

# Disinfection and Public Health 2013

February 24 – 26, 2013 Hyatt Regency Indianapolis Indianapolis, Indiana







This conference is hosted by the Water Environment Federation in cooperation with the Indiana Water Environment Association (IWEA), International Ultraviolet Association (IUVA), National Water Research Institute (NWRI), National Onsite Wastewater Recycling Association (NOWRA).

### **OPENING GENERAL SESSION**

Monday, February 25, 2013 8:30am – 10:00am

The Disinfection and Public Health 2013 Conference Opening General Session will take place on the morning of Monday February 25 at 8:30am. Further details will be provided in the coming weeks!

### TECHNICAL PROGRAM

**Session 1: Evaluating UV Doses and Operations** 

Monday, February 25, 2013 10:45am - 12:15pm

1A 10:45am	Investigating Polychromatic UV Complexity Part 2: Models and Experiments to Determine Polychromatic Correction Factors B. Petri1, S. McDermid1, W. Sun1, C. Shen2, K. Scheible2, Y. Lawryshyn3; 1Trojan Technologies, 2HDR Hydroqual Inc., 3University of Toronto.
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- 1B 11:15am On-Line UV Sensors in Wastewater Applications: Why They Work and How They Benefit Operations, Compliance, and Public Health J. Bandy; Carollo Engineeers.
- 1C 11:45am Operations Of Wastewater UV Systems Keys For Success G. L. Hunter; Wastewater Technologies, Black & Veatch.
- Alternate 1 Bigger, Better, Brighter: UV Inactivation with New Technology Integral to Melbourne's (Australia) Advanced Tertiary Treatment Upgrade
  B. R. Townsend; Water Technology Group, Black & Veatch.
- Alternate 2 Investigating Polychromatic UV Complexity Part 1: Microbial Action Spectra Sensitivity Analyses
  B. Petri, S. McDermid; Trojan Technologies.

### **Session 2: Disinfection Basics**

Monday, February 25, 2013 10:45am - 12:15pm

2A	10:45am	<b>Disinfection Fundamentals</b> Sam Jeyanayagam, CH2M Hill
2B	11:15am	Introduction to Disinfection Technologies Keith Bourgeous, Carollo Engineers
2C	11:45am	Emerging Technologies Kati Bell, CDM Smith

### **Session 3: New Options for Disinfection in the Developing World**

Monday, February 25, 2013 10:45am - 12:15pm

3A 10:45am Point-of-Use Disinfection of Household Drinking Water with

Copper/Zinc Ions and Oxide Nanoparticles: a Proof-of-Concept Lab

Study

M. D. Sobsey, A. Komandur, A. Malone; Environmental Sciences and

Engineering, University of North Carolina.

3B 11:15am TBD

3C 11:45am TBD

<sup>\*</sup>Detailed information on all technical session presentations will become available in the coming weeks.

### **Session 4: UV Standards and Validation**

Monday, February 25, 2013 1:45pm – 5:00pm

4A	1:45pm	Current Observations On UV Validation Protocols, Processes, And Practices C. Shen, O. K. Scheible; HDR.
4B	2:15pm	Uniform Protocol for Wastewater UV Validation Applications G. E. Whitby; UV Group, Calgon Carbon Corporation.
	2:45pm	Networking Break
4C	3:30pm	The Evolution of UV Disinfection in Indianapolis: Balancing Between USEPA Guidance and Other Regulatory Frameworks B. R. Townsend; Water Technology Group, Black & Veatch
4D	4:00pm	Alternate Indicator Organisms for Reclaimed Water in North Carolina P. Drummey Stiegel1, M. Mann1, M. Dalton2; 1Hazen and Sawyer, 2Public Utilities Department, City of Raleigh.
4E	4:30pm	Spot-check Bioassay of A Full-scale Gravity-flow Open-channel Vertical UV System at The Russian River WTF in Sonoma County, California  B. A. Ferran1, Y. Borroum2; 1Ozonia North America, 2Stantec Consulting Services.

Alternate 1 Validating Validation Microbes for UV Reactor Validations: Getting it Right
B. Petri1, S. McDermid1, W. Sun1, C. Shen2, K. Scheible2; 1Trojan
Technologies, 2HDR Hydroqual Inc..

Alternate 2 Validation of UV Reactors – Lessons Learned Andy Salveson

### **Session 5: Molecular Methods and Mechanistic Studies**

Monday, February 25, 2013 1:45pm – 5:00pm			
5A	1:45p	m	Degradation and Deactivation of Extracellular and Intracellular Antibiotic Resistance Genes during Disinfection Processes P. Zhou, S. Li, M. C. Dodd; Department of Civil and Environmental Engineering, University of Washington.
5B	2:15p	m	UV Or PAA For Wastewater Disinfection: A Comparison of the Impact on Virulence Genes R. Gehr1, B. Biswal1, R. Khairallah1, A. Mazza2, L. Masson2, D. Frigon1; 1Civil Engineering, McGill University, 2Biotechnology Research Institute.
	2:45p	m	Networking Break
5C	3:30p	m	An Assay for Estimating UV Disinfection Dose by Direct Quantification of DNA Damage in Indigenous Microorganisms in Drinking Water J. Blyth1, M. Templeton1, B. Cairns2; 1Department of Civil and Environmental Engineering, Imperial College London, 2Trojan Technologies.
5D	5D 4:00pm		From Systematic Process Optimization To Alternative Indicator Development, How MSDGC Has Utilized Innovative Approach to Optimize the Chlorination Disinfection Efficacy T. Lu, R. Welsh, D. Linn; MSDGC.
5E	5E 4:30pm		Effects of Extracellular Polymeric Substance Composition on Bacteria Disinfection by Monochloramine K. M. Coburn1, Z. Xue1, Y. Seo2; 1Civil Engineering, University of Toledo, 2Civil and Chemical Engineering, University of Toledo.
Alterr	nate 1		f Molecular Methods in Quantifying Wastewater Disinfection Boczek, EPA
Alternate 2 An Investigation of Mechanisms of UV Inactivation for a Complex Microorganism			

B. Petri1, R. Hedrick2, T. McDowell2, M. Adkinson2, K. Myklebust2, F.

Mardones2; 1Trojan Technologies, 2University of California.

### **Session 6: Community Health**

Monday, February 25, 2013 1:45pm – 5:00pm

6A 1:45pm Transforming Community Health with Simple Yet Effective

Disinfection in Central Andes of Perú

T. R. Armitage1, T. Jackson2;1Indian Health Service, US Public Health

Service, 2Missions, Immanuel Community Church.

6B 2:15pm TBD

2:45pm Networking Break

6C 3:30pm TBD

6D 4:00pm TBD

6E 4:30pm TBD

<sup>\*</sup>Detailed information on all technical session presentations will become available in the coming weeks.

### **Session 7: Effects of Upstream Processes on Disinfection**

Tuesday, February 26, 2013 8:30am – 9:30am

7A 8:30am Impact of Wastewater Disinfection on Reuse Applications

Mark LeChevallier, American Water

7B 9:00am Removals of Enteric Viruses and Indicator Organisms In Membrane

**Bioreactor and Conventional Secondary Activated Sludge** 

**Wastewater Plants** 

D. S. Francy1, T. Gellner2, A. Williston2, K. Riddell3; 1U.S. Geological Survey, 2CT Consultants, 3City of Delphos and Smith Environmental.

Alternate 1 The Effect of Secondary Treatment Operational Conditions on Floc

Composition, Structure, and UV Disinfection

Y. Azimi1, G. Allen2, R. Farnood1; 1Chemical Engineering and Applied Chemistry, University of Toronto, 2Chemcial Engineering and Applied Chemistry, University of Toronto.

Alternate 2 Controlling Ozone for Consistent Disinfection of Wastewater

K. Rakness; Process Applications Inc.

### **Session 8: Innovative Disinfection Methods**

Tuesday, February 26, 2013 8:30am – 11:45am

8A	8:30am	How UV-C LED Technology is Shaping Todays Water Treatment Solutions K. S. Kershner; Sales, Aquionics.
8B	9:00am	E-beam Disinfection of Water, Wastewater, and Recycled Water Theresa Slifko, Metropolitan Water District of Southern California
	9:30am	Networking Break
8C	10:15am	Low(est) Energy Disinfection using Pasteurization - Results of Demonstration Scale Testing in Ventura California A. Salveson1, D. Pfeifer2; 1Carollo Engineers Inc, 2City of Ventura.
8D	10:45am	Utilization of Ferrate for Wetland Rehabilitation. Public Health Considerations B. K. Skaggs, R. Reimers, A. Englande, C. A. Miller; Tulane University.
8E	11:15am	Evaluation of Oxidants Products as Disinfectants Seeking Reuse of Refinery Wastewater  A. A. Veiga; Technology forTreatment and Water Reuse, Petrobras Petroleo Brasileiro.

- Alternate 1 Alternate Disinfection Methods for Small Scale Systems Disinfection by products Design/Operation
  - J. Deogracias; Parkson Corporation, Fort Lauderdale, FL.

4Sankat Mochan Foundation.

Alternate 2 Innocuous For Reuse: Scaling Sustainable Wastewater Treatment and Natural Disinfection Processes For Safe Water Recycling At Delhi, California USA and at Varanasi, Uttar Pradesh, India.

F. B. Green1, R. E. Dawyot2, P. Husby3, E. McNaughton3, S. K. Mishra4, V. B. Mishra4; 1GO2 WATER, INC., 2Allied Engineers, Inc., 3US EPA Region 9,

### Session 9: Engineers Without Borders: Real World Projects and Lessons Learned

Tuesday, February 26, 2013 8:30am – 11:45am

9A 8:30am TBD

9B 9:00am TBD

9:30am Networking Break

9C 10:15am TBD

9D 10:45am TBD

9E 11:15am TBD

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### **Session 10: Wet Weather**

Tuesday, February 26, 2013 10:15am – 11:45am

10A	10:15am	First-flush Disinfection: Challenges of Chlorinating Wet Weather Primary Effluent to Meet A Stringent <i>E. Coli</i> Requirement M. J. Scarborough1, M. Arends2, S. Jeyanayagam1, L. Schimmoller1; 1CH2M HILL, 2City of Omaha.
10B	11:45am	In-Line Disinfection of Combined Sewer Flow in Detroit C. D. Courter1, M. Rabbaig2, N. M. Sajdak1, K. Al-Omari1; 1Hazen and Sawyer, 2Detroit Water and Sewerage Department.
10C	11:15am	Pilot Study Results for Peracetic Acid and Sodium Hypochlorite Disinfection of Combined Sewer Overflows J. M. Brady; Stanley Consultants.

Alternate 1 The Use of Ozone to Treat Wet Weather Flows in Springfield, MO G. Hunter, Black & Veatch.

### **Session 11: Biosolids**

Tuesday, February 26, 2013

1:15pm - 5:00pm 11A 1:15pm The Historical Impacts of Stabilization and Disinfection of Municipal Sludge John Donovan, Vice President, CDM Smith 11B 1:45pm **Future Directions of Biosolids Management for the Second Decade** of the 21st Century Robert S. Reimers, Yue Xu, Suresh D. Pillai, Kari B. Fitzmorris-Brisolara, Jan A. Oleszkiewicz, Gerald Seidl 11C 2:15pm Application of High Energy Electron Beam and Chemical Oxidants to **Destroy Endocrine Disrupting Compounds and Inactivate** (Pathogenic) Microorganisms in Wastewater Effluent and Biosolids Charlotte Rambo, Chandni Praveen, Palmy Jesudhasan, Robert S. Reimers, Suresh D. Pillai 2:45pm **Networking Break** 11D Potential Sterilization of Biosolids by BioElecticTM Process 3:30pm Eham Safaei Takhtehfouladi, Maria Elektrowicz, Robert S. Reimers, Jan A. Oleszkiewicz 11E **Developments in Disinfection Using Advanced Alkaline Stabilization** 4:00pm Kari Fitzmorris Brisolara, Robert S. Reimers 11F 4:30pm **Development of Heat Dried Product for Application in the Wetlands** Yue Xu, Robert S. Reimers, Andrew J. Englande

### **Session 12: Peracetic Acid**

Tuesday, February 26, 2013 1:15pm – 5:00pm

12A	1:15pm	Regulatory Environment and Challenges in Wastewater Disinfection
12B	1:45pm	Toxicology Profile of PAA in Wastewater Discharge Applications
12C	2:15pm	Disinfection Effectiveness of PAA for Target Pathogenic Microorganisms
	2:45pm	Networking Break
12D	3:30pm	PAA Pilot Demonstration to Determine PAA Efficacy as an Alternative Disinfectant to Chlorine and Sodium Bisulfite Technology for Wastewater J. T. Meakim1, R. T. Freeborn2; 1Engineered Water Treatment, Engineers Plus, Manchester, MO, 2PERAGreen Solutions.
12E	4:00pm	Design and Operation Considerations for PAA Disinfection Systems
12F	4:30pm	Lessons Learned from St. Augustine WWTP

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### **Session 13: Inactivation of Drinking Water Pathogens and Indicators**

Tuesday, February 26, 2013 1:15pm – 2:45pm

# 13A 1:15pm Kinetics and Mechanism of Coxsackievirus B5 Inactivation by Free Chlorine for Safe Global Water

T. Vonder Haar1, B. Marinas2, J. Shisler3; 1Civil and Environmental Engineering, Water Environment Federation, 2Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, 3Microbiology, University of Illinois at Urbana-Champaign.

13B 1:45pm Phot

Photochemical Activation of Free Chlorine to Reactive Oxygen Species for Enhanced Inactivation of Chlorine-Resistant Waterborne Pathogens

J. E. Forsyth1, Q. Mao1, J. S. Meschke2, M. C. Dodd1; 1Department of Civil and Environmental Engineering, University of Washington, 2Department of Environmental and Occupational Health Sciences, University of Washington.

13C 2:15pm

Anticipating Challenges Associated with In-Building Disinfection for Control of Opportunistic Premise Plumbing Pathogens

W. Rhoads, C. Proctor, A. Pruden, M. A. Edwards; Dept of Civil & Environmental Engineering, Virginia Tech.

Alternate 1 Groundwater Coliform Occurrence and Disinfection Practices R. A. Ryder; Kennedy/Jenks Consultants.

### **Session 14: DBPs and Trace Constituents**

Tuesday, February 26, 2013 3:30pm – 5:00pm

14A 3:30pm Effects of UV-Based Treatment on Water Chemistry in Chlorinated,

**Indoor Swimming Pool Facilities** 

M. Zare Afifi; Civil Engineering, Purdue University.

14B 4:00pm Influence of Biofilm on DBP Formation in a Simulated Water

**Distribution System** 

Z. Wang1, K. M. Coburn2, Y. Seo2; 1Chemical and Environmental Engineering, University of Toledo, 2Civil Engineering, University of

Toledo.

14C 4:30pm The Impact of Ferrate on the Deactivation of Estrogenic Activity as

Compared to Chlorine for New Orleans Wastewater Disinfection P. Srisawat; Global Environmental Health Sciences, Tulane University,

School of Public Health and Tropical Medicine.

Alternate 1 Nitrogenous Disinfection By-Products in 20 Water Supply Systems in England

M. Templeton1, N. Mokhtar Kamal1, N. Graham1, R. Kanda2; 1Department of Civil and Environmental Engineering, Imperial College London, 2Severn Trent Services.

Alternate 2 Dynamic Behavior of Volatile DBPs and their Precursors in Chlorinated, Indoor Swimming Pools

S. Weng1, M. Z. Afifi1, R. W. Staton1, Z. Sun1, R. Berry2, X. Zhu2, S. Parigrahi2, P. Rhoads2, E. R. Blatchley III1; 1School of Civil Engineering, Purdue University, 2West Lafayette High School.