WEF/IWA Residuals and Biosolids Conference 2019

Draft Technical Program

(Updated March 27, 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
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

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 requirement 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, Marquette University; Patrick McNamara

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, CDM Smith

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, Katherine Heflin, Metropolitan Council Environmental Services; Scott Smrekar

4:15 PM Mattabassett Experience: The First New Fluid Bed Municipal Sludge Incinerator in the U.S. Meeting the New MACT LII 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 The Restoration of an Existing Sewage Sludge Incinerator: Bayshore Regional Sewerage Authority's NIRO Incinerator Repairs and Mitigation Project  
Edward Barboe, Hazen & Sawyer; Robert Fischer, Peter Canal, Bayshore Regional Sewerage Authority; Bryan Atieh, Hazen & Sawyer

Alternate 2 Bioenergy Recovery from a Fluidized Bed Incinerator Using Organic Rankine Cycle Technology  
Stanley Chilson, GHD; Geordie Gauld, Mark Elliott, Kirby Oudekerk, City of London; Throstur Gretarssson, 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 Criteria for Considering the Economic Viability of Co-Digestion at Small Water Resource Recovery Facilities: Rockland Case Study
          John Ross, John Loughlin Sr; Tracy Chouinard, Brown and Caldwell; Wenye Kuo-Dahab; Natalie Sierra, Christopher Muller, Brown and Caldwell

2:00 PM  Comparing Approaches for Financing and Delivering Your Biogas to RNG Project
          Becky Luna, Tyler Dougherty, Carollo Engineers; 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, GHD; Steven Devan, Oneida County WPC; Nicholas Hatala

3:00 PM  Networking Break

3:45 PM  Revenue from Electric Vehicle Fueling with Combined Heat and Power
          Drury Whitlock, Rod Schebesch, 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

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, Passaic Valley Sewer District; 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 Bullard, James Struve, Hazen & Sawyer; David Wiman
Session 03: Codigestion
Wednesday, May 8, 1:30 PM - 4:45 PM

Moderators: Wendy Barrott, Great Lakes Water Authority; 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, Petersenstrasse 13

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, University of South Florida; Lensey Casimir; Eduardo Jimenez, Kimley-Horn and Associates, Inc.; Deborah Oliveira, Luiza Oliveira, University of South Florida; Gregory Hinds; Sarina Ergas, Meng Wang, Qiong Zhang, 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, Universität der Bundeswehr München; Christian Schaum, Petersenstrasse 13

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, Yaser Dahman, Saad Aldin, Ryerson University; Elsayed Elbeshbishy

4:15 PM  Small Facilities Can Co Digest Too! Easton, PA Looks to the Future
Micah Blate, Mohammad Abu-Orf, Hazen & Sawyer; Hossain Azam, Univ of Illinois; Robert Sharp, Manhattan College

4:45 PM  Session Adjourns for Networking Reception in Exhibit Hall

Alternate 1  Impact of Co-digestion of Food Waste on Microbial Communities
Michael Keleman, InSinkErator; George Nakhlia, Western University

Alternate 2  Enhancement of Biogas Production in Anaerobic Co-Digestion of Wastewater Sludge and Food Waste by Natural Fermentation Pretreatment
Agne Cunha, UFRJ; Isaac Volschan, LAGOA; Magali Cammarota, UFRJ
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 Rasel*, George Washington University; Mandy Mitchell, George Washington University; Matthew Higgins, Bucknell University; Charles Bott, Hampton Roads Sanitation District; Sudhir Murthy; Ahmed Al-Omari; Haydee De Clippeleir, District of Columbia Water and Sewer Authority

**2:00 PM**  
**Critical Assessment and Optimisation of Sewage Sludge Mesophilic Anaerobic Digestion Processes at Operational Wastewater Treatment Plant**  
*Stephen Smith, Jin Liu*, 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 1**  
**Which Thermal Hydrolysis Process Configuration Do I Choose?**  
*David Solley, Rahul Chhillar*, GHD

**Alternate 2**  
**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**  
*Selim Sanin, Hacettepe University; Hazal Aksu Bahçeçi, Faika 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 Ormeci, 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, Linda Lee, Purdue University

4:15 PM  Strategies for Treating Biodegradable and Recalcitrant Nutrient Fractions Generated from THP Processes  
Wendell Khunjar, Hazen & Sawyer; Katya Bilik; Gregory Pace

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, Amber Klassen, Region of Waterloo; 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, Carleton University; Narek Martirosyan

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  Volute Thickening and Linear Motion Mixing: A Tale of Two Technologies
Clay Rahn, HDR, Inc.

11:15 AM  Polymer Contract up for Expiration? Oh no! What Now? Challenges & Resolutions with Finding the Right Thickening and Dewatering Polymer
Maria Vega-Rodriguez, Nory Hancock, Pinellas County Utilities; Ivy Drexler; Stephanie Kapfenstein; Faustino Prado, Prado & Associates

11:45 AM  Session Adjourns for Lunch

Alternate 1  Thickening: Unlocking Idle Capacity for Capital Savings and Improved Operations
Christopher Muller, Patricia Tam, Brown and Caldwell

Alternate 2  Dewatering Process Optimization through Mechanical Inline Polymer Mixing
Edward Fritz, Chip Pless, Harald Neumann, Huber Technology
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**  
Baoqiang Li, DC Water; Haydee De Clippeleir, District of Columbia Water and Sewer Authority; Rumana Riffat, George Washington University; Ahmed Al-Omari; Adrian Romero, CH2M; Matthew Higgins, Bucknell University; Sudhir Murthy

9:00 AM  
**Application of Hydrothermal Pre-Treatment for Enhanced Two-Stage Anaerobic Digestion of Wastewater Sludge and Source Separated Organics**  
Armineh Azizi; Ehsan Hosseini Koupae; Amir Abbas Bazyar Lakeh, Ryerson University; H Hafez, Greenfield Ethanol Inc; Elsayed Elbeshbishy

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, SUEZ WTS; Adam Bentham

11:15 AM  
**Waste and Biomass Valorisation: Energy Production from Agro-Wastes Enhanced by Ultrasonic and Microwave Pre-Treated Wastewater Sludges**  
B. Aylin Alagoz, Ayşen Erdençler, Orhan Yenigun, Bogazici University

11:45 AM  
**Session Adjourns for Lunch in Exhibit Hall**

Alternate 1  
**Becoming a Utility of the Future - Achieving Energy Neutrality Through Co-digestion**  
Alan Johnson, Dave Baran, Quasar Energy Group

Alternate 2  
**Grease Removal Units (GRUs) as an Alternative Way to Manage Fats, Oils and Grease (FOG) in Food Outlets: a Case Study**  
Thomas Collin, Rachel Cunningham, Thames Water Utilities; Bruce Jefferson, Raffaella Villa, Cranfield University
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, William Brower, DC Water & Sewer Authority

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, City and County of San Francisco

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, Hazen & Sawyer

10:00 AM  Session Adjourns for Networking Break in Exhibit Hall

Alternate  Successful Marketing Strategies for a Biosolids Fertilizer: BMPs, Nutrient Stewardship and Third party agronomic trials
Mike Dougherty, Simon Meulendyk, 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, Ebaraitsugyo,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, Carollo Engineers; Thomas Mossinger; Gunter Ritter, South Platte Water Renewal Partners; John Gage, City of Longmont

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

Alternate  Demand-Driven Biogas Production from Anaerobic Digestion of Sewage Sludge: Potential Environmental Benefits and Strategies  
Mauro Latratta, Thames Water; Rex Thorpe, Sabeha Ouki, Jacquetta Lee, University of Surrey; Achame Shana, Mark Willcocks, Thames Water

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

Moderators: Natalie Sierra, Brown and Caldwell; Albert Rubin, North Carolina State University

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, Watercare Services Ltd; Shane Morgan

11:45 AM  Session Adjourns for Lunch in Exhibit Hall

Alternate Planning for Agricultural Use of Compost Produced with Sewage Sludge and Coffee Husks: The Case for Coffee Plantations in Brazil
Renata Bortolini, Antonio Matos, UFMG; Lucas Chamhum-Silva, UMG; Cesar Mota Filho, UFMG
Session 11: Energy  
Thursday, May 9, 10:45 AM - 11:45 AM  

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

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenters</th>
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<tr>
<td>11:15 AM</td>
<td>Focus on Energy Recovery in Developing Capital Upgrades Recommendations Offers Many Benefits at For Solids Management at Peel Region Wastewater Treatment Plants</td>
<td>Deborah Ross, Jacobs; John Glass, Regional Municipality of Peel; Emma Shen, Jacobs; Cindy Kambeitz, Region of Peel</td>
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<td>11:45 AM</td>
<td>Session Adjourns for Lunch</td>
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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  
Scott Scholz, Frank Scriver, Flottweg Separation Technology, Inc.

2:00 PM  Drying Can Be Odor-Free (and Headache Free), if Managed Holistically from Design Through Operation  
Zdenek Frcek, VODAKVA; Lynne Bouchy, SUEZ Water Technologies and Solutions; Gerardo Aguilera Soriano, Suez Environment; Françoise Rousseille, Suez Eau France; Naike Noyon, Suez

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  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, Perry Schafer, Tracy Stigers, Jann Yamauchi, Brown and Caldwell

4:45 PM  Session Adjourns  

Alternate 1  Dust Hazard Analysis and Thermal Dryer Design Safety Considerations  
Brandon Gott, Vincent Maillard, GHD Inc

Alternate 2  Pilot-study: An approach to Improve the Performance of Existing Sludge Dewatering Process  
Pranoti Kikale, David Schuman, Globaltech Inc; Brent Weidenhamer, Seacoast Utilities Authority
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 Seyedi, Kaushik Venkiteshwaran, Daniel Zitomer, Marquette University

2:00 PM  THP Without the use of Steam or Chemicals
          James Goldhardt, Ovivo; Gloria Cadavid, Eliquo Water

2:30 PM  Economic Analysis of Implementing Centrifugal Thickening and Thermal Alkali Hydrolysis Technologies in a Medium Sized Water Resource Recovery Facility
          Zhongtian Li, Centrisys/CNP; Hiroko Yoshida; Gerhard Forstner; Michael Stenstrom, UCLA

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. Keith Panter, THP Consultant Cambi, Paul Fountain, Achame Shana, Sludge Process Specialists, Keith Panter, Consultant

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 1  Thermal Hydrolysis of Waste Activated Sludge for Digestion Enhancement
             Yu Lei, Winson Lay, Public Utilities Board of Singapore

Alternate 2  Turbocharging Egg-Shaped Digesters with WAS-Only Thermal Hydrolysis at the Hengelo WWTP
             Hans Ellenbroek, Water Authority Vechtstromen; Davy Ringoot, Cambi AS
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 prácticas 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**
**Panelistas:** Kathryn Snyder, Hazen & Sawyer

2:40 PM  **Impacto de Tecnologías de Espesamiento y Deshidratación de Lodos en el Manejo Estratégico de Biosólidos**
**Panelistas:** 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**
**Panelistas:** Diego Alejandro Larrahondo, Universidad Autónoma De Occidente

4:05 PM  **Sludge Electrocoagulation: Effect on Physicochemical Properties and Extracellular Polymeric Substances**
**Panelistas:** Anaid Cano Quiroz, Instituto de Ingeniería UNAM

4:25 PM  **Sácale el Jugo al Biogás: Maximizando el Valor del Gas Producido por Digestión Anaerobia**
**Panelistas:** 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**
**Panelistas:** 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, Evoqua Water Technologies; Kevin Jankowski, Milwaukee Metropolitan Sewerage District; 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, Hazen & Sawyer; David Wiman; David Wagoner; Meredith Bridwell, Barry Bickerstaff, Hazen & Sawyer; Michael Foisy, Upper Blackstone Water

3:00 PM  Session Adjourns for Networking Break in Exhibit Hall

Alternate  Electrokinetic Thickening and Solubilization of Secondary Sludge Prior to Anaerobic Digestion
Fred Mussari; Michael Norris, BCR

Poster  Life-cycle Cost Analysis of Heavy Metal Removal from Electromagnetic Wave-Pretreated Dewatered Biosolids
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, Arcadis; Robert Ostapczuk, Malcolm Pirnie Inc; 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 Arikan, Kaan Dereli, Evren Ersahin, Istanbul Technical University; Fatih Turan, Istanbul Water and Sewerage Administration

4:45 PM Session Adjourns

Alternate Biosolids Planning with the Opening of the Metropolitan Water Reclamation District of Greater Chicago's 7.9 Billion Gallon Thornton Composite Reservoir
Dominic Brose, Peter O'Brien, Judy Moran-Andrews, Metropolitan Water Reclamation District Chicago

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; Mark Lang, 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

10:00 AM  **Networking Break**

Derya Dursun, Mohammad Abu-Orf, Hazen & Sawyer; Hersy Enriquez; Dawn Guendert; Bryan Lisk, 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**
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; Xiongfei 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; Gayathri Mohan, Gwinnett County Department of Water Resources

9:00 AM     Enzyme Recovery From Waste Activated Sludge
             Stephen Smith, Ziyi Liu, Imperial College London

9:30 AM     Doubling Down on Phosphorus
             Rachel Lee, Ostara Nutrient Recovery Technologies Inc.; Matt Seib, Madison Metropolitan Sewerage; Derek Lycke, Ostara; 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; Adam Klein, Henryk Melcer, Brown and Caldwell

10:45 AM    To Recover or Not to Recover? Controlling Phosphorus Recycles and Scaling with Struvite Precipitation
             Chris Moline, HDR; Brian Balchunas, Lawrence Hentz, Atkins; Robert Hindt, DELCOR

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

             Menachem Tabanpour, Centrisys-CNP; Phillip Barak, Nutrient Recovery & Upcycling; Hiroko Yoshida; Zhongtian Li, Centrisys/CNP; Mauricio Avila, Nutrient Recovery & Upcycling; Gerhard Forstner
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

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 Sludge Treatment and Removal of Emerging Compounds
Banu Ormeci, Carleton University

10:45 AM  Techno-Economical Analysis of Anaerobic Digestion Pre-Treatment Technologies for a UK Site
Ester Rus, Jacobs; Richard Smith

11:15 AM  Conference Adjourns

Alternate 1  Production and Treatment of Dewatering Side-Streams Following Thermal Hydrolysis and Anaerobic Digestion of Sewage Sludge
Bill Barber, Cambi, Inc.

Alternate 2  Torque Rheology and UV-Vis Spectrophotometry for Monitoring Sludge Characteristics and Optimization of Treatment Processes
Banu Ormeci, Carleton University; Jordan Smyth
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 Ormeci, Carleton University

9:30 AM  How the Regulatory Environment in Germany is Driving Sludge Disposal
         Harald Plank, Edward Fritz, Chip Pless, 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, Metropolitan Council
          Environmental Services; Scott Smrekar

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; 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