



Odors and Air Pollutants Conference 2020

Draft Technical Program

(Updated January 24, 2020)

**March 15 – 18, 2020
Duke Energy Convention Center
Cincinnati, Ohio**

The conference is held by the Water Environment Federation in cooperation with the Ohio Water Environment Association and the Water Research Foundation (WRF).

Pre-conference Workshops

(Additional fees apply)

Workshop A: Odor and Corrosion Problem Solving using Sewer Process Modeling Tools

Sunday, March 15

8:30 AM – 12:00 PM

Evaluating and mitigating wastewater collection system odor and corrosion is challenging, because:

1. Collection systems are highly dynamic. Frequent and often rapid changes in wastewater flows and characteristics will vary hydrogen sulfide concentrations, sewer headspace volume, and headspace pressures significantly with time and along the length of a sewer.
2. Collection networks are complex. Collection systems include numerous elements – pipes of multiple diameters and lengths, manholes, elevation drops, junction boxes, and outfall structures that are interconnected in complex ways.

Odor and corrosion of sewers is an increasing concern because of tighter controls of the trade waste (heavy metals), drinking water conservation programs, and the growing trend towards more centralised larger wastewater treatment facilities. This makes the sewage typically more septic causing hundreds of millions of dollars in damage to sewers including collapse of sewers in densely populated areas. Many of the odor and corrosion issues are dealt with in a reactive manner, often providing temporary or expensive solutions. Addressing odors and corrosion in sewers is challenging, in part because historically there has not been reliable calculation methods and computing capability of predicting odors and corrosion because of the complexities in doing. Can sewer process modeling address the above challenges opening the way for a more pro-active approach, so that reactive trial-and-error approaches can be avoided?

This workshop will provide a comprehensive understanding of the sewer processes (a sewer as a bioreactor, so more than only transport) and will illustrate the latest developments, including an appreciation of the advantages and limitations, of sewer process modeling tools.

Workshop B: Odor Measurements - Proper Use and Interpretation for Air Nuisance Odor Control

Sunday, March 15

1:30 – 5:00 PM

The four dimensions of odor perception are detection (odor threshold), recognition (odor character), quantification (odor intensity) and appreciation (hedonic tone). If you have a mixture of chemical odorants, consideration of what general method or set of specific methods will efficiently and economically allow for the mitigation of the odor nuisance is a major consideration. This workshop will present a set of methodologies to help address the odor nuisance control problem including identifying the odor character, determining the chemical causing the odor, applying the odor measurement data to apply the appropriate mitigation measures and demonstrating compliance with odor guideline criteria.

Session 01: Odor Impact and Mitigation Assessment

Monday, March 16

10:45 AM- 11:45 AM

10:45 AM **Odors in the Queen City: Case Study for Quantifying, Analyzing, and Mitigating Odors in the Cincinnati Area**

Jarod Gregory, Brian Otten, Trinity Consultants

11:15 AM **A Case Study for Investigating Elevated Hydrogen Sulfide within a Wastewater Treatment Plant**

Patricia Hsia, Hana Long, Thomas Knapp, Michael Liu, Nikos Melitas, LA County Sanitation District

11:45 AM **Session Adjourns for Networking Luncheon**

Alternate **Assessing of Odor Impacts in Urban Areas Using an Advanced Modeling Approach**

Raymond Porter, Porter Odor Science; Peter D'Abreton, Envirosuite; Mark Feltner, HRSD

Session 02: Community Relations and Odor Complaints

Monday, March 16

10:45 AM- 11:45 AM

10:45 AM Controlling Fugitive Odor Emissions Gives Pima County a Breath of Fresh Air

Catherine Vanyo, Steven Davidson, Brown and Caldwell; Alex Marye, Lambtech Inc; Dean Moulis, Pima County Regional Wastewater Reclamation Department; Edward Lamb, Lamb Tech; Bobby DeAngelo, Pima County Regional Wastewater Reclamation Department; Thomas Chapman, Brown and Caldwell; John Warner, KE&G Construction

11:15 AM Not In My Back Yard: A Risk Based Approach to Odor Mitigation Buffer Zones

Brian Huang, Christopher Hunniford, V&A Consulting Engineers; Brent Meyer, City of Woodland

11:45 AM Session Adjourns for Networking Luncheon

Alternate Bridging the Gap Between People, Politics and Professionals

Bryan Smith, Pivotal Engineering, LLC

Session 03: Collection Systems - Odor and Corrosion Mitigation

Monday, March 16

1:30 PM - 4:45 PM

- 1:30 PM** **Collection System Designs Lead to Upset Neighbors**
Richard Pope, Hazen and Sawyer
- 2:00 PM** **Odor & Corrosion Juggling Act: Challenges of Upgrading a Major Municipal Collection System Odor Control Program to Include Corrosion Control Objectives**
David Hunniford, Christopher Hunniford, V&A Consulting Engineers; Michael Fleury, Carollo Engineers; Nickolas Wagner, Manatee County
- 2:30 PM** **Sacrificial Concrete Sewers as an Odor Control Strategy**
Asbjorn Nielsen, Jes Vollertsen, Aalborg University
- 3:00 PM** **Networking Break**
- 3:45 PM** **A Study to Assess the Effects of Hydrogen Sulphide Formation in a Large CSO Storage Tunnel, UK**
Sofia Georgaki, Rodrigo Baur, David Crawford, Jacobs
- 4:15 PM** **A Drive Down Odor Lane**
Hanting Wang, Greeley and Hansen; Brian Brach, Manasquan River Regional Sewerage Authority; Ray David, Greeley and Hansen; Michael Hope
- 4:45 PM** **Session Adjourns for Networking Reception**
- Alternate** **Integrating Odor and Corrosion Control With Emerging Wastewater Treatment and Resource Recovery Objectives**
Alan Bowers, Vanderbilt University; Matthew Madolora, Premier Chemicals; Nathaniel Barnes, Vanderbilt University

Session 04: Biological Odor Control

Monday, March 16

1:30 PM - 3:00 PM

- 1:30 PM** **Overcoming Challenges to Startup of Biological Odor Control in Low H₂S Conditions**
Samuel Boswell, Daniel Company
- 2:00 PM** **City of Los Angeles Expands Sustainable Odor Control Technology at DCT Air Treatment Facility**
Cyrus Gilani, David Copp, Aroosa Ansari, City of Los Angeles
- 2:30 PM** **An Integrated Biotrickling Filter – Anammox Bioreactor System to Treat Air Contaminated with Ammonia**
Marc Deshusses, Lizhan Tang, Duke University
- 3:00 PM** **Session Adjourns for Networking Break**
- Alternate** **Impact of Biosurfactants on Biodegradation of a Binary Mixture of Hydrophilic and Hydrophobic VOCs in Trickle Bed Air Biofilter**
Assem Dewidar, University of Cincinnati; George Sorial, Dept of Civil & Env Eng

Session 05: Odor and Corrosion Treatment

Tuesday, March 17

8:30 AM - 11:45 AM

- 8:30 AM** **Horizontal Airflow Vertical Bed Dry Media Odor Scrubber Geometry, Media Retention System Design and Access for Internal Maintenance and Repair – One Utility’s Experience Based Knowledge**
Diederik Apgar, King County Dept Of Natural Resources & Parks; Sally Gordon, Samayyah Williams, King County - Wastewater Treatment Division
- 9:00 AM** **NIMBE (Not in My Basement, Ever!) – Sewer Odors DS of a PS**
Lindsey Hassenauer, Hazen and Sawyer; Lydia Watkins, Sanitation District No 1; Robert Copeland
- 9:30 AM** **Super Oxygenation to Stop H₂S Odor and Corrosion in Large Diameter Gravity Sewers**
Richard Speece, Vanderbilt University; Alison Trollier, Eco Oxygen Technologies LLC
- 10:00 AM** **Networking Break**
- 10:45 AM** **Durational Biosolids Odor Control Using Peroxide Regenerated Iron Technology (PRI-TECH™) at the Metropolitan St. Louis Sewer District’s Lower Meramec Treatment Plant**
Michael Nelson, Afsary Ahmed, USP Technologies; Lynne Moss, Black & Veatch
- 11:15 AM** **Minimum Acceptable Dose – Future Sewer Corrosion Management through Sewer Process Modeling**
Alexander Demith, Matthew Ward, Jacobs; Chris Quigley, CH2M; Derek Velarde, Salt Lake City Department of Public Utilities
- 11:45 AM** **Session Adjourns for Lunch on your own**
- Alternate** **Proactive Planning for Ventilation and Odor Control of a Large Diameter Tunnel System**
Adam Dellinger, Jennie Celik, Chris Easter, HDR
- Alternate** **Understanding the Real Costs of Liquid Phase Dosing for Odor Control Fuels Innovation**
Giuseppe Tomasio, Scott Cowden, Jacobs; Brian Reed, OCSD

Session 06: Sewer Odor Modeling

Tuesday, March 17

8:30 AM - 10:00 AM

- 8:30 AM** **System-Wide Sulfide Control Optimization Using Sewer Process Models**
Adrian Romero, Jacobs; Mark Holstad, City of Albuquerque; Matthew Ward, CH2M; Jes Vollersten, University of Aalborg
- 9:00 AM** **PH Impacts to Sulfate-Reducing Bacteria: Research, Modeling, and Case Study**
Robert Gaylord, David McEwen, Brown and Caldwell; Jason Parrillo
- 9:30 AM** **WATS the Deal? Understanding and Mitigating Hydrogen Sulfide Impacts in Billings, MT through Collection System Modeling**
Kelsey Kenel, HDR; Chris Easter; Coralynn Revis, HDR; Jes Vollertsen, Aalborg University; Louis Engels, City of Billings
- 10:00 AM** **Session Adjourns for Networking Break**
- Alternate** **Enhanced Toolkit Guides Odor Control Solutions**
Scott Cowden, Jacobs; Monica Wright, CH2M; Keith Kibbee, Alexander Demith, Jacobs

Session 07: Odor Measurement Monitoring and Performance

Tuesday, March 17

1:30 PM - 4:45 PM

- 1:30 PM** **Investigating Volatile Sulfur Compound (VSCs) Emissions from Primary Sedimentation Tanks**
Ulrich Bazemo, DC Water; Adrian Romero, Jacobs; Haydee De Clippeleir, DC Water
- 2:00 PM** **Odor Control System Evaluation and Optimization at the F. Wayne Hill WRC**
Kristen Smeby, Hazen and Sawyer; Gayathri Ram Mohan, Gwinnett County - Department of Water Resources
- 2:30 PM** **Development of a Biosensor for Objectively Quantifying Odorants**
Sharmily Rahman, Daniel Meeroff, Florida Atlantic University
- 3:00 PM** **Networking Break**
- 3:45 PM** **Budgeting Odor Sampling Uncertainty - A Practical Strategy**
Charles McGinley, St Croix Sensory Inc
- 4:15 PM** **Lessons Learned from OCSD's Odor Control Master Plan**
Tadeo Vitko, Brian Reed, Orange County Sanitation District
- 4:45 PM** **Session Adjourns for Social with Speakers**
- Alternate** **Fecal Malodor Detection Using Low-Cost Gas Sensors**
Siddharth Kawadiya, Claire Welling, Sonia Grego, Marc Deshusses, Duke University

Session 08: Innovative Treatment Approaches

Tuesday, March 17

1:30 PM - 4:45 PM

- 1:30 PM** **Full-scale Digester Micro-Aeration Studies to Improve Biogas Quality**
Bart Kraakman, Jacobs; Israel Diaz, Raul Munoz, University of Valladolid
- 2:00 PM** **Using Horticulture for Treating Wastewater Odor on Reactor Top and Utilizing Synesthesia for Altering Perception**
László Tutor, Organica Zrt.
- 2:30 PM** **Development of Inorganic Media for Organic Odor Removal in Biofilters - An Incredible Journey!**
Louis le Roux, Louis Jackson, Matthew Johnson, Bioair Solutions LLC
- 3:00 PM** **Networking Break**
- 3:45 PM** **Advanced Water Scrubber for Odorous VOC Treatment in WWTP**
Catherine Gracian, Suez International; Valérie Nastasi, Suez International
- 4:15 PM** **Microbioreactors Application for Process Intensification of VOC Treatment for Indoor Air Quality Control: Reactor Design, Fabrication and Operation Optimization**
Luis Rafael De Leon, Kelsey Deaton, Marc Deshusses, Duke University
- 4:45 PM** **Session Adjourns for Social with Speakers**
- Alternate** **Wet Chemical Packed Tower Scrubber Sizing for Waste Water Odor Control – A Practical Approach**
Diederik Apgar, King County Dept Of Natural Resources & Parks; Samayyah Williams, Sally Gordon, King County - Wastewater Treatment Division
- Alternate** **Process Modelling of Sulfur Chemistry to Understand and Optimize a Full-Scale Micro Aeration Process**
Josef Cesca, Jacobs; Derek Van Rys, Sydney Water

Session 09: Utility Odor Management and Planning

Wednesday, March 18

8:30 AM - 11:15 AM

- 8:30 AM** **Cost of Being a Good Neighbor**
Scott Cowden, Jacobs; Sharon Paterson, Anue Water Technologies; Mark Feltner, HRSD
- 9:00 AM** **Solving Odor Control Needs while Meeting Indoor Endotoxin Limits and Optimizing Energy Used for Ventilation at the Avon WWTP**
Neil Webster, Webster Environmental Assoc; Melissa Marts, Eagle River Water and Sanitation District; Tim Drescher, ERWSD; Carter Biesemeyer, Carollo
- 9:30 AM** **Multi-faceted Odor Control Planning for Primary Clarifiers at the Orange County Sanitation District**
Lynne Moss, Black & Veatch; May Kyi, Orange County Sanitation Dist; Shahrzad Namini; Andy DaSilva; Shirley Edmondson, Mark Wilson, James Clark, David Cover, Black & Veatch
- 10:00 AM** **Networking Break**
- 10:15 AM** **The Thornton Composite Reservoir – Odor Lessons Learned from the Operation of Unique 7.9 Billion Gallon Combined Sewer Overflow Mega-structure**
Jonathan Grabowy, Kevin Fitzpatrick, Reed Dring, Dominic Brose, Brent Bedell, Weizhe An, Kuldip Kumar, Metropolitan Water Reclamation District of Greater Chicago
- 10:45 AM** **Modeling for Management: Wastewater Quality Transformations and Odor Generation Potential In Conveyance Resulting From Upstream Discharges of Scalping Facility Sludge**
Dennis Froehlich, Pima County Regional Wastewater Reclamation Dept; Rajeev Goel, Hydromantis ESS, Inc
- 11:15 AM** **Conference Adjourns**
- Alternate** **State-of-the-Art Odor Control at the Southeast Wastewater Treatment Plant**
Ken Galardi, Scott Cowden, Jacobs; Nohemy Revilla, San Francisco Public Utilities Commission
- Alternate** **Composting, Poor Planning, Urban Sprawl and Odour Complaints- An Australian Example**
Geordie Galvin, Warrick Shillito, Astute Environmental Consulting

Session 10: Not Treatment Technology: The Other Critical Components of an Odor Control System

Wednesday, March 18

8:30 AM - 11:15 AM

- 8:30 AM** **The Corrosion Damage Mechanisms, Contributing Factors and Prevention Options in Odor Control Systems**
Robert Nixon, Corrosion Probe Inc
- 9:00 AM** **Optimizing Your Fiberglass Process Equipment Mechanical Reliability**
Gary Arthur, Fiberglass Reinforced Plastics Institute, Inc.
- 9:30 AM** **Key Factors Often Overlooked When Specifying Fans**
Ryan Cassel, Hartzell Air Movement
- 10:00 AM** **Networking Break**
- 10:15 AM** **Corrosive odors and their successful conveyance**
Samuel Boswell, Daniel Company
- 10:45 AM** **Effective Odor Control System Exhaust Approaches: Stacks and Vents**
Phyllis Diosey, Hazen & Sawyer
- 11:15 AM** **Conference Adjourns**