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, International Ultraviolet Association, National Water Research Institute, and the National Onsite Wastewater Recycling Association.

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. It will feature Dr. Ernest R. Blatchley III, professor of civil engineering at Purdue University, and Board Member of Aqua Clara International, and Jim Williams, President and CEO of Peerless-Midwest Inc., and a Board Member of Water for People. They will explore the role of disinfection (and other treatment processes) in protecting public health around the world, and discuss projects in which water treatment has improved the health of communities.

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. Petri[1], S. McDermid[1], W. Sun[1], C. Shen[2], K. Scheible[2], Y. Lawryshyn[3]; [1]Trojan Technologies, [2]HDR Hydroqual Inc., [3]University of Toronto

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; Black & Veatch

Alternate 1 **Bigger, Better, Brighter: UV Inactivation with New Technology Integral to Melbourne's (Australia) Advanced Tertiary Treatment Upgrade**
B. R. Townsend; Black & Veatch

Alternate 2 **Investigating Polychromatic UV Complexity Part 1: Microbial Action Spectra Sensitivity Analyses**
B. Petri, S. McDermid; Trojan Technologies

TECHNICAL PROGRAM

Session 2: Disinfection Basics

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

2A	**10:45am**	**Disinfection Fundamentals** S. Jeyanayagam; CH2M Hill
2B	**11:15am**	**Introduction to Disinfection Technologies** K. Bourgeous; Carollo Engineers
2C	**11:45am**	**Emerging Technologies** K.Bell; CDM Smith

TECHNICAL PROGRAM

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; University of North Carolina
3B	**11:15am**	**Regulation of Water Treatment Options for Cholera Response in Haiti** D. Lantagne; Tufts University
3C	**11:45am**	**Optimising Char-Based Filtration Materials for Fluoride Removal from Drinking Water** L.R. Brunson, D.A. Sabatini; University of Oklahoma

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TECHNICAL PROGRAM

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 Hydroqual Inc.

4B 2:15pm **Uniform Protocol for Wastewater UV Validation Applications**
G. E. Whitby; 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; Black & Veatch

4D 4:00pm **Alternate Indicator Organisms for Reclaimed Water in North Carolina**
P. Drummey Stiegel[1], M. Mann[1], M. Dalton[2]; [1]Hazen and Sawyer, [2]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. Ferran[1], Y. Borroum[2]; [1]Ozonia North America, [2]Stantec Consulting Services

Alternate 1 **Validating Validation Microbes for UV Reactor Validations: Getting it Right**
B. Petri[1], S. McDermid[1], W. Sun[1], C. Shen[2], K. Scheible[2]; [1]Trojan Technologies, [2]HDR Hydroqual Inc.

Alternate 2 **Validation of UV Reactors – Lessons Learned**
A. Salveson; Carollo Engineers

TECHNICAL PROGRAM

Session 5: Molecular Methods and Mechanistic Studies

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

5A 1:45pm **Degradation and Deactivation of Extracellular and Intracellular Antibiotic Resistance Genes during Disinfection Processes**
P. Zhou, S. Li, M. C. Dodd; University of Washington

5B 2:15pm **UV Or PAA For Wastewater Disinfection: A Comparison of the Impact on Virulence Genes**
R. Gehr[1], B. Biswal[1], R. Khairallah[1], A. Mazza[2], L. Masson[2], D. Frigon[1]; [1]McGill University, [2]Biotechnology Research Institute

2:45pm **Networking Break**

5C 3:30pm **An Assay for Estimating UV Disinfection Dose by Direct Quantification of DNA Damage in Indigenous Microorganisms in Drinking Water**
J. Blyth[1], M. Templeton[1], B. Cairns[2]; [1]Imperial College London, [2]Trojan Technologies

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 4:30pm **Effects of Extracellular Polymeric Substance Composition on Bacteria Disinfection by Monochloramine**
K. M. Coburn, Z. Xue, Y. Seo; University of Toledo

Alternate 1 **Use of Molecular Methods in Quantifying Wastewater Disinfection**
L. Boczek; EPA

TECHNICAL PROGRAM

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. Armitage[1], T. Jackson[2];[1]Indian Health Service, US Public Health Service, [2]Missions, Immanuel Community Church
6B	**2:15pm**	**Sustainability and Impact of Hospital Water Treatment Systems in Honduras** K. Robb, K. Roguski, A. Huttinger, M. Sinha, K. Bauer, C. Moe; Emory University
	2:45pm	**Networking Break**
6C	**3:30pm**	**Accuracy and Usability of Free Chlorine Residual Testing Methods** A. Murray, D. Lantagne; Tufts University
6D	**4:00pm**	**The Safe Global Water Institute: An Integrated, Collaborative Approach for Improving Drinking Water and Sanitation Globally** A. M. Gall[1,2], V. Madadi[2,3], J. L. Shisler[1,2], B. J. Mariñas[1,2]; [1]University of Illinois at Urbana-Champaign, [2]Safe Global Water Institute, [3]University of Nairobi, Kenya
6E	**4:30pm**	**The Role Of Sanitation And Hygiene Practices In Contamination Of Household Drinking Water In Rural Households Of South Africa** N. Potgieter[1], T. Barnard[2]; [1]University of Venda, [2]University of Johannesburg, South Africa

TECHNICAL PROGRAM

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**
M. LeChevallier, Z. Bukhari, L. Weinrich, P. Jjemba; American Water

7B 9:00am **Removals of Enteric Viruses and Indicator Organisms In Membrane Bioreactor and Conventional Secondary Activated Sludge Wastewater Plants**
D. S. Francy[1], T. Gellner[2], A. Williston[2], K. Riddell[3]; [1]U.S. Geological Survey, [2]CT Consultants, [3]City of Delphos and Smith Environmental

Alternate **Lessons Learned: UV Wastewater Operations**
O. Lawal; Aquionics Inc.

TECHNICAL PROGRAM

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; Aquionics Inc.
8B	**9:00am**	**E-Beam Disinfection of Water, Wastewater, and Recycled Water** T. 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. Salveson[1], D. Pfeifer[2]; [1]Carollo Engineers, [2]City of Ventura
8D	**10:45am**	**Alternate Disinfection Methods for Small Scale Systems Disinfection by Products Design/Operation** J. Deogracias; Parkson Corporation
8E	**11:15am**	**Evaluation of Oxidants Products as Disinfectants Seeking Reuse of Refinery Wastewater** A. A. Veiga; Petrobras Petroleo Brasileiro

Alternate 1 **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. Green[1], R. E. Dawyot[2], P. Husby[3], E. McNaughton[3], S. K. Mishra[4], V. B. Mishra[4]; [1]GO_2 Water, Inc., [2]Allied Engineers, Inc., [3]US EPA Region 9, [4]Sankat Mochan Foundation

TECHNICAL PROGRAM

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

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

9A	**8:30am**	**Post-Implementation Assessment of Student Executed Clean Water Programs in Ecuador** G. String; Tufts University/Clarkson University
9B	**9:00am**	**Fighting Failure: Development Lessons Learned in Pueblo Nuevo, Honduras** C. Dutt, J. Bryant; Lehigh University
	9:30am	**Networking Break and Poster Session**
9C	**10:15am**	**A Self-Contained, PV-Powered Domestic Toilet and Waste Water Disinfection System** Y. Qu, H. Zhang; California Institute of Technology
9D	**10:45am**	**From the Amazon to the Andes: WASH Projects in Rural Peru** J. Milliken, G. Stonebraker; George Mason University
9E	**11:15am**	**Panel Discussion**

Poster **A Self-Contained, PV-Powered Domestic Toilet and Waste Water Disinfection System**
Y. Qu, H. Zhang; California Institute of Technology

TECHNICAL PROGRAM

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 *E. Coli* Requirement**
M. J. Scarborough[1], M. Arends[2], S. Jeyanayagam[1], L. Schimmoller[1]; [1]CH2M Hill, [2]City of Omaha

10B 11:45am **In-Line Disinfection of Combined Sewer Flow in Detroit**
C. D. Courter[1], M. Rabbaig[2], N. M. Sajdak[1], K. Al-Omari[1]; [1]Hazen and Sawyer, [2]Detroit 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

TECHNICAL PROGRAM

Session 11: Biosolids

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

11A 1:15pm **The Historical Impacts of Stabilization and Disinfection of Municipal Sludge**
J. Donovan; CDM Smith

11B 1:45pm **Future Directions of Biosolids Management for the Second Decade of the 21st Century**
R. S. Reimers[1], Y. Xu[1], S. D. Pillai[2], K. B. Fitzmorris-Brisolara[3], J. A. Oleszkiewicz[4], G. Seidl[5]; [1]Tulane University, [2]Texas A&M, [3]Louisanna State University, [4]University of Manitoba, [5]Headworks Inc.

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**
C. Rambo, C. Praveen, P. Jesudhasan, R. S. Reimers[1], S. D. Pillai[2]; [1]Tulane University, [2]Texas A&M

2:45pm **Networking Break**

11D 3:30pm **Potential Sterilization of Biosolids by BioElecticTM Process**
E. S. Takhtehfouladi, M. Elektrowicz, R. S. Reimers[1], J. A. Oleszkiewicz[2]; [1]Tulane University, [2]University of Manitoba

11E 4:00pm **Developments in Disinfection Using Advanced Alkaline Stabilization**
R. S. Reimers[1], K. B. Fitzmorris-Brisolara[2]; [1]Tulane University, [2]Louisanna State University,

11F 4:30pm **Development of Heat Dried Product for Application in the Wetlands**
Y. Xu, R. S. Reimers, A. J. Englande; Tulane University

TECHNICAL PROGRAM

Session 12: Peracetic Acid

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

12A	**1:15pm**	**Regulatory Environment and Challenges in Wastewater Disinfection** B. Bastian; USEPA
12B	**1:45pm**	**Toxicology Profile of PAA in Wastewater Discharge Applications** J. Meakim; Peragreen Solutions
12C	**2:15pm**	**Disinfection Effectiveness of PAA for Target Pathogenic Microorganisms** D. Santoro; Trojan UV
	2:45pm	**Networking Break**
12D	**3:30pm**	**Design and Operation Considerations for PAA Disinfection Systems** K. Bell; CDM Smith
12E	**4:00pm**	**PAA Pilot Demonstration to Determine PAA Efficacy as an Alternative Disinfectant to Chlorine and Sodium Bisulfite Technology for Wastewater** J. T. Meakim[1], R. T. Freeborn[2]; [1]Engineered Water Treatment, Engineers Plus, Manchester, MO, [2]PERAGreen Solutions.
12F	**4:30pm**	**FMC Case Study** M. Tran; FMC

TECHNICAL PROGRAM

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 Haar, B. Marinas, J. Shisler; University of Illinois at Urbana-Champaign

13B 1:45pm **Photochemical Activation of Free Chlorine to Reactive Oxygen Species for Enhanced Inactivation of Chlorine-Resistant Waterborne Pathogens**
J. E. Forsyth, Q. Mao, J. S. Meschke, M. C. Dodd; 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; Virginia Tech

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

TECHNICAL PROGRAM

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; Purdue University

14B 4:00pm **Influence of Biofilm on DBP Formation in a Simulated Water Distribution System**
Z. Wang, K. M. Coburn, Y. Seo; 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; Tulane University

Alternate 1 **Dynamic Behavior of Volatile DBPs and their Precursors in Chlorinated, Indoor Swimming Pools**
S. Weng[1], M. Z. Afifi[1], R. W. Staton[1], Z. Sun[1], R. Berry[2], X. Zhu[2], S. Parigrahi[2], P. Rhoads[2], E. R. Blatchley III[1]; [1]Purdue University, [2]West Lafayette High School