

WATER ENVIRONMENT FEDERATION

# Disinfection & Reuse Symposium

July 29-31 | Portland, OR

# 2018

**Disinfection and Reuse Symposium 2018**  
**Draft Technical Program**  
(Updated June 28, 2018)

**July 29-31, 2018**  
**Portland Crowne Plaza**  
**Portland, Oregon**

## PRE-CONFERENCE WORKSHOP

### **Pre-Conference Workshop**

**Sunday, July 29**

**1:00 – 4:30 PM**

*(Additional fees apply)*

#### **Workshop A:**

#### **Emerging Issues with Pathogens and Constituents of Emerging Concern (CECs) in Water Reuse and Surface Water Discharge**

Emerging chemical and biological constituents in water and wastewater are a concern for the public and regulators alike. It is imperative for wastewater and water reuse industry to advance scientific understanding of the risks of constituents of concern (CECs) and prioritize their assessment, as well as to become familiar with treatment alternatives available to control a range of these emerging compounds. This workshop will examine hormonally active substances, pharmaceuticals, personal care products, per- and poly-fluorinated alkyl compounds (PFAS) (including fire-fighting foams), pathogens, and antibiotic resistant bacteria in wastewater, non-potable reclaimed water, and purified reclaimed water for potable water reuse. The workshop team will share the latest research from pilot and full-scale treatment and monitoring approaches and provide attendees with the necessary tools to protect public health and water quality.

## TECHNICAL PROGRAM

### Opening General Session

Monday, July 30

8:30 AM – 10:00 AM

- 8:30 AM            **Welcome to the 2018 Conference!**  
Bob English, *Palintest*, 2018 Co-Chair  
Val Frenkel, *Greeley and Hansen*, 2018 Co-Chair
- 8:40 AM            **WEF Welcome**  
Mark Poling, *Clean Water Services*, WEF Board of Trustees
- 8:45 AM            **Welcome from Pacific Northwest Clean Water Association**
- 8:50 AM            **Presentations TBC**
- 10:00am           **Networking Break in Exhibit Floor**

## TECHNICAL PROGRAM

### Session 01: Disinfection Fundamentals

Monday, July 30

10:45 AM – 11:45 AM

**Moderators:** Jay Swift, Gray and Osborne; Bob English, Palintest

- 10:45 AM      **Intro to Disinfection, including recent WEF Disinfection Practices Survey**  
Scott Schaefer, AE2S
- 11:00 AM      **Chlorination**  
Stan Shmia, DeNora Water Technologies
- 11:15 AM      **Ultra Violet**  
Bill Sotirakos, Carollo
- 11:30 AM      **Peracetic acid**  
Josh Goldman, CDM Smith
- 11:45 AM      **Session Adjourns for Luncheon**

## TECHNICAL PROGRAM

### **Session 02: Wet Weather Disinfection – Current and Emerging Practices**

**Monday, July 30**

**10:45 AM – 11:45 AM**

**Moderators:** Matt Noesen, CH2M; Ajit Ghorpade, Veolia

**10:45 AM**            **Evaluation of Disinfection Alternatives to Meet Main Plant and CSO Permit Criteria**

Robert Sharp, Manhattan College; Xiao Lin, Hazen and Sawyer; Keith Mahoney, NYC DEP

**11:15 AM**            **New Jersey CSO Treatment Demonstration Project - Disinfection Results**

Jurek Patoczka, Mott MacDonald

**Alternate**            **Overcoming Challenges of Wet Weather Disinfection**

Samuel Jeyanayagam; John Siczka, Jacobs CH2M

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

## TECHNICAL PROGRAM

### **Session 03: Innovative Disinfection Methods and Technology Trends**

**Monday, July 30**

**1:30 PM – 4:45 PM**

**Moderators:** Bertrand Dussert, Xylem, Inc.; Erica Marti, University of Nevada

- 1:30 PM**                    **Can MBR Reduce or Eliminate the Need for Disinfection in Water Reuse Projects**  
Ufuk Erdal, AECOM; Zeynep Erdal, CH2M; Beverley Stinson, AECOM
- 2:00 PM**                    **PAA, UV, and PAA/UV: Finding the Right "Bowl of Porridge" For Texas Type I Reuse Disinfection**  
Kaylee Dusek, Michael Watts, Garver; Matthew Jalbert, Trinity River Authority
- 2:30 PM**                    **Disinfection of Wastewater with PAA And UV Combined Treatment: A Pilot Study**  
Achal Garg, MSD City of Cincinnati; Vasudevan Namboodiri, EPA; Bruce Smith, Tyler Bowman, Metropolitan Sewer District, City of Cincinnati
- 3:00 PM**                    **Networking Break**
- 3:45 PM**                    **Advanced Dose Control Strategy for Disinfection of Wastewater By Peracetic Acid: Pilot-Scale Validation**  
Kyriakos Manoli, Siva Sarathy, Trojan Technologies; Paris Neofotistos, US PEROXIDE; Domenico Santoro, Trojan Technologies
- 4:15 PM**                    **UV-C LED – Advances in Technology Foster Implementation**  
Gary Hunter, Black & Veatch; Oliver Lawal, AquiSense Technologies; Raymond Ehrhard, Wahington University

*Session 03 Continues on following page*

## TECHNICAL PROGRAM

*Session 03 Continues from the previous page*

**Alternate 1**      **Re-Birth of Ozone Based IPR Treatment Trains and the Resulting Integrated Controls for an Efficient Process**  
Flis Kevin, XYLEM; Charles Bott, Germano Salazar-Benites HRSD; Lauren Zuravnsky; Matt Poe, Chris Wilson, HRSD; Steve Green, Xylem

**Alternate 2**      **Peracetic Acid Disinfection: Demonstration Of PAA As Sole Wastewater Disinfectant At The Berkeley Heights WPCP**  
Christopher Jepson, Van Cleef Engineering Associates

**4:45 PM**      **Session Adjourns for Networking Reception**

## TECHNICAL PROGRAM

### **Session 04: Potable Reuse (DPR and IPR) - Safety, Water Quality Control, Demonstration**

**Monday, July 30**

**1:30 PM – 3:00 PM**

**Moderators:** Val Frenkel, Greeley and Hansen; Stuart F. Humphries, Orthos Liquid Systems, Inc.

- 1:30 PM**            **Are TOC Limits Appropriate for Regulating Potable Reuse? Analyzing Organics through the Domestic Water Cycle - Research Results from WERF Project-15-04**  
Larry Schimmoller, James Lozier, JACOBS CH2M
- 2:00 PM**            **Using Large Data Sets and Statistical Tools to Define "Failure" and Demonstrate the Safety of DPR**  
Austa Parker, Andrew Salveson, Carollo Engineers; David Hokanson, Shane Trussell, Trussell Technologies Inc; Jeff Soller, Soller Environmental, LLC
- 2:30 PM**            **A Framework for Regulating Raw Water Augmentation - Results from a Pathogen Benchmarking Study**  
Dave MacNevin, Andrea Netcher, Matt Azarian, Tetra Tech
- Alternate**            **PureWaterSF: Direct Potable Reuse Demonstration in San Francisco**  
Andrea Corral, Carollo Engineers; Manisha Kothari, Paula Kehoe, San Francisco Public Utilities Commission; Nicola Fontaine, Andrew Salveson, Carollo Engineers
- 3:00 PM**            **Session Adjourns for Networking Break**



## TECHNICAL PROGRAM

### **Session 05: Expanding Reuse Strategies and Markets**

**Monday, July 30**

**3:45 PM – 4:45 PM**

**Moderators:** Patrick Regan, Evoqua Water Technologies; Matt Noesen, CH2M

- 3:45 PM**            **Stormwater Reuse: Evaluation of Municipal Residential Stormwater as a Source for Aquifer Storage and Recovery**  
Jason Melady, GSI Water Solutions, Inc.; Jadene Stensland, Clean Water Services, OR; Andrew Davidson, GSI Water Solutions, Inc.; David Winship, City of Beaverton
- 4:15 PM**            **Telling the Story Of ONE WATER A Pint At A Time: What Four Years Of Drinking Beer Made From Wastewater Has Taught Us About The Language Of Water**  
Mark Jockers, Mark Poling, Clean Water Services, OR
- Alternate**            **Waterless Urinals: A Potential Extraction Medium for Pharmaceuticals in Wastewater**  
Utsav Thapa, University of Nevada; Chelsea Cluff, University of Colorado, Boulder; David Hanigan, University of Nevada
- 4:45 PM**            **Session Adjourns for Networking Reception**

## TECHNICAL PROGRAM

### **Session 06: Disinfection Optimization and Control of Disinfection Byproducts (DBPs)**

**Tuesday, July 31**

**8:30 AM – 11:45 AM**

**Moderators:** Scott Schaefer, AE2S; Val Frenkel, Greeley and Hansen

- 8:30 AM**            **Disinfection By-Product (DBP) Formation and Control in Potable Reuse Applications**  
Caroline Russell, Carollo Engineers
- 9:00 AM**            **Evaluation of Over 100 Disinfection Reactor Tracer Studies in Washington State**  
Keith Stewart, Russ Porter, Jay Swift, Gray & Osborne
- 9:30 AM**            **Ranitidine – A Potential Significant NDMA Precursor for Potable Reuse**  
Erica Marti, University of Nevada, Las Vegas; Caitlin Glover; Eric Dickenson, Southern Nevada Water Authority
- 10:00 AM**           **Networking Break**
- 10:45 AM**           **Getting a Jump on Disinfection Byproducts: A Pro-Active Approach for Optimizing Reclaimed Water Disinfection**  
Andrea Netcher, Gary Revoir, Tetra Tech
- 11:15 AM**           **Experiences and Successful Strategies for Reuse Water Chlorine Residual Control**  
Bing Lin, Alfredo Suarez, EPCOR Water Services
- 11:45 AM**           **Session Adjourns for Luncheon**

## TECHNICAL PROGRAM

### **Session 07: New Water Reuse Approaches to Manage Tomorrow's Challenges**

**Tuesday, July 31**

**8:30 AM – 10:00 AM**

**Moderators:** Jenny Reina, CH2M; Justin Mattingly, Water Research Foundation

**8:30 AM**                    **Antibiotic Resistance: State of The Science of Proliferation in Wastewater Treatment and Water Reuse Implementation**  
Daniela Castañeda, Allegra Da Silva, Stantec; Daniel Gerrity, University of Nevada, Las Vegas; Channah Rock, Jean McLain, University of Arizona

**9:00 AM**                    **Quantification and Prediction of Degradation and Deactivation Kinetics of Antibiotic Resistance Genes During Disinfection/Oxidation Processes: From Bench-scale to Full-scale**  
Huan He, Peiran Zhou, University of Washington; Kyle Shimabuku, University of Colorado, Boulder; Xuzhi Fang, University of Washington; Annika Anderson, Washington University in St. Louis; Michael Dodd, University of Washington

**9:30 AM**                    **Assessing Chemical Disinfectant Alternatives Using I-CT Dose-Response Kinetics for Multiple Microorganisms**  
Roberta Maffettone, Western University - Trojan Technologies; Siva Sarathy, Trojan Technologies; Paris Neofotistos, US PEROXIDE; Domenico Santoro, Trojan Technologies; Ronald Gehr, McGill University Dept of Civil Engineering

**10:00 AM**                    **Session Adjourns for Networking Break**

## TECHNICAL PROGRAM

### **Session 08: Supporting Public Health with Water, Sanitation and Hygiene (WaSH) Projects**

**Tuesday, July 31**

**10:45 AM – 11:45 AM**

**Moderators:** Michael Watts, Garver; Bob Reimers, Environmental Consultant/Tulane University

- 10:45 AM**            **Managing Chlorinated Water for Ebola Disinfection**  
Lee Gary, Tulane University; Robert Reimers, Tulane University/Consultant; Kari Brisolaro, LSUHSC
- 11:15 AM**            **Increasing In-Home Water Availability in Remote Alaska's Homes with Water Reuse**  
Aaron Dotson, University of Alaska Anchorage
- Alternate**            **Effects of Disinfection Process on Antibiotic Resistant Bacteria in The Secondary Effluents of Sewage Treatment Plant, India**  
Jahnvi Kurasam, Sudipta Sarkar, Prabhat Kumar Mandal, IIT Roorkee
- 11:45 AM**            **Session Adjourns for Luncheon**

## TECHNICAL PROGRAM

### **Session 09: Residuals, Sanitation and Hygiene: Concerns, Design and Application for Low Technology Processing**

**Tuesday, July 31**

**1:30 PM – 4:45 PM**

**Moderators:** Leonard Casson, University of Pittsburgh; Krishna Krishnapurs, Parkson, Inc.

- 1:30 PM**                    **Sampling and Disinfection of Wastewater relative to Parasites and the Role of associated Surrogates, Indicators and Non-Vital Models**  
Dwight Bowman, Cornell University Dept Of Micro & Imm
- 2:00 PM**                    **Effective Treatment of Biosolids and Manures – Multiple Additives/Factors for Disinfection, Stabilization and Product Quality**  
Robert Reimers, Tulane University/Consultant
- 2:30 PM**                    **Low-Cost, Low-Tech Biosolids Treatment via combined Long-Term Storage (Lagoon) and Air Drying: A**  
Jennifer Becker, Michigan Tech University
- 3:00 PM**                    **Networking Break**
- 3:45 PM**                    **Effectiveness of Tropical Lagoon Treatment for Disinfection of Domestic Septage**  
Joel Nkiama Konde, Kinshasa School of Public Health, University of Kinshasa
- 4:15 PM**                    **Usage of Low-Cost Bio Electro Technology to convert Class B Biosolids Processes (aerobic and anaerobic digestion) to Class A Disinfected and Stabilized Biosolids**  
Maria Elektorowicz, Concordia University
- 4:45 PM**                    **Symposium Adjourns**

## TECHNICAL PROGRAM

### **Session 10: Optimizing a Future for DPR – Design, Implementation and Operation of Robust Solutions**

**Tuesday, July 31**

**1:30 PM – 3:00 PM**

**Moderators:** Andrew Salveson, Carollo; Melanie Mann, Hazen and Sawyer

**1:30 PM**                    **Accounting for Future Potable Reuse When Implementing Disinfection Solutions Today**  
June Leng, CH2M

**2:00 PM**                    **From Collection Systems to Tap: Resilience of Treatment Processes for Potable Reuse**  
Justin Mattingly, Water Research Foundation; Sharon Waller, Sustainable Systems, LLC – Consulting; Patti Craddock, Short Elliott Hendrickson, Inc.; Stuart Khan, University of New South Wales

**2:30 PM**                    **Design of a Managed Aquifer Recharge and Advanced Treatment Research Center**  
Andrew Newbold, Hazen and Sawyer; Lauren Zuravnsky; Charles Bott, Germano Salazar-Benites, Chris Wilson, HRSD; Dwayne Amos, David Briley, Hazen and Sawyer

**Alternate**                    **Planning for a Potable Reuse Future While Maximizing Recycled Water Today**  
Jasmine Diaz, Water Systems Consulting, Inc.

**3:00 PM**                    **Session Adjourns for Networking Break**

## TECHNICAL PROGRAM

### **Session 11: Disinfection of WRRF Effluents for Surface Water Discharges**

**Tuesday, July 31**

**3:45 PM – 4:45 PM**

**Moderator:** Cyndy Bratz, Tetra Tech; Bob Reimers, Environmental Consultant/Tulane University

- 3:45 PM**                    **City of Aberdeen, WA WRRF Disinfection Evaluation**  
Jay Swift, John Markus, Gray and Osborne
- 4:15 PM**                    **Using Dynamic Dilution Methods to Derive More Accurate Effluent Total Residual Chlorine Limits for WWRFs**  
Robert Sharp, Manhattan College; Sarah Galst, Hazen and Sawyer; Laura Grieco, NYC DEP
- 4:45 PM**                    **Symposium Adjourns**