

Disinfection and Reuse Symposium 2018

Linking Water Quality and Public Health

Portland, Oregon, USA
29 – 31 July 2018

ISBN: 978-1-5108-7159-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Water Environment Federation (WEF)
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Water Environment Federation (WEF)
at the address below.

Water Environment Federation (WEF)
601 Wythe Street
Alexandria, Virginia 22314
USA

Phone: 1-800-666-0206
Fax: 1-703-684-1545

csc@wef.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TECHNICAL PROGRAM

Session 02: Wet Weather Disinfection – Current and Emerging Practices

Monday, July 30

10:45 AM – 11:45 AM

Room: Belmont A

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; Maria Grieco, Keith Mahoney, New York City Department of Environmental Protection (NYCDEP); Xiao Lin, Sarah Galst, Hazen and Sawyer

11:15 AM **Bayonne, NJ Combined Sewer Overflow Treatment Demonstration Project: Disinfection Results**

Jurek Patoczka, Mott MacDonald; John Dening

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

Room: Belmont B

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, Zeynep Erdal, 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, Metropolitan Sewer District, City of Cincinnati; Vasudevan Namboodiri, EPA; Bruce Smith, Abdulaziz Al-Anazi, Brindha Murugesan, 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 And Performance**
Kyriakos Manoli, Siva Sarathy, Western University - Trojan Technologies; Paris Neofotistos, USP Technologies; Domenico Santoro, Western University - Trojan Technologies
- 4:15 PM** **UV-C LED – Advances in Technology Foster Implementation**
Oliver Lawal, AquiSense Technologies; Gary Hunter, Black & Veatch; 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**
Steve Green, Kevin Flis, Xylem; Charles Bott, Chris Wilson, Germano Salazar Benites, Lauren Zuravnsky, Matt Poe, HRSD
- Alternate 2** **Peracetic Acid Disinfection**
Christopher Jepson, Van Cleef Engineering Associates
- 4:45 PM** **Session Adjourns for Networking Reception in Belmont Foyer**

TECHNICAL PROGRAM

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

Monday, July 30

1:30 PM – 3:00 PM

Room: Belmont A

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

- 1:30 PM** **Are TOC and COD Limits Appropriate for Regulating Potable Reuse? Analyzing Organics through the Domestic Water Cycle: Results from WE&RF Project-15-04**
Larry Schimmoller, James Lozier, James Rosenblum, CH2MHill
- 2:00 PM** **Using Large Data Sets and Statistical Tools to Define "Failure" and Demonstrate the Safety of DPR**
Austa Parker, Carollo Engineers; Yan Qu, David Hokanson, Trussell Technologies; Jeff Soller, Soller Environmental; Eric Dickenson, Southern Nevada Water Authority; Robert Angelotti, Upper Occoquan Service Authority; Julian Inoue, Carollo Engineers; Shane Trussell, Trussell Technologies; Andrew Salveson, Carollo Engineers
- 2:30 PM** **A Framework for Regulating Raw Water Augmentation - Results from a Pathogen Benchmarking Study**
Dave MacNevin, Matt Azarian, Andrea Netcher, Tetra Tech
- 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

Room: Belmont A

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

- 3:45 PM** **Stormwater Reuse: Aquifer Storage and Recovery
Evaluation Using Municipal Residential Stormwater in the
Pacific Northwest**
Jason Melady, GSI Water Solutions, Inc.; Jadene Stensland,
Clean Water Services, OR; Andrew Davidson, GSI Water
Solutions, Inc.; David Winship, City of Beaverton, OR
- 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
- 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

Room: Belmont A

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, 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, Tetra Tech; Gary Revoir, Reiss
Environmental Consulting Engineers
- 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

Room: Belmont B

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

- 8:30 AM** **PureWaterSF: Direct Potable Reuse Demonstration in San Francisco**
Manisha Kothari, Paula Kehoe, San Francisco Public Utilities Commission; Andrea Corral, Carollo Engineers; Nicola Fontaine; Mark Millan; Andrew Salveson, Carollo Engineers
- 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, Kyle Shimabuku, 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, Siva Sarathy, Western University - Trojan Technologies; Ronald Gehr, McGill University Dept of Civil Engineering; Paris Neofotistos, USP Technologies; Domenico Santoro, Trojan Technologies
- 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

Room: Bellmont B

Moderators: Michael Watts, Garver

- 10:45 AM** **Managing Chlorinated Water for Ebola Disinfection**
Lee Gary, Robert Reimers, Tulane University; 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
- 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

Room: Bellmont B

Moderator: Leonard Casson, University of Pittsburgh

- 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
- 2:00 PM** **Effective Treatment of Biosolids and Manures – Multiple Additives/Factors for Disinfection, Stabilization and Product Quality**
Robert Reimers, Tulane University
- 2:30 PM** **Low-Cost, Low-Tech Biosolids Treatment via combined Long-Term Storage (Lagoon) and Air Drying: A Comparison of Two Pilot-Scale Studies**
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**
Adam Faschan, Ardurra Group
- 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

Room: Belmont A

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

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

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 Facility**
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.; Michael Falk, HDR 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

Room: Belmont A

Moderator: Cyndy Bratz, Tetra Tech

- 3:45 PM** **Aberdeen, WA Water Resource Recovery Facility
Disinfection System Evaluation**
Jay Swift, 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; Xiao Lin, Sarah Galst
Hazen and Sawyer; Kathy Ammari, Manhattan College; Laura
Grieco, New York City Department of Environmental Protection
(NYCDEP)
- 4:45 PM** **Symposium Adjourns**