

# AGENDA AT A GLANCE

## TUESDAY, MARCH 6, 2018

7:00 am – 8:00 am	<b>Registration / Continental Breakfast</b>	
8:00 am – 8:10 am	Opening Remarks	
8:10 am – 8:55 am	<b>KEYNOTE ADDRESS</b> - Biology of Emerging Contaminants: Do They Eventually Emerge?	
8:55 am – 9:15 am	Student Flash Presentations	
9:15 am – 9:45 am	<b>Morning Networking Break / Exhibit Hall Opens</b>	
9:45 am – 12:05 pm	<b>SESSION #1</b>	<b>SESSION #2</b>
	PFAS State of Knowledge	Managing Emerging Contaminants in Drinking Water, Wastewater and Stormwater
12:05 pm – 1:20 pm	<b>Luncheon</b>	
12:45 pm – 1:15 pm	<b>Student Mentoring</b>	
1:20 pm – 3:15 pm	<b>SESSION #3</b>	<b>SESSION #4</b>
	1,4-Dioxane: Site Characterization and Remediation	1,2,3-TCP and NDMA
3:15 pm – 3:45 pm	<b>Afternoon Networking Break</b>	
3:45 pm – 5:15 pm	<b>SESSION #5</b>	<b>SESSION #6</b>
	1,4-Dioxane: Biological Treatment	Emerging Contaminants: U.S. Geological Survey Research Highlights
5:15 pm – 7:00 pm	<b>Networking Reception</b>	

## WEDNESDAY, MARCH 7, 2018

7:00 am – 8:00 am	<b>Registration / Continental Breakfast</b>	
8:00 am – 8:05 am	Opening Remarks	
8:05 am – 8:45 am	<b>KEYNOTE ADDRESS</b> - Oxidative Processes for Water Treatment: Options and Limitations	
8:45 am – 10:00 am	<b>PANEL DISCUSSION</b> - Managing PFAS Impacts Caused by AFFF Usage	
10:00 am – 10:10 am	Student Competition Award Winner Announcement	
10:10 am – 10:40 am	<b>Morning Networking Break</b>	
10:40 am – 12:10 pm	<b>SESSION #7</b>	<b>SESSION #8</b>
	PFAS and 1,4-Dioxane Toxicology Issues	Trace Organics in Biosolids
12:10 pm – 1:15 pm	<b>Luncheon</b>	
1:15 pm – 2:40 pm	<b>SESSION #9</b>	<b>SESSION #10</b>
	PFAS Management Strategies	Other Emerging Contaminants: Bisphenols, EDB, Norbornene Flame Retardants and Insecticides
2:40 pm – 2:55 pm	<b>Afternoon Networking Break</b>	
2:55 pm	<b>Exhibit Hall Closes</b>	
2:55 pm – 3:55 pm	<b>PRACTITIONER WORKSHOP #1</b>	<b>PRACTITIONER WORKSHOP #2</b>
	Advances in Treatment of PFAS-Impacted Environmental Media	PFAS Analytical Best Practices
4:00 pm – 5:00 pm	<b>PRACTITIONER WORKSHOP #3</b>	<b>PRACTITIONER WORKSHOP #4</b>
	Lessons Learned from PFAS Site Investigations	Managing PFAS-Impacted Granular Activated Carbon and Ion Exchange Resin Waste
5:00 pm	<b>Summit Concludes</b>	

# SUMMIT PROGRAM

**TUESDAY, MARCH 6, 2018**

7:00 am – 8:00 am

Registration / Continental Breakfast

8:00 am – 8:10 am

Welcome & Opening Remarks

Rula Deeb, Geosyntec Consultants | Sarah Harding, BNP Media | David Sedlak, University of California, Berkeley

8:10 am – 8:55 am

**KEYNOTE ADDRESS**  
**BIOLOGY OF EMERGING CONTAMINANTS:**  
**DO THEY EVENTUALLY EMERGE?**

Lisa Alvarez-Cohen, University of California, Berkeley

Societal demand for new products promotes the production and release of new chemicals. Additionally, population growth and climate change have produced increased demand on water resources, resulting in greater reliance on direct and indirect water reuse. Advances in analytical chemistry enables us to detect environmental contaminants with increasing sensitivity, allowing us to discover new families of emerging contaminants that threaten our water resources. Understanding the biotransformation potential of emerging contaminants has been a challenge that's been greatly assisted recently by means of molecular tools. This talk will describe lessons learned and research aimed at discovering the biodegradation potential and pathways for a variety of important "emerging contaminants", including MTBE, 1,4-dioxane, NDMA, PBDEs and PFASs.



WEBINAR SPONSORED BY:



8:55 am – 9:15 am

Student Flash Presentations

Tasha Kamegai-Karadi, Geosyntec Consultants

9:15 am – 9:45 am

Morning Networking Break / Exhibit Hall Opens

**TRACK 1**  
 Location: Westminster Ballroom I, II  
**TRACK 2**  
 Location: Standley Ballroom

**SESSION #1**  
**PFAS State of Knowledge**  
*Session Chairs:*  
 James L'Esperance, Northrop Grumman Corporation  
 Cornell Long, Air Force Civil Engineer Center

**SESSION #2**  
**Managing Emerging Contaminants in Drinking Water, Wastewater and Stormwater**  
*Session Chairs:* Alice Fulmer, The Water Research Foundation  
 Jeff Mosher, Carollo Engineers, Inc.

9:45 am – 10:20 am

**SESSION KEYNOTE**  
**Innovations in PFAS Assessment and Technologies: An Australian Perspective**  
 Ravi Naidu, CRC CARE

**SESSION KEYNOTE**  
**Contaminants of Emerging Concern in Potable Reuse**  
 Rhodes Trussell, Trussell Technologies, Inc.

10:20 am – 10:45 am

**Fact or Folklore? Sampling and Field Materials as Sources of PFAS Data Artifacts**  
 Jennifer Field, Oregon State University

**Identification of the "Active" Fraction and Metabolic Pathways in Trace Organic Contaminants Removal Using Stable Isotope Probing**  
 Catherine Hoar, Columbia University

10:45 am – 11:10 am

**In Situ Sequestration of Per- and Polyfluorinated Substances (PFAS) from Contaminated Groundwater**  
 Kurt D. Pennell, Brown University

**Oxidized But Not Mineralized: Formation of Toxic Unsaturated Eneals and Oxoals by Hydroxyl and Sulfate Radicals**  
 David Sedlak, University of California, Berkeley

11:10 am – 11:35 am

**Impacts of Perfluoroalkyl Ether Acids on Drinking Water Quality in North Carolina**  
 Detlef Knappe, North Carolina State University

**Impact of Inoculum Sources and Primary Carbon Sources on Removal of Pharmaceuticals and Personal Care Products in Biotreatment Systems**  
 Susan De Long, Colorado State University

11:35 am - 12:00 pm

**When Do We Need PFAS: The Chemical Class Approach Towards a Healthier Environment**  
 Arlene Blum, UC Berkeley & Green Science Policy Institute

**Hospital Wastewater: A Relevant Source of Constituents of Emerging Concern to the Water Cycle?**  
 Ruth Marfil-Vega, American Waters

# SUMMIT PROGRAM

TUESDAY, MARCH 6, 2018

12:00 pm – 12:05 pm	<b>FLASH POSTER PRESENTATIONS</b> <ol style="list-style-type: none"> <li>1. Remediation of Poly- and Perfluoroalkyl Substances: New Remediation Technologies for Emerging Challenge Jeff Burdick, Arcadis</li> <li>2. Repurpose and Optimization of an Existing Groundwater Pump and Treat System for Removal of Perfluoroalkyl Substances Benjamin Porter, APTIM</li> <li>3. Response to PFAS-Impacted Drinking Water Source at Moose Creek Community, AK Craig Kyhl, EA Engineering, Science and Technology, Inc., PBC</li> </ol>	<b>FLASH POSTER PRESENTATIONS</b> <ol style="list-style-type: none"> <li>1. Nanoscopic Photocatalysts for the Treatment of Organic Water Pollutants Donald Cropek, U.S. Army Corps of Engineers</li> <li>2. There is Too Much in the Water: VOCs, Active Pharmaceutical Ingredients, Polar Solvents and Many Unknowns Bernd Eccarius, ERM</li> <li>3. The TSCA Nanoscale Rule - An Update on the Status and Its Implications Kathleen Teuscher, TRC Environmental</li> </ol>
12:05 pm – 1:20 pm Luncheon - Sponsored by: 		
12:45 pm – 1:15 pm Student Mentoring Session		
<b>SESSION #3</b>		<b>SESSION #4</b>
<b>TRACK 1</b> Location: Westminster Ballroom I, II <b>TRACK 2</b> Location: Standley Ballroom	<b>1,4-Dioxane: Site Characterization and Remediation</b> <i>Session Chairs:</i> Mark Kluger, TRS Group Shaily Mahendra, University of California, Los Angeles	<b>1,2,3-TCP and NDMA</b> <i>Session Chairs:</i> John Schmeltzer, Vermont Department of Environmental Conservation Amy Wilson, TRC
1:20 pm – 1:55 pm	<b>SESSION KEYNOTE</b> <b>1,4-Dioxane Remediation - Where We Are, Where We're Going and What We Need</b> Erin Mack, DuPont Corporate Remediation Group	<b>SESSION KEYNOTE</b> <b>Life Cycles of Emerging Contaminants: 1,2,3-Trichloropropane (TCP) vs. the Others</b> Paul Tratnyek, Oregon Health & Science University
1:55 pm – 2:20 pm	<b>Breakthroughs and Lessons Learned from Treating 1,4-Dioxane in a Chemically Complex Water Stream</b> Brian Petty, Geosyntec Consultants	<b>Cometabolic Biodegradation of 1,2,3-Trichloropropane by Propane-Oxidizing Bacteria</b> Kung-Hui Chu, Texas A&M University
2:20 pm – 2:45 pm	<b>Optimized Treatment of 1,4-Dioxane in Extracted Groundwater and Reinjection for Aquifer Replenishment</b> Steven Woodard, ECT	<b>Field Validation of Low-Level TCP Remediation Approaches</b> Eric Sucomel, Geosyntec Consultants
2:45 pm – 3:10 pm	<b>1,4-Dioxane and 1,3-Dioxolane: Presence and Mobility of Contaminants of Emerging Concern in Groundwater at 1,1,1-Trichloroethane Polluted Sites in Flanders, Belgium</b> Roeland Van Muylder, Witteveen+Bos Belgium	<b>Biological Treatment of N-nitrosodimethylamine (NDMA) to Part-Per-Trillion Concentrations</b> Paul Hatzinger, APTIM
3:10 pm – 3:15 pm	<b>FLASH POSTER PRESENTATIONS</b> <ol style="list-style-type: none"> <li>1. Treatment of 1,4-Dioxane Comingled with TCA and DCA Using Both Oxidative and Reductive Pathways Brant Smith, PeroxyChem</li> <li>2. Drinking Water Combined Treatability Study for TCE, Dioxane and PFAS Compounds Stewart Abrams, Langan Engineering &amp; Environmental Services, Inc.</li> <li>3. Applying In Situ Thermal Remediation to Remove 1,4-Dioxane in Low Permeability Matrices Mark Kluger, TRS Group</li> </ol>	<b>FLASH POSTER PRESENTATIONS</b> <ol style="list-style-type: none"> <li>1. Zinc Oxide as a Promising Photocatalyst for Emerging Contaminants Removal Kung-Hui Chu, Texas A&amp;M University</li> </ol>

# SUMMIT PROGRAM

3:15 pm – 3:45 pm

Afternoon Networking Break - Sponsored by:



## SESSION #5

## SESSION #6

**TRACK 1**  
Location: Westminster Ballroom I, II  
**TRACK 2**  
Location: Standley Ballroom

### 1,4-Dioxane: Biological Treatment

Sponsored by: Design & Consultancy for natural and built assets



*Session Chairs:* Laurie LaPat-Polasko, Matrix New World Engineering  
Jennifer Nyman, Geosyntec Consultants

### Emerging Contaminants: U.S. Geological Survey Research Highlights

*Session Chairs:* Evan Cox, Geosyntec Consultants  
David Gent, U.S. Army Corps of Engineers

3:45 pm – 4:20 pm

### SESSION KEYNOTE 1,4-Dioxane Bioremediation: Lessons Learned in the Laboratory



Sandra Dworatzek, SiREM

### SESSION KEYNOTE Mixed Contaminant Exposure and Predicted Effects in Wadeable Streams of the Southeastern United States

Paul Bradley, U.S. Geological Survey

4:20 pm – 4:45 pm

### Comparison of Bench-Scale Environmental Molecular Diagnostics to Pilot-Scale Data During Bioremediation of 1,4-Dioxane



Monica Heintz, Arcadis

### How Do Numbers, Concentrations and Loads of Bioactive Chemicals in the Illinois Waterway Differ Upstream and Downstream From the Bigheaded Carp Population Migration Front

William Battaglin, U.S. Geological Survey

4:45 pm – 5:10 pm

### Coupling Electrochemical with Biological Oxidation of 1,4-Dioxane: Impacts on Degradation Rates, Co-Contaminant Removal and Disinfection By-Product Formation



Nasim Pica, Colorado State University

### Trends of Known and New Contaminants of Emerging Concern Measured in a Wastewater-Influenced Stream Using Passive Samplers

Ed Furlong, U.S. Geological Survey

5:10 pm – 5:15 pm

### FLASH POSTER PRESENTATIONS

1. Bioremediation of 1,4-Dioxane in Bioreactors Using Thermophilic Bacteria  
Raymond Sambrotto, Columbia University
2. 1,4-Dioxane Degradation in an Aerobic, Fixed-Film Bioreactor with Toluene, Other Volatile Organics and Phenolics in the Influent  
Paul Hare, OBG

### FLASH POSTER PRESENTATIONS

1. Ethynylestradiol in Wastewater Influent, Effluent and U.S. Streams (2011-2016)  
William Foreman, U.S. Geological Survey

5:15 pm – 7:00 pm

Networking Reception - Sponsored by:



## WEDNESDAY, MARCH 7, 2018

7:00 am – 8:00 am

Registration / Continental Breakfast

8:00 am – 8:05 am

### Opening Remarks

Rula Deeb, Geosyntec Consultants | Sarah Harding, BNP Media | David Sedlak, University of California, Berkeley

8:05 am – 8:45 am

### KEYNOTE ADDRESS OXIDATIVE PROCESSES FOR WATER TREATMENT: OPTIONS AND LIMITATIONS

Urs Von Gunten, Swiss Federal Institute of Aquatic Science and Technology

The presence of micropollutants in water resources and the urban water cycle from many sources such as agriculture, municipal wastewater and industry has raised concerns about the eco- and human toxicity of these compounds. This talk will focus on oxidation processes, share examples from oxidative drinking water and wastewater treatment and also discuss a novel test system, which allows operators to decide whether or not an oxidation process is meaningful for a particular water.



8:45 am – 10:00 am

### PANEL DISCUSSION - Managing PFAS Impacts Caused by AFFF Usage



**Moderator:** Adam Baas, DLA Piper LLP

**Panelists:** Arlene Blum, Green Science Policy Institute & UC Berkeley  
Ravi Naidu, CRC CARE & University of Newcastle, Australia

Cornell Long, Air Force Civil Engineer Center  
Tracie White, Colorado Department of Public Health & Environment

# SUMMIT PROGRAM

WEDNESDAY, MARCH 7, 2018

10:00 am – 10:10 am	<b>Student Competition Award Winner Announcement</b> Tasha Kamegai-Karadi, Geosyntec Consultants	
10:10 am – 10:40 am	<b>Morning Networking Break</b>	
<b>TRACK 1</b> Location: Westminster Ballroom I, II <b>TRACK 2</b> Location: Standley Ballroom	<b>SESSION #7</b> <b>PFAS and 1,4-Dioxane Toxicology Issues</b> Sponsored by:  <i>Session Chairs:</i> Janet Anderson, Integral Consulting Shalene Thomas, Wood	<b>SESSION #8</b> <b>Trace Organics in Biosolids</b> <i>Session Chairs:</i> Lola Olabode, The Water Research Foundation Jennifer Guelfo, Brown University
	<b>SESSION KEYNOTE</b> <b>Prioritizing PFAS Mixtures and Sites for Focused Ecotoxicology, Ecological Risk Assessment and Risk Communication</b> Christopher Salice, Towson University	<b>SESSION KEYNOTE</b> <b>Trace Organics in Biosolids: Trends, Myths and Challenges</b> Linda Lee, Purdue University
10:40 am – 11:15 am	<b>Prioritizing Data Needs For Assessing the Ecological Risks of PFASs in Habitats Impacted by Aqueous Film-Forming Foam Releases</b> Jason Conder, Geosyntec Consultants	<b>Assessing the Risk of Azithromycin and Ciprofloxacin in Biosolids Amended Soil</b> Drew McAvoy, University of Cincinnati
11:15 am – 11:40 am	<b>A Path Forward for 1,4-Dioxane: Opportunity for Increasing Remediation Goals</b> Mark Lafranconi, ERM	<b>Addressing PFAS Leaching Concern Related to Recycled Biosolids &amp; Other Residuals</b> Ned Beecher, NEBRA
11:40 am – 12:05 pm	<b>FLASH POSTER PRESENTATIONS</b> <ol style="list-style-type: none"> <li>Exploring Freshwater Species Sensitivity to Environmentally Persistent PFAS and PFAS Mixtures Jamie Suski, EA Engineering, Science and Technology, Inc., PCB</li> <li>Re-Assessment of Ecological Risk at a Mature Near-Bay Petroleum Sites Due to Emerging Polar Degradation Metabolite Contaminants Arnab Chakrabarti, Terraphase Engineering</li> <li>Enhanced Catalytic Degradation of Unregulated Organic Micropollutants via Heterogeneous Photo-Fenton Reactions Wen Zhang, New Jersey Institute of Technology</li> </ol>	
12:05 pm – 12:10 pm	<b>Luncheon - Sponsored by:</b> 	
<b>TRACK 1</b> Location: Westminster Ballroom I, II <b>TRACK 2</b> Location: Standley Ballroom	<b>SESSION #9</b> <b>PFAS Management Strategies</b> <i>Session Chairs:</i> Jeffrey Cornell, Tehama LLC Joe Montello, Republic Services, Inc.	<b>SESSION #10</b> <b>Other Emerging Contaminants: Bisphenols, EDB, Norbornene Flame Retardants and Insecticides</b> <i>Session Chairs:</i> Kristin Robrock, Exponent, Inc. David Share, Olin Corporation
	<b>SESSION KEYNOTE</b> <b>Air Force Meets Challenges of PFOS/PFOA at Closed Installations</b> Stephen TerMaath, Air Force Civil Engineer Center (AFCEC)	<b>SESSION KEYNOTE</b> <b>Vault Nanoparticles Packaged with Enzymes as an Efficient Biodegradation Technology for Bisphenol A and its Analogues</b> Shaily Mahendra, University of California, Los Angeles
1:15 pm – 1:50 pm	<b>PFAS Sampling and Analytical Challenges and Opportunities</b> Marc Mills, U.S. EPA	<b>Documenting and Enhancing In Situ Degradation 1,2-Dibromoethane (EDB)</b> Paul Hatzinger, APTIM
1:50 pm – 2:15 pm		

# SUMMIT PROGRAM

WEDNESDAY, MARCH 7, 2018

2:15 pm – 2:40 pm

**SESSION #9 CONTINUED**

**Remediation Challenges and Opportunities for AFFF-Impacted Sites**

Christopher Higgins, Colorado School of Mines

**SESSION #10 CONTINUED**

**Chemistry Rules: Developing MNA and Remedial Strategies for Emerging Contaminants**

Leah MacKinnon, Geosyntec Consultants

2:40 pm – 2:55 pm

Afternoon Networking Break

2:55 pm

Exhibit Hall Closes

## PRACTITIONER WORKSHOPS

2:55 pm – 3:55 pm

**PRACTITIONER WORKSHOP #1**

**PRACTITIONER WORKSHOP #2**

**TRACK 1**  
Location: Westminster Ballroom I, II  
**TRACK 2**  
Location: Standley Ballroom

**Advances in Treatment of PFAS-Impacted Environmental Media**

**Session Chair:** Bill DiGuseppi, Jacobs  
**Panelists:** Ali Ciblak, Langan Engineering and Environmental Services  
Jeff McDonough, Arcadis  
Charles Schaefer, CDM Smith  
Timothy Strathmann, Colorado School of Mines  
Danielle Toase, Ventia

**PFAS Analytical Best Practices**

**Session Chairs:** Pamela Hamlett, Air Force Civil Engineer Center  
Karla Buechler, TestAmerica  
**Panelists:** Will Backe, Minnesota Department of Health  
Harry Behzadi, SGS  
Taryn McKnight, TestAmerica  
Stephen Zeiner, Environmental Standards, Inc.  
Charles Neslund, Eurofins Lancaster Laboratories Environmental, LLC

4:00 pm – 5:00 pm

**PRACTITIONER WORKSHOP #3**

**PRACTITIONER WORKSHOP #4**

**Lessons Learned from PFAS Site Investigations**

**Session Chair:** Nathan Hagelin, Wood  
**Panelists:** Kristi Diller, Parsons Corporation  
Levi Todd, Ayuda Companies  
Catherine McMillen, Aerostar SES LLC  
Bob Anderson, Geosyntec Consultants

**Managing PFAS-Impacted Granular Activated Carbon and Ion Exchange Resin Waste**

**Session Chairs:** Stephanie Fiorenza, BP America  
Cynthia Tremblay, Department of National Defence, Canada  
**Panelists:** Francis Boodoo, Puro-lite  
Ramona Darlington, Battelle  
David Flannery, Cabot Corporation  
Matthew Robbins, TRC Environmental Corp.

5:00 pm

Summit Concludes



## BROADCASTING LIVE



### SELECT SESSIONS ON MARCH 6 WILL BE STREAMED LIVE!

This online extension of the Emerging Contaminants Summit, provides an opportunity to view the day 1 keynote presentation and session #5 presentations live online or on demand after the event. For the first time, you'll have the chance to view sessions again or share them with your colleagues who weren't able to make it to this year's Summit.



Look for the *Broadcasting Live icon throughout the agenda for available sessions.*