilation**

Dave Hunniford, V&A Consulting Engineers

**9:15 a.m. Conversations & Input**

**9:20 a.m. Practical Operational & Economic Challenges**

- **Transition Period –2018-2020**
- **Ongoing Period –2021-2023**
- **Moving Forward –2023-2025**

Vaughan Harshman, Evoqua Water Technologies; David Pickard, Premier Magnesia

**9:40 a.m. Panel Discussion**

- **Force Main, Gravity Lines, Lift Station, and WRF Headworks Designs**
- **Individual Basin Dynamics –Flows, Temperature, Expansion**
- **Mining Performance & Operational Data**
- **Next Steps –refinement of H2S goals, leveraging system operations/design changes**

**9:50 a.m. Q&A**

**10:00 a.m. Session adjourns for networking break**

**Session 06: Dispersion and Ventilation Modeling**  
**Thursday, May 18, 2023**  
**8:30 a.m. - 10:00 a.m.**

- 8:30 a.m.      Monitoring and Dispersion Modeling to Become Good Neighbors**  
Kelsey Kenel, Brian Balchunas, Miranda Mair, John Maley, HDR; Shannon Spence, Prince William County Service Authority
- 9:00 a.m.      Using Advanced Sewer Ventilation Modeling to Size Vapor Phase Controls**  
Matthew Ward, The WATS Guys; Melissa Berry, Jacobs
- 9:30 a.m.      I Smell a New Approach — A Utility’s Adoption and Use of a Sewer Process Model**  
Mark Holstad, Albuquerque Bernalillo County Water Utility Authority; Adrian Romero Flores, Jacobs; Brandon De Flon, Albuquerque Bernalillo County Water Utility Authority
- Alternate      Monitoring and Dispersion Modeling to Become Good Neighbors**  
Kelsey Kenel, Brian Balchunas, Miranda Mair, John Maley, HDR; Shannon Spence, Prince William County Service Authority
- 10:00 a.m.      Session adjourns for networking break in exhibit hall**

**Session 07: A 360 Approach: Preventing Infrastructure Failure and Odor Emissions**

**Thursday, May 18, 2023**

**10:45 a.m. - 11:45 a.m.**

**10:45 a.m. Brooklyn Trunk Sewer Long Term Investment Plan**

Graeme Hamer; Brandon Levi, David Lynch, Jacobs; Kirsty Mountford, Michelle Wotten, Melbourne Water

**11:15 a.m. Modelling Air Movement and Sulphide Transformations in a Deep Tunnel for Corrosion and Odour Mitigation**

Sofia Georgaki, Jacobs; Rodrigo Baur; Amanda Lake, Jacobs

**11:45 a.m. Session adjourns for networking luncheon in exhibit hall**

**Technology Spotlight II**  
**Thursday, May 18, 2023**  
**10:45 a.m. - 11:45 a.m.**

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10:50 a.m.      3 Simultaneous Presentation A  
11:08 a.m.      3 Simultaneous Presentation B  
11:26 a.m.      3 Simultaneous Presentation C

**Booth tbc      Micro Sampling Technology and ELD Sensors Extend In-Situ Gas Sampling Duration and Minimize Expenses within Wastewater Treatment Plants, Collection Systems and Odor Control Scrubbers**  
Lindy Eppinger, Detection Instruments

**Booth tbc      Biological Odor Control - What's New and What's Next?**  
Louis Le Roux, BioAir Solutions, LLC

**Booth tbc      Advanced Odor Control Using Digitally Enabled Dosing Feed System (ORCA)**  
Elizabeth Chaffin, Evoqua Water Technologies

**Session 08: Model, Monitor, and Treat: Controlling Collection System Odors**  
**Thursday, May 18, 2023**  
**1:30 p.m. - 4:45 p.m.**

- 1:30 p.m. Numerous Odor Control Treatment Alternatives, but What is Best for us? Effective Assessment to Determine the Optimal Odor and Corrosion Mitigation Strategy**  
Stephanie Schramm, Jacobs; Gabrielle Sinsky, Jefferson County Commission; William Desing; Adrian Romero Flores, Jacobs; Mia Welch,
- 2:00 p.m. Comprehensive Collection System Odor and Corrosion Control through Integrated Planning**  
Kelsey Kenel, HDR; Matthew Ward, The WATS Guys; Jes Vollertsen; Jeff Bognar, City of Raleigh
- 2:30 p.m. Pima County's 'Smart Collection System': Real-Time H2S Monitoring Pinpoints Problematic Sites in Pima**  
Rudy Daniels, Pima County; Brogan Quist, SmartCover; Douglas Pratt; Paris Neofotistos, SmartCover
- 3:00 p.m. Networking break**
- 3:45 p.m. Continuous Measurement of Dissolved Sulphide in Sewers**  
Esther Vollertsen, Envidan A/S; Jes Vollertsen; Bo Jacobsen, Yansi Jesuloganathan, Aarhus Vand A/S
- 4:15 p.m. OC San Strategies and Pilot Testing to Optimize Collection System Odor Control**  
Brian Reed, Jeffrey Brown, Orange County Sanitation District (OCSAN); Ganesh Rajagopalan, AECOM
- 4:45 p.m. Session adjourns for Meet the Speakers reception**

**Session 09: Bacteria and Synthetic Media: A Match Made in Odor Heaven**  
**Thursday, May 18, 2023,**  
**1:30 p.m. - 3:00 p.m.**

- 1:30 p.m.      Pilot-Scale Comparison of Synthetic Biotrickling Filter Media for Hydrogen Sulfide Removal at the Los Coyotes Water Reclamation Plant**  
Wonho Song, Naoko Munakata, Philip Ackman, LA County Sanitation District;  
Nikos Melitas; Michael Sullivan, Ajay Malik, LA County Sanitation District
- 2:00 p.m.      Effectiveness of Biotrickling Filters as Standalone Technology to Treat Municipal Odors in Harsh Desert Environments — Case Study**  
Louis Le Roux, BioAir Solutions, LLC; Catherine Rapheal, Ras Al Khaimah Wastewater Agency; Haidar Ezal-deen, BioAir Solutions
- 2:30 p.m.      Trade Ya! One Organic, Open Biofilter for One Synthetic, Closed Biofilter**  
Richard Pope, Hazen and Sawyer
- 3:00 p.m.      Session adjourns for networking break in exhibit hall**

**Session 10: Beyond the Odor Nuisance: Airborne Pollutant Emissions**

**Thursday, May 18, 2023**

**3:45 p.m. - 4:45 p.m.**

**3:45 p.m.      Is PFAS Air Pollution?**

Michael Lannan, Tech Environmental; Katherine Mears, Tech Environmental Inc.

**4:15 p.m.      Styrene? Not in my Ambient Air! A DC Water Case Study for Air Quality Monitoring and Testing during CIPP Installation at Soapstone Valley Park**

Burak Kaynak, William Elledge, DC Water

**4:45 p.m.      Session adjourns for Meet the Speakers reception**

**Session 11: Plant & Interceptor Vapor Phase Planning Controls Odors/Corrosion**  
**Friday, May 19, 2023**  
**8:30 a.m. - 11:15 a.m.**

- 8:30 a.m.**      **Leveraging the Odor Toolbox - A Comprehensive Approach to Evaluating Odor and Corrosion in a Large Diameter Interceptor System**  
Steve Graziano, Jacobs; Sid Lockhart; Adrian Romero Flores, Stephanie Schramm, Jacobs
- 9:00 a.m.**      **Odor Control Technology Isn't Enough Without Effective Capture**  
Lynn Grijalva; Richard Pope, Hazen and Sawyer; Sharon Yin, Brian Waite, Orange County Sanitation District
- 9:30 a.m.**      **Keeping it Under Vacuum: Vapor-Phase Odor Control for Nearly One Mile of Large Diameter Interceptor Sewer**  
Marty Kazmierczak, Dewberry Engineers Inc.; Stephanie Acosta
- 10:00 a.m.**      **Networking break**
- 10:15 a.m.**      **How Lasers and Data Analytics Kept Bids in the Ballpark, and Treated Air Flowing at Nut Island**  
Nicholas Ellis, Hazen and Sawyer
- 10:45 a.m.**      **Deep Sewerage Tunnel Ventilation & Odor Control Design and Operational Experiences in Hot Climate Conditions**  
Bart Kraakman; Scott Cowden, Jacobs
- Alternate**      **The Functional Design of Odor Control Systems**  
Samuel Boswell, Carollo Engineers
- 11:15 a.m.**      **Conference adjourns**



**Session 12: Just When You Thought There Was Nothing New: Odor Innovation**  
**Friday, May 19, 2023**  
**8:30 a.m. - 10:00 a.m.**

- 8:30 a.m.**      **Durational Control of Sulfide in an Interceptor System: Integrating Low-Hazard Iron Dosing into a Cost-Constrained Calcium Nitrate Program**  
Michael Collins, USP Technologies; Kevin Peoples, Brandon Stevens, City of Bakersfield, CA; Ian Watson, USP Technologies; Lam Nguyen; Peter Huhn, USP Technologies
- 9:00 a.m.**      **Circular Cross Section Horizontal Airflow Vertical Bed Dry Media Odor Scrubber Design Considerations for Easy Operation and Maintenance**  
Diederik Apgar, King County
- 9:30 a.m.**      **Treatment of Odors and Emissions using an In-Situ Floating Reactive Barrier Technology**  
Jeffrey Martin, Kieran Armstrong, Tia Chai, H2nanO Inc.; Zac Young; Tim Leshuk, Frank Gu, H2nanO Inc.
- Alternate**      **City of Los Angeles, LASAN Utilizing Innovating Technology For Improving Carbon Life**  
Amirmohammad Jafarnejad, Spencer Yu, Rowena Lau, City of Los Angeles; Cyrus Gilani, Cyrus and Associates
- 10:00 a.m.**      **Session adjourns for networking break**

**Session 13: How to Be A Good Neighbor – A YP Perspective**  
**Friday, May 19, 2023**  
**10:15 a.m. - 11:15 a.m.**

**Speakers:** Julie Settembrino, Woodard & Curran; Alejandro Caicedo Ramirez, V&A Consulting Engineers

More information about this session is coming soon!