



**WEF/IWA Residuals and Biosolids Conference
2019**

Draft Technical Program

(Updated April 23, 2019)

May 7 - 10, 2019

**Greater Fort Lauderdale-Broward County
Convention Center**

Fort Lauderdale, Florida, USA

Pre-Conference Workshops

(Additional fees apply)

Tuesday, May 7, 2019

8:30am-5:00pm

WORKSHOP A

Anaerobic Digestion of Organics: Synergies between Public and Private Sector

All day workshop on organics/food waste anaerobic digestion to give the wastewater industry an overview of what's going on across North America in organics anaerobic digestion and investigate what role the wastewater industry can play in meeting organics recycling goals, and potential synergies between the public and private sector. The workshop will start with an introduction of the policy drivers, and the status of installations and future trends. Then we will dive into case studies of real world operating facilities both in the public sector and private sector, to learn from their successes and issues. The case studies were carefully selected to provide a broad picture of what's going on in the field of organics anaerobic digestion. The case studies are intended to represent a diversity of feedstocks, pre-treatment and treatment technologies, contractual arrangements, and both urban and rural facilities across various regions in North America. To conclude, workshop participants will engage in an interactive brainstorming session trying to answer the question "How Would You Handle Organics in Your Jurisdiction?"

Christine Polo, Sarah Deslauriers, Carollo; Drury Whitlock, Stantec; Chris Muller, Brown and Caldwell; Nora Goldstein, BioCycle; Patrick Serfass, American Biogas Council; Jim Meehan, Rahway Valley Sewerage Authority; Mike Hyatt, East Bay Municipal Utilities District; Tim Muirhead, Veolia; Dave Baran, Quasar; Jo Szczepkowski, Hitachi Zosen Inova

Tuesday, May 7, 2019

8:30am-5:00pm

WORKSHOP B

Developing a Comprehensive Biosolids / Residuals Program: "Think Beyond Class B Sludge"

This workshop will highlight the proper steps and considerations for developing a comprehensive biosolids / residuals master plan. Presenters will provide better understanding of current trends and drivers for a biosolids / residuals program that can span a 20-year or longer planning period. This workshop will focus on the following topics to assist a utility in developing a roadmap towards a sustainable, cost effective biosolids / residuals master plan.

- Current and potential future biosolids / residuals regulations
- Utility assessments of limitations and opportunities
- Evaluations of technologies and triple bottom line assessments
- Resource recovery and trends in beneficial reuse
- Strategic planning and capital improvement program development

Mohammad Abu-Orf, Hazen and Sawyer, K. Richard Tsang, CDM Smith; Laura Boczek, EPA; Lisa Challenger, Materials Matters; Chris Peot, DC Water; Andrea Bohmholdt, AECOM

Tuesday, May 7, 2019
8:30am-12:00pm

WORKSHOP C

Sharing Your Biosolids Story with the Public

Participants will leave this workshop with practical tools and proven tactics to improve biosolids storytelling to the public. Participants will learn about and draft a messaging “stool” that features three legs of soundbites, statistics, and stories. The workshop will explore the tools that are available for distributing biosolids messages, such as social media, blogs, and videos. Presenters will develop a list of potential third-party validators for biosolids, who can help tell the story to others in the community. The workshop will explore how to effectively build relationships with the media and pitch biosolids stories. Lastly, participants will learn how to prepare to respond to biosolids critics. The workshop will be conducted by communications experts from WEF and utilities and use case studies to demonstrate how to use the tools and tactics.

Travis Loop, WEF; Sarah Mason-Renton, Lystek; Kate Kurtz, SRT Consultants; Saul Kinter, DC Water; Trevor Brown, Region of Waterloo; Manon Fisher, San Francisco PUC; David Fleshler, South Florida Sun-Sentinel

Tuesday, May 7, 2019
1:30-5:00pm

WORKSHOP D

Current and Emerging Regulatory Trends in Biosolids Processing, Recovery, and Land Application

This half day workshop will discuss the current and emerging regulatory considerations for building a biosolids program. The workshop will review the different requirements for Class AA, A, and B sludge and the variations of treatment processes needed to attain these classifications along with associated reporting requirements. In addition, the workshop will identify emerging pollutants currently being researched for potential future regulations including microplastics, PFAS (perfluoroalkyl), and new pathogens of concern. Finally, strategies and methods for negotiating with regulators will be reviewed.

Fred Mussari, BCS Laboratories, Inc; Elizabeth Resek, EPA Office of Science and Technology; Laura Boczek, EPA National Risk Management Research Laboratory; Dilek Sanin, Middle East Technical University; Jacob Porter, Hazen and Sawyer; Lynnette Ramirez, Miami-Dade Water and Sewer District

Facility Tour

(Additional fees apply)

Broward County's North Regional Water and Wastewater Treatment Plant

Friday, May 10, 2019

1:00-5:00pm

Join us on Friday, May 10th for a walking tour of Broward County's North Regional Water and Wastewater Treatment Plant in Pompano led by plant experts who explain the processes and capabilities of this award-winning facility. On this tour, attendees will visit the new F.O.G. receiving station, co-gen facility, gravity thickeners, dewatering facility, current biosolids disposal methodology; and will discuss further upcoming upgrades to the facility.

About the Facility: The Plant was established in 1974, and is now a 95 million gallon per day facility that provides a regional wastewater treatment and disposal solution for Broward County's retail water customers and large users, including the Cities of Coconut Creek, Coral Springs, Deerfield Beach, Lauderhill, North Lauderdale, Oakland Park, Pompano Beach and Tamarac; North Springs Improvement District, Parkland Utilities, and North Springs Improvement District and Royal Utilities.

Attendees should plan to wear comfortable shoes and cool clothing. Hardhats are not required.

Session 01: Incineration

Wednesday, May 8, 1:30 PM - 4:45 PM

Moderators: Juan Oquendo, Carollo; Jeanette Brown, Manhattan College

- 1:30 PM** **Autocatalytic Pyrolysis for a NEWAGE (Nutrient, Energy, Water for Agriculture and Green Environment): Overview of Bench, Sub-Pilot, and Pilot Scale Studies**
Zhongzhe Liu, Daniel Zitomer, Patrick McNamara, Marquette University
- 2:00 PM** **The R2E2 Experience: Commissioning and Initial Energy Performance at the Green Bay Facility**
Peter Burrowes, Jacobs; William Angoli, Bruce Bartel, Nathan Qualls, New Water, Green Bay Metro Sewerage Dist; Steve Graziano, David Parry, Jacobs
- 2:30 PM** **Can an Old Dog Learn New Tricks: The Use of Modern Incineration with Phosphorous Recovery in Germany**
Harald Plank, Edward Fritz, Chip Pless, Huber Technology, Inc.
- 3:00 PM** **Networking Break**
- 3:45 PM** **The Road to Adding a Fourth Incinerator at the Metropolitan Wastewater Treatment Plant**
Stephen Norton, Joe Ward, Scott Smrekar, Katherine Heflin, Metropolitan Council Environmental Services
- 4:15 PM** **Mattabassett Experience: The First New Fluid Bed Municipal Sludge Incinerator in the U.S. Meeting the New MACT LLLL Emission Limits**
Levent Takmaz, SUEZ; David Stille, Arthur Simonian, Michael Manfre, Mattabassett District; Gary Claytor, Ken Glass, SUEZ
- 4:45 PM** **Session Adjourns for Networking Reception in Exhibit Hall**
- Alternate 1** **Restoration of the Bayshore Regional Sewerage Authority's Biosolids Incinerator and Air Emissions Controls**
Edward Barboe, Hazen & Sawyer; Robert Fischer, Peter Canal, Bayshore Regional Sewerage Authority; Bryan Atieh, Hazen & Sawyer
- Alternate 2** **ORC Energy Recovery System At The Greenway WWTP In London, Ontario**
Stanley Chilson, GHD; Mark Elliott, Kirby Oudekerk, Geordie Gauld, City of London; Throstur Gretarsson, Ian Scott, GHD

Session 02: Economic Drivers and Cost Recovery
Wednesday, May 8, 1:30 PM - 4:45 PM

Moderators: Jean Creech, Charlotte Water; Rashi Gupta, Carollo

- 1:30 PM** **Key Economic Criteria for Evaluating Co-Digestion at Small Water Resource Recovery Facilities: Rockland Case Study**
John Ross, Christopher Muller, Natalie Sierra, Tracy Chouinard, Wenye Kuo-Dahab, Brown and Caldwell; John Loughlin Sr., Town of Rockland
- 2:00 PM** **Determining the Best Approach for Financing and Delivery of Your Biogas to Renewable Natural Gas Project**
Becky Luna, Tyler Dougherty, Thomas Mossinger, David Pier, Carollo Engineers
- 2:30 PM** **Getting out of the Incinerator Business: Constructing the First Egg Shaped Digesters in Upstate New York**
John Story, Nicholas Hatala, GHD; Steven Devan, Oneida County WPC
- 3:00 PM** **Networking Break**
- 3:45 PM** **RIN and California LCFS Credit Revenue from Electric Vehicle Fueling with Biogas Fueled Combined Heat and Power**
Drury Whitlock, Rod Schebesch, Stantec; Bob Cleaves, Biomass Power Association; Mike Voll, Stantec
- 4:15 PM** **Resource Recovery Could Unlock Economic Opportunity and Leverage Dormant Industrial Infrastructure**
Chloe Greenberg, Donald Song, Edward Sharood, Woodard & Curran; Ned Beecher, NEBRA
- 4:45 PM** **Session Adjourns for Networking Reception in Exhibit Hall**
- Alternate 1** **Reviving a Biosolids Workhorse: The Rehabilitation of Passaic Valley Sewerage Commission's Wet Air Oxidization's Decant Facility**
Julian Chianelli, Hazen & Sawyer; Elizabeth Engelbert, Bridget McKenna, Patricia Lopes, Passaic Valley Sewerage Commissioners; William Gettings, Hazen & Sawyer
- Alternate 2** **Leveraging Existing Assets First (LEAF): Developing a Progressive Biosolids Management Approach Through Intentional Infrastructure Repurposing**
Ruth Borgmann, C. Michael Bullard, James Struve, Hazen & Sawyer; David Wiman, City of Columbia

Session 03: Codigestion

Wednesday, May 8, 1:30 PM - 4:45 PM

Moderators: Christine Polo, Carollo; J. Scott Carr, Black & Veatch

- 1:30 PM** **Learning from Co-Digestion Practices and Experiences in Europe and the US**
Tanja Rauch-Williams, Carollo Engineers; Christian Schaum, Bundeswehr University Munich
- 2:00 PM** **Sustainable Bioenergy Production by High Solids Anaerobic Digestion of Food Waste, Yard Waste, and Biosolids: A Case Study**
Eunyoung Lee, Paula Bittencourt, Lensey Casimir, Eduardo Jimenez, Deborah Oliveira, Luiza Oliveira, Gregory Hinds, Meng Wang, Qiong Zhang, Sarina Ergas, University of South Florida
- 2:30 PM** **Residues from the Dairy Industry as Co-Substrate for the Flexibilization of Digester Operation**
Christian Hubert, Bettina Steiniger, Christian Schaum, Universität der Bundeswehr München
- 3:00 PM** **Networking Break**
- 3:45 PM** **Co-digestion of Source Separated Organic Waste (SSO) with Thickened Waste Activated Sludge (TWAS) for Improving Biomethane Production- Effect of Mixture Ratio**
Anahita Rabii, Frances Okoye, Saad Aldin, Yaser Dahman, Elsayed Elbeshbishy, Ryerson University
- 4:15 PM** **Small Facilities Can Co Digest Too! Easton, PA Looks to the Future**
Micah Blate, Hazen & Sawyer; Mohammad Abu-Orf, AECOM; Charles Wilson, City of Easton STP; Djigui David; Stephane Yameogo; Timothy Conway; Dylan Curran; Robert Sharp, Manhattan College
- 4:45 PM** **Session Adjourns for Networking Reception in Exhibit Hall**
- Alternate** **Impact of Co-digestion of Food Waste on Microbial Communities**
Mingu Kim; Michael Keleman, InSinkErator; Basem Haroun; George Nakhla, Western University

Session 04: Advances in Stabilization
Wednesday, May 8, 1:30 PM - 3:00 PM

Moderators: Dilek Sanin, Middle East Technical University; Chris Muller, Brown & Caldwell

- 1:30 PM** **Determination of the Optimal Thermal Dose Input for Maximum AD Kinetics Based on the Gelation Potential of Sludge**
Munshi Md Raseel, George Washington University; Mandy Mitchell, DC Water; Rumana Riffat, George Washington University; Matthew Higgins, Bucknell University; Charles Bott, Hampton Roads Sanitation District; Sudhir Murthy, NEWhub Corp.; Ahmed Al-Omari, Christine deBarbadillo, Haydee De Clippeleir, DC Water
- 2:00 PM** **Critical Assessment and Optimisation of Sewage Sludge Mesophilic Anaerobic Digestion Processes at Operational Wastewater Treatment Plant**
Jin Liu, Stephen Smith, Imperial College London
- 2:30 PM** **How Class 'A' Can Have a Lower Overall Cost than Class 'B' - Evaluation and Implementation of the ATAD Process**
Heidi Bauer, Jacobs; Chris Matkins, Eric Bailey, South Fort Collins Sanitation District; David Oerke, Kile Snider, Jacobs
- 3:00 PM** **Session Adjourns for Networking Break in Exhibit Hall**
- Alternate** **Which Thermal Hydrolysis Process Configuration Do I Choose?**
David Solley, Rahul Chhillar, GHD
- Alternate** **Simple Improvement of Digested Sludge Quality: Is Post-Aeration the Key?**
Pavel Jenicek, Marie Vojtiskova, Barbora Satkova, Jan Bindzar, UCT Prague
- Poster** **Enhanced Biogas Production from Organized Industrial District Sludge**
Hazal Aksu Bahçeci, Middle East Technical University; Selim Sanin, Hacettepe University; Dilek Sanin, Middle East Technical University
- Poster** **Incidental ATAD at the Largest Wastewater Reclamation Plant in the World - A Case Study**
Ersin Kasirga, GHD; Ahmed Ifthikar, Parsons International

Session 05: Emerging Issues
Wednesday, May 8, 3:45 PM - 4:45 PM

Moderators: Banu Ormeçi, Carleton University; Jody Barksdale, Gresham Smith

- 3:45 PM** **Per-and Polyfluorinated Alkyl Substances in Commercially Available Biosolid-based Fertilizers: Effect of Post Treatment Processing Technologies**
Rooney Kim Lazcano, Michael Mashtare, Chloe De Perre, Linda Lee, Purdue University
- 4:15 PM** **Strategies for Treating Biodegradable and Recalcitrant Nutrient Fractions Generated from THP Processes**
Matthew Vanhorne, Wendell Khunjar, Gregory Pace, Katya Bilik, Hazen & Sawyer; Kendra Sveum, Donohue & Associates
- 4:45 PM** **Session Adjourns for Networking Reception in Exhibit Hall**

Session 06: Thickening, Dewatering, Drying I
Thursday, May 9, 8:30 AM - 11:45 AM

Moderators: Richard Tsang, CDM Smith; Alexander Kraemer, Centrisys/CNP

- 8:30 AM** **Full Scale Testing of HydroFLOW for Scale Prevention in Dewatering Systems**
Jose Bicudo, Region of Waterloo; Amber Klassen, Associated Engineering; Patryk Dorozynski, Wilfrid Laurier University; Wayne Parker, University of Waterloo; Scott Smith, Wilfrid Laurier University, Department of Chemistry; Jason Mank, Ontario Clean Water Agency; Micah Blate, Hazen & Sawyer
- 9:00 AM** **A New Spectrophotometry Based Method to Determine the Optimum Maturation and Activation Time for Polymers**
Banu Ormeci, Narek Martirosyan, Carleton University
- 9:30 AM** **State-of-the-Practice in Biosolids/Polymer Blending for Biosolids Dewatering**
David Oerke, Jacobs; Robert Harris, Kent Kilby, Gwinnett County Department of Water Resources; John Horton, Nicholas Freeman, Jacobs; Katie Snyder, Gresham, Smith and Partners
- 10:00 AM** **Networking Break**
- 10:45 AM** **Process Optimization through Mechanical Inline Polymer Mixer**
Edward Fritz, Chip Pless, Harald Neumann, Huber Technology
- 11:15 AM** **Pinellas County Utilities Polymer Contract Up for Expiration: Challenges & Resolutions with Finding the Right Thickening and Dewatering Polymer**
Maria Vega-Rodriguez, Nory Hancock, Ivy Drexler, Pinellas County Utilities; Stephanie Kapfenstein, Pinellas County Government; Faustino Prado, Prado & Associates
- 11:45 AM** **Session Adjourns for Lunch**

Session 07: Preconditioning I
Thursday, May 9, 8:30 AM - 11:45 AM

Moderators: Manny Moncholi, Miami-Dade County; Dru Whitlock, Stantec

- 8:30 AM** **Determination of Inhibition Constants for Free Ammonia in Anaerobic Digesters Pretreated by Thermal Hydrolysis**
Mojolaoluwa Ladipo-Obasa; [Baoqiang Li](#), DC Water; Adrian Romero, Jacobs; Matthew Higgins, Bucknell University; Ahmed Al-Omari, DC Water; Sudhir Murthy, NEWhub Corp.; Rumana Riffat, George Washington University; Haydee De Clippeleir, DC Water
- 9:00 AM** **Becoming a Utility of the Future - Achieving Energy Neutrality Through Co-digestion**
[Dave Baran](#), Quasar Energy Group
- 9:30 AM** **Disintegration and Siloxane Removal of Sewage Sludge by Ultrasonic Treatment Prior to Anaerobic Digestion**
[Kazuyuki Oshita](#), Atsuki Yana, Masaki Takaoka; Takashi Fujimori, Taketoshi Kusakabe, Kyoto University
- 10:00 AM** **Networking Break**
- 10:45 AM** **Evaluation of Biological Hydrolysis Pretreatment for the Sludge Anaerobic Digestion and Class A Biosolids**
Youngseck Hong, [Michael Theodoulou](#), Adam Bentham, SUEZ WTS
- 11:15 AM** **Turbocharging Egg-Shaped Digesters with WAS-Only Thermal Hydrolysis at the Hengelo WWTP**
[Hans Ellenbroek](#), Water Authority Vechtstromen; Davy Ringoot, Cambi AS; Anouk Koelen, Water Authority Vechstromen
- 11:45 AM** **Session Adjourns for Lunch in Exhibit Hall**

Session 08: Biosolids Products and Marketability
Thursday, May 9, 8:30 AM - 10:00 AM

Moderators: Patrick Dube, Water Environment Federation; Jeffery LeBlanc, Denali Water Solutions

- 8:30 AM** **Building Relationships Through Research: Coupling Outreach with an On-Farm Trial of Bloom**
Saul Kinter, DC Water; Ben Beale, University of Maryland; William Brower, DC Water; Steven Walter, H & S Farms; Francesca Valente, Blue Drop; James Fotouhi, Chris Peot, DC Water
- 9:00 AM** **Getting to “Class A” - Beyond a Technology, a Strong Biosolids Program Requires a Class A Business Strategy**
Manon Fisher, San Francisco Public Utilities Commission; Natalie Sierra, Brown and Caldwell; Karri Ving, San Francisco Public Utilities Commission
- 9:30 AM** **Starting with the End in Mind: How a Biosolids Market Assessment Revealed an Unexpected Alternative for the Goleta Sanitary District**
Lisa Challenger, Material Matters; Derya Dursun, Mohammad Abu-Orf, AECOM; Steve Wagner, Goleta Sanitary District
- 10:00 AM** **Session Adjourns for Networking Break in Exhibit Hall**
- Alternate** **Successful Marketing Strategies for a Biosolids Fertilizer**
Mike Dougherty, Simon Meulendyk, Samantha Halloran, Lystek International Inc

Session 09: Biogas
Thursday, May 9, 8:30 AM - 10:00 AM

Moderators: Anna Munson, Black & Veatch; Masaki Takaoka, Kyoto University

- 8:30 AM** **Operational Characteristics of Simultaneous Removal of Siloxane and H₂S from Biogas Using a Biotrickling Filter**
Yuyao Zhang, Kyoto University; Daisuke Minami, Ebarajitsugyo.Co.,Ltd.; Toshihiro Tanaka, Ebara Corporation Environmental; Kazuyuki Oshita, Masaki Takaoka, Kyoto University
- 9:00 AM** **Finding the Best Use for Biogas - How Site Specific Factors Impact the Decision Making Process**
Tyler Dougherty, Becky Luna, Thomas Mossinger, Carollo; John Gage, City of Longmont; Gunter Ritter, South Platte Water Renewal Partners
- 9:30 AM** **Uniform Basis for Estimating Methane Production with Co-Digestion**
Ron Appleton, Carollo
- 10:00 AM** **Session Adjourns for Networking Break in Exhibit Hall**
- Poster** **Cost-Effective Biogas Treatment: Understanding Factors That Affect Media Life**
Alison Nojima, Nancy Andrews, Brown and Caldwell; Shawn Redmond, Delta Diablo SD; Jon Diller, City of Eugene

Session 10: Land Applications and Management
Thursday, May 9, 10:45 AM - 11:45 AM

Moderators: Natalie Sierra, Brown and Caldwell; Sherri van der Wege, Atkins

- 10:45 AM** **Composting, an Option to Reduce Nitrogen Release Rate and Optimize Environmental Benefits of Biosolids**
Olawale Oladeji, Guanglong Tian, Pauline Lindo, Kuldip Kumar, Metropolitan Water Reclamation District of Greater Chicago; Albert Cox; Lakhwinder Hundal; Heng Zhang, MWRD of Greater Chicago At Cicero Stickney WTP
- 11:15 AM** **Puketutu Island Quarry Rehabilitation with Biosolids - the First 10 Years**
Rob Tinholt, Shane Morgan, Watercare Services Ltd
- 11:45 AM** **Session Adjourns for Lunch in Exhibit Hall**

Session 11: Energy

Thursday, May 9, 10:45 AM - 11:45 AM

Moderators: Winson Lay, Singapore Public Utilities Board; Rusty Schroedel, AECOM

10:45 AM **RNG vs CHP: Comparing Value, Energy Output, and Carbon Emissions Reductions for Digester Gas**

Chris Peot, James Fotouhi, DC Water

11:15 AM **Focus on Energy Recovery in Developing Capital Upgrades Recommendations Offers Many Benefits at For Solids Management at Peel Region Wastewater Treatment Plants**

Deborah Ross, Emma Shen, Jacobs; Cindy Kambeitz, John Glass, Region of Peel

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

Session 12: Thickening, Dewatering, Drying II
Thursday, May 9, 1:30 PM - 4:45 PM

Moderators: Alexander Kraemer, Centrisys/CNP; Terry Goss, AECOM

- 1:30 PM** **Improvements in Process Performance of Dewatering Centrifuges With Super-Deep Pond Operation**
Frank Scriver, Flottweg Separation Technology, Inc.
- 2:00 PM** **Drying Can Be Odor-Free (and Headache Free), if Managed Holistically from Design Through Operation**
Lynne Bouchy, Gerardo Aguilera Soriano, Naike Noyon, Françoise Rousseille, Magalie Denisan, Valarie Nastasi, SUEZ; Zdenek Frcek, Vodakva
- 2:30 PM** **The Impact of Base Pretreatment on Dewaterability of Conventional vs. Bio-P Anaerobically Digested Biosolids**
Eileen Kennedy, Marquette University; Patrick McNamara; Brooke Mayer, Marquette University
- 3:00 PM** **Networking Break**
- 3:45 PM** **Case Study: Using Cerium Chloride to Control Soluble Orthophosphate Concentration and Improve the Dewaterability of Sludge**
Dian Zhang, Virginia Tech; Robert Angelotti; Erick Schlosser, Upper Occoquan Service Authority; Zhi-Wu Wang, Virginia Tech
- 4:15 PM** **Progressing to Class A Biosolids: A Guide to Thermal Hydrolysis Process Pre-Treatment Options**
Frances Burlingham, Jann Yamauchi, Perry Schafer, Tracy Stigers, Brown and Caldwell
- 4:45 PM** **Session Adjourns**
- Alternate** **Pilot-study: An Approach to Improve the Performance of Existing Sludge Dewatering Process**
Pranoti Kikale, Globaltech Inc.; Brent Weidenhamer, Seacoast Utilities Authority; David Schuman, Globaltech Inc.

Session 13: Preconditioning II
Thursday, May 9, 1:30 PM - 4:45 PM

Moderators: Greg Woodward, Stantec; Angela Hintz, Arcadis

- 1:30 PM** **Impact of Ozone Pretreatment on Anaerobic Degradability of Aqueous Pyrolysis Liquid (APL) from Biosolids**
Saba Seyedj, Kaushik Venkiteshwaran, Daniel Zitomer, Marquette University
- 2:00 PM** **Continuous Thermal Hydrolysis without Steam or Chemicals**
Ulrich Knorle, Eliquo; James Goldhardt, Ovivo; Gloria Cadavid, Eliquo
- 2:30 PM** **Cost and Benefit Analysis of Implementing Centrifugal Thickening and Thermal Alkali Hydrolysis Technologies in a Medium Sized Water Resource Recovery Facility**
Gerhard Forstner, Zhongtian Li, Centrisys/CNP; Hiroko Yoshida; Menachem Tabanpour, Centrisys/CNP; Michael Stenstrom, University of California Los Angeles
- 3:00 PM** **Networking Break**
- 3:45 PM** **The Effects of Thermal Hydrolysis, Hydraulic Retention Time and Ammonia Concentration on Digestion Rates and Dewatering Across Digestion Sites in Thames Water UK**
Paul Fountain, Thames Water; Keith Panter, Cambi UK; Achame Shana, Thames Water
- 4:15 PM** **A Fresh Start for Palo Alto: Building the Biosolids Program of the Future**
Donald Song, Shalini Travedi, Woodard and Curran
- 4:45 PM** **Session Adjourns**
- Alternate** **Thermal Hydrolysis of Waste Activated Sludge for Digestion Enhancement**
Yu Lei, Winson Lay, Public Utilities Board of Singapore

Session 14: El Panorama de Biosólidos en Latinoamérica: Reglamentación y Tecnología (Running the Gamut of Biosolids in Latin America: Regulations and Technology)
Thursday, May 9, 1:30 PM - 4:45 PM

Moderadores: Alonso Griborio, Hazen and Sawyer; Juan Oquendo, Carollo

Esta sesión, completamente en español, presentará las practicas actuales y la investigación relacionadas con el tratamiento de biosólidos en Latinoamérica. Igualmente se discutirá el estado del arte para el tratamiento y la reutilización de biosólidos y la adaptación de estas tecnologías para su aplicación en Latinoamérica.

This session will be conducted completely in Spanish and will not be translated. It will present the current status, typical practices, and research for the treatment of biosolids in Latin America. The session will also discuss the state-of-the-art for biosolids treatment and resource recovery and its potential application to Latin America.

- 1:30 PM** **El Estado del Arte para el Tratamiento y la Reutilización de Biosólidos en Latinoamérica y el Mundo**
- Panelistas** Rudy E. Kilian, Carollo; Manny Moncholi, Miami Dade Water and Sewer; Fernando Chiriboga, Hazen and Sawyer
- 2:20 PM** **Factores que Impulsan la Selección De Procesos de Biosólidos en Latinoamérica: Siete Casos de Estudio**
Kathryn Snyder, Kurt Pfeffer, Hazen & Sawyer
- 2:40 PM** **Impacto de Tecnologías de Espesamiento y Deshidratación de Lodos en el Manejo Estratégico de Biosólidos**
Adrian Romero, Jacobs
- 3:00 PM** **Receso**
- 3:45 PM** **Recuperación de Estruvita e Hidroxiapatita Como Estrategia de Gestión Integral de Agua Residual Municipal: Caso de Estudio Universidad Autónoma de Occidente**
Nancy Vasquez Sarria, Daniela Maria Rivera Velasco, Diego Alejandro Larrahondo, Hernan David Mazuera Rios, Mario Andres Gandini, Clara Eugenia Goyes, Universidad Autónoma De Occidente
- 4:05 PM** **Sludge Electrocoagulation: Effect on Physicochemical Properties and Extracellular Polymeric Substances**
Anaid Cano Quiroz, Instituto de Ingeniería UNAM
- 4:25 PM** **Sácale el Jugo al Biogás: Maximizando el Valor del Gas Producido por Digestión Anaerobica**
Christine Polo, Black and Veatch
- 4:45 PM** **Termina Sesión**
- Poster** **Reactor Biológico de Electrohidrogénesis Como Alternativa Para la Recuperación de Energía a Partir del Tratamiento de Lixiviados Generados en Sitios de Disposición Final de Residuos Sólidos Municipales**
Nancy Vasquez Sarria, Laura Vanessa Giraldo, Universidad Autónoma de Occidente

Session 15: Process Optimization and Lessons Learned
Thursday, May 9, 1:30 PM - 3:00 PM

Moderators: Kristen Waksman, Arcadis; Bipin Pathak, DC Water

- 1:30 PM** **Hydraulic Mixing System Optimization for Anaerobic Digestion**
Matthew Bronk, [Tom Mangione](#), Evoqua Water Technologies
- 2:00 PM** **Dewatering Optimization at Capital Region Water: Effects of Biological Nutrient Removal, Polymer Selection and Mixing, and Chemical Addition on Dewatering Efficiency**
[Wade Yankey](#), Trudy Johnston, Material Matters Inc; Jess Rosentel, City of Harrisburg; Raymond Hoke, Capital Region Water
- 2:30 PM** **Its Alive: Bringing the Rehabilitated Columbia Metropolitan WWTP Anaerobic Digesters Back to Life**
[C Michael Bullard](#), Barry Bickerstaff, Meredith Bridwell, Hazen & Sawyer; Michael Foisy, David Wiman, City of Columbia; David Wagoner, CDM Smith CW2020 Program
- 3:00 PM** **Session Adjourns for Networking Break in Exhibit Hall**
- Poster** **Electromagnetic Wave-Induced Heavy Metal Removal for Dewatered Biosolids Composting**
[Simeng Li](#), Gang Chen, FAMU-FSU College of Engineering
- Poster** **Deep Earth Digestion - An Innovative Technique for Sewage Wastewater and Biosolids Management in the Miami-Dade County of Florida**
Yashesh Panchal, [Ibrahim Mohamed](#), Nihal Mounir, Omar Abou-Sayed, Advantek Waste Management Svcs LLC; Homayoun (Omar) Moghaddam, Geoenvironment Technologies

Session 16: Regionalization and Master Planning I
Thursday, May 9, 3:45 PM - 4:45 PM

Moderators: Natalie Sierra, Brown and Caldwell; Shannon Dunne, Houston Public Works

- 3:45 PM** **Regionalization of Biosolids Treatment with New Digestion, Advanced Energy Recovery, and Beneficial Reuse at Albany and Saratoga Counties**
Eric Auerbach, Robert Ostapczuk, Arcadis; Timothy Murphy, Albany County Water Purification District; Dan Rourke, Saratoga County Sewer District No 1
- 4:15 PM** **Sludge Management Master Plan For Istanbul Metropolitan Municipality**
Osman Arıkan, Kaan Dereli, Evren Ersahin, Istanbul Technical University; Fatih Turan, Istanbul Water and Sewerage Administration
- 4:45 PM** **Session Adjourns**
- Poster** **Co-incineration Possibility and Regional Analysis of Municipal Solid Waste and Sewage Sludge**
Masaki Takaoka, Zheng Zhang, Kazuyuki Oshita, Ryo Matsuo, Kyoto Univeristy; Kazue Shibata, Masaru Sakamoto, SANKI Engineering Co., LTD.

Session 17: Regionalization and Master Planning II
Friday, May 10, 8:30 AM - 11:15 AM

Moderators: John Hermann, Arminius; Ralph Eschborn, AECOM

- 8:30 AM** **A Test Case for Centralized Thermal Hydrolysis and Anaerobic Digestion for Medium Sized Communities**
Rahul Chhillar, [David Solley](#), GHD; Lauren Randall, David Derkenne, Hunter Water Corporation; Mayur Sathe, GHD
- 9:00 AM** **DC Water's Greenhouse Gas Modelling Results and Implications for Master Planning**
[James Fotouhi](#), Chris Peot, DC Water & Sewer Authority; John Willis, Brown and Caldwell; William Brower, DC Water & Sewer Authority
- 9:30 AM** **Developing a Sustainable Biosolids Program Through a Comprehensive, Collaborative Approach for Arlington County**
[Kwok-Wai Tsang](#), CDM Smith; Mary Strawn, Thomas Broderick, Arlington County; Jonathan Treadway, CDM Smith; [Lisa Racey](#), Arlington County Water Pollution Control Bureau
- 10:00 AM** **Networking Break**
- 10:15 AM** **Integrated Biosolids and Energy Management Planning: Achieving Energy Self-Sufficiency for Small Utilities**
[Derya Dursun](#), Bryan Lisk, Hersy Enriquez, Hazen & Sawyer; Mohammad Abu-Orf, AECOM; Dawn Guendert, Allan Briggs, Hazen & Sawyer; Steve Wagner, Goleta Sanitary District
- 10:45 AM** **Comprehensive Solids and Energy Analysis Leads to Long Term Facilities Plan at the Encina Water Pollution Control Plant**
Alison Nojima, [Natalie Sierra](#), [Thomas Chapman](#), Adam Ross, Scott Lacy, Brown and Caldwell; Scott McClelland, Encina Wastewater Authority; Perry Schafer, Brown and Caldwell
- 11:15 AM** **Conference Adjourns**
- Alternate** **Metropolitan Sewer District of Greater Cincinnati System-wide Biosolids Master Plan**
[Tracy Chouinard](#), Brown and Caldwell; [Matthew Spidare](#), Metropolitan Sewer District of Greater Cincinnati; Timothy Koch, John Ross, Natalie Sierra, John Willis, Brown and Caldwell

Session 18: Nutrient and Resource Recovery
Friday, May 10, 8:30 AM - 11:15 AM

Moderators: Bipin Pathak, DC Water; Xiongfai Xie, Hillsborough County Public Utilities Department

- 8:30 AM** **Nutrient Recovery: Mature and Ready for the Big Stage**
Bryan Atieh, Wendell Khunjar, Ron Latimer, Hazen & Sawyer; Kristen Wisdom, MWRD; Gayathri Ram Mohan, Gwinnett County Department of Water Resources
- 9:00 AM** **Enzyme Recovery From Waste Activated Sludge**
Ziyi Liu, Stephen Smith, Imperial College London
- 9:30 AM** **Doubling Down on Phosphorus**
Rachel Lee, Ostara Nutrient Recovery Technologies Inc.; Matt Seib, Madison Metropolitan Sewerage; Derek Lycke, Mikaela Verigin, Katherine Lai, Ostara Nutrient Recovery Technologies Inc.
- 10:00 AM** **Networking Break**
- 10:15 AM** **The DEMON® Anammox Process: Case Study at Pierce County Chambers Creek WWTP**
Chandler Johnson, World Water Works, Inc; Amanda Summers, Pierce County Public Works and Utilities; Henryk Melcer, Adam Klein, Brown and Caldwell
- 10:45 AM** **Controlling Phosphorus Recycles and Scaling with Struvite Precipitation**
Chris Moline, Brian Balchunas, Lawrence Hentz, HDR; Robert Hindt, Howard County – LPWRP
- 11:15 AM** **Conference Adjourns**
- Alternate 1** **Quantification of Struvite Content of Biosolids is Necessary to Avoid Bias in the Assessment of Digester and Dewaterability Performance**
Wendell Khunjar, Hazen & Sawyer
- Alternate 2** **High Efficiency Calcium Phosphate Recovery Technology at The Madison Metropolitan Sewerage District: Stability Metrics, Design Optimization, and Performance**
Menachem Tabanpour, Centrisys/CNP; Phillip Barak, Nutrient Recovery & Upcycling; Hiroko Yoshida; Zhongtian Li, Centrisys/CNP; Mauricio Avila, Nutrient Recovery & Upcycling; Gerhard Forstner, Centrisys/CNP; Leon Downing, Donohue and Associates

Session 19: Recent Advances in Biosolids Technology
Friday, May 10, 8:30 AM - 11:15 AM

Moderators: Jay Kemp, Black & Veatch; Charlie Alix, Stantec

- 8:30 AM** **The Smell of Successful Biosolids Resource Recovery by the University Area Joint Authority**
Aaron Stephens, Material Matters, Inc.; Robin Brandt; Jason Brown, Corey Miller, University Area Joint Authority; Ben Burns, Herbert Rowland & Grubic Inc
- 9:00 AM** **New GHG Methodology for Estimation of Methane Emissions from Digested-Biosolids Storage and Dewatering**
John Willis, Brown and Caldwell; William Brower, James Fotouhi, Chris Peot, DC Water & Sewer Authority; Pusker Regmi, Brown and Caldwell
- 9:30 AM** **Effluent Phosphorous Control through Facultative Biosolids Stabilization**
Albert Bock, Aquaconeer
- 10:00 AM** **Networking Break**
- 10:15 AM** **Supercritical Water Oxidation for Treatment of Wastewater Sludge and Recalcitrant Organic Contaminants**
Banu Ormeci, Carleton University
- 10:45 AM** **Techno-Economical Analysis of Anaerobic Digestion Pre-Treatment Technologies for a UK Site**
Ester Rus, Jacobs
- 11:15 AM** **Conference Adjourns**
- Alternate** **Torque Rheology and UV-Vis Spectrophotometry for Monitoring Sludge Characteristics and Optimization of Treatment Processes**
Banu Ormeci, Carleton University; Jordan Smyth, Jacobs

Session 20: Regulatory and Environmental Drivers
Friday, May 10, 8:30 AM - 11:15 AM

Moderators: Michele Duggan, Pinellas County Utilities; Tom Schwartz, Woodard & Curran

- 8:30 AM** **Protecting Beneficial Use - Current Legal Issues Impacting Land Application**
Andrew Silton, Beveridge & Diamond PC
- 9:00 AM** **Biosolids Management in Circular Economy: Lessons from Around the World**
Banu Ormeçi, Carleton University
- 9:30 AM** **How the Regulatory Environment in Germany is Driving Sludge Disposal**
Harald Plank, Chip Pless, Edward Fritz, Huber Technology, Inc.
- 10:00 AM** **Networking Break**
- 10:15 AM** **Full System Understanding, Integration, and Optimization Lead to Low Emissions**
Joseph Ward, George Sprouse, Laura Fletcher, Stephen Norton, Scott Smrekar, Metropolitan Council Environmental Services
- 10:45 AM** **Travelling Calgary's "Yellow Brick Road" to Biosolids Diversification - A Case Made for Capitalizing on Benefits, Feeding Giraffes, and Discovering the Wizard Behind the Curtain**
Catalina Nadeau-Bonilla, City of Calgary; John Lavery, Sylvis; Sam Bailey, City of Calgary
- 11:15 AM** **Conference Adjourns**
- Alternate 1** **Evaluation of Short Term Biosolids Management Options in Response to a Settlement Agreement**
Bill Fasth, Brown and Caldwell