

WATER ENVIRONMENT FEDERATION

# Residuals and Biosolids

Engaging Public and Private Sectors for  
Integrated Resource Recovery

May 15–18, 2018 | Phoenix, Arizona

## CONFERENCE PROGRAM



#Residuals18



This conference is held by the Water Environment Federation in cooperation with the Arizona Water Environment Association, The Water Research Foundation, and the Sustainable Phosphorus Alliance.



## Local Connections, **Global Ideas**

Our clients face tough decisions with limited resources. That's why we support leading water associations—like WEF—to help make great things possible for our industry.



WEF Specialty Conferences Elite Sponsor

[hdrinc.com](http://hdrinc.com)



**Residuals and Biosolids Conference 2018**  
**Engaging Public and Private Sectors for**  
**Integrated Resource Recovery**

**May 15-18, 2018**

**Phoenix Convention Center**

**Phoenix, Arizona, USA**



This conference is held by the Water Environment Federation in cooperation with the Arizona Water Environment Association, The Water Research Foundation, and the Sustainable Phosphorus Alliance.

May 15, 2018

Dear Colleagues:

On behalf of the Water Environment Federation, the AZ Water Association, and The Water Research Foundation, we welcome you to Phoenix, Arizona and to the 32nd Annual Residuals and Biosolids Conference!

We are excited to have worked alongside the Steering Committee, the WEF staff, and all the volunteers who have dedicated their time and effort over the last 18 months to make this an unforgettable experience filled with learning and networking opportunities. We would also like to offer our thanks to the generous support of our exhibitors, sponsors, presenters, and to you for supporting this conference and for being the voice for biosolids and organics management in our country.

The Residuals and Biosolids 2018 Conference carries a broader theme this year. Integrating biosolids and other organics and identifying that we are not alone in this quest to provide stewardship for the environment and our rate payers. The conference kicks off on Tuesday with focused workshops and the AZ Water Friends of Biosolids Social Event on Tuesday evening. We could not have offered this event without their support and the committed efforts of our local Steering Committee and AZ Water volunteers.

On Wednesday morning, the Opening General Session will be our opportunity to greet all in person as we kick off the technical and exhibit portions of the conference. As our industry is changing our speakers in this session will bring their perspective on the changing landscape we face managing our communities most valuable assets.

Wednesday through Friday offers an excellent array of technical presenters. Presentations will cover the latest research, new processes, process optimization, biosolids, organics management, and bioenergy. We invite you to join us Thursday to showcase one of Arizona's first steps into long term sustainable solids management as the City of Surprise, hosts the facility tour. Being in the *Valley of the Sun*, this opportunity was selected since it utilizes the very power of the sun and also hosts a training academy in partnership with a local community college to identify and train the best operators of tomorrow.

Thank you for joining us in Phoenix to learn, develop, and work together as professionals to recover the valuable organic resources of our community and to help promote and educate our communities to be partners with us in this most exciting journey. Please enjoy the local hospitality, events, and facilities as we are happy you are joining us to make this a memorable conference. We are confident that our Downtown Phoenix location and the State of Arizona will offer great experiences for you while at this Conference.

Thank you and welcome.



Dave Quinby, City of Surprise  
Conference Co-Chair



Rudy Kilian, Carollo  
Conference Co-Chair

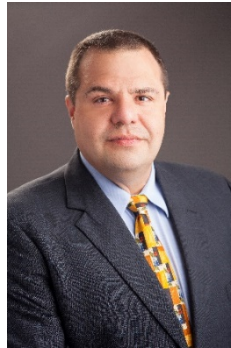
## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>Conference Steering and Program Committee.....</b> | <b>1</b>  |
| <b>Registration .....</b>                             | <b>2</b>  |
| <b>Presenter and Moderator Information .....</b>      | <b>2</b>  |
| <b>Committee Meetings .....</b>                       | <b>3</b>  |
| <b>Reception and Meal Functions .....</b>             | <b>4</b>  |
| <b>Continuing Education .....</b>                     | <b>5</b>  |
| <b>Online Proceedings .....</b>                       | <b>7</b>  |
| <b>Mobile App .....</b>                               | <b>7</b>  |
| <b>Sponsorship Information .....</b>                  | <b>8</b>  |
| <b>WEF Policies &amp; Positions .....</b>             | <b>9</b>  |
| <b>WEF Social Media Policy .....</b>                  | <b>9</b>  |
| <b>Conference Safety and Security .....</b>           | <b>10</b> |
| <b>Pre-Conference Workshops .....</b>                 | <b>11</b> |
| <b>Facility Tour .....</b>                            | <b>11</b> |
| <b>Opening General Session .....</b>                  | <b>12</b> |
| <b>Mobile Session .....</b>                           | <b>13</b> |
| <b>Technical Program .....</b>                        | <b>14</b> |
| <b>Presentations-at-a-Glance .....</b>                | <b>40</b> |
| <b>Sessions-at-a-Glance .....</b>                     | <b>45</b> |
| <b>Exhibition Information .....</b>                   | <b>46</b> |
| <b>Exhibition Floor Plan .....</b>                    | <b>47</b> |
| <b>Exhibition Directory .....</b>                     | <b>48</b> |
| <b>Presenter and Moderator Directory .....</b>        | <b>64</b> |
| <b>Conference Schedule-at-a-Glance .....</b>          | <b>67</b> |
| <b>Upcoming Education and Training Events .....</b>   | <b>68</b> |

# RESIDUALS AND BIOSOLIDS CONFERENCE COMMITTEE



Dave Quinby  
City of Surprise, AZ  
Conference Co-Chair



Rudy Kilian  
Carollo  
Conference Co-Chair

## RESIDUALS AND BIOSOLIDS CONFERENCE STEERING COMMITTEE

|                                      |  |                                 |
|--------------------------------------|--|---------------------------------|
| Mohammad Abu-Orf<br>Hazen and Sawyer | Rudy Kilian<br>Chair                   | Annette Reese Retired           |
| Nathan Antonneau Evoqua              | Jeff Leblanc<br>Denali Water Solutions | Chris Seney<br>We Care Organics |
| Charles Bott<br>HRSD                 | David McNeil<br>City of Tempe          | Richard Tsang<br>CDM Smith      |
| Houssam Eljerdi Pima<br>County       | Lisa Melton<br>Hazen and Sawyer        | Art Umble<br>Stantec            |
| Jason Joynes<br>City of Florence. AZ | Dave Quinby<br>Chair                   | Steve Wirtel<br>KORE            |

## RESIDUALS AND BIOSOLIDS CONFERENCE PROGRAM COMMITTEE

|   |  |                                      |
|---|--|--------------------------------------|
| Eric Auerbach Arcadis   | Scott Carr<br>Black & Veatch                                   | Rashi Gupta<br>Carollo Engineers     |
| Wendy Barrott<br>Great Lakes Water Authority                                | Joyce Chang<br>CH2M  | John Hermann Arminius<br>Consultants |
| Jean-Christophe Baudex<br>Luxembourg Institute of<br>Science and Technology | Carolyn Christy<br>RDP Technologies                            | Joe Husband Arcadis                  |
| Kari Brisolaro LSUHSC   | Jean Creech Charlotte Water                                    | Jay Kemp<br>Balck & Veatch           |
| Jeanette Brown Manhattan<br>College   | Richard Finger Retired From<br>King County                     | Mark Lang<br>AECOM                   |
| Charles Bullard Hazen and<br>Sawyer   | Thomas Granato<br>Retired Director of Research<br>MWRD Chicago | Jeffrey Layne<br>HRSD                |

## RESIDUALS AND BIOSOLIDS CONFERENCE COMMITTEE

|   |  |   |
|---|--|---|
| F. Michael Lewis<br>F. Michael Lewis, Inc.                  | Mark Philbrick<br>U.S. Department of Energy          | Aaron Stephens Material<br>Matters, Inc.                |
| Craig Lincoln Western Lake<br>Superior Sanitary District    | Thierry Ribeiro Institut<br>Polytechnique UniLaSalle | K. Richard Tsang CDM Smith                              |
| Yanjin Liu<br>American Water                                | A R Rubin<br>NCSU                                    | Sherri van der Wege Trinity<br>River Authority of Texas |
| Peter Loomis<br>CDM Smith                                   | Rusty Schroedel AECOM                                | Jim Welp<br>Black & Veatch                              |
| Jeff McBurnie Casella<br>Organics                           | Toshio Shimada Carollo<br>Engineers                  | Todd Williams<br>CH2M now JACOBS, USA                   |
| Robert Morton<br>Los Angeles County<br>Sanitation Districts | Natalie Sierra<br>Brown and Caldwell                 | Steve Wilson<br>Brown and Caldwell                      |
| Bipin Pathak<br>DC Water                                    | James E Smith Jr<br>Independent Consultant           | Greg Woodward Stantec<br>Consulting Inc.                |

## REGISTRATION

**All events are held in the Phoenix Convention Center.**

The Registration Desk is located in West Hall 1-2 Lobby and will be open at the following times:

**Hours:**

|                   |                    |
|-------------------|--------------------|
| Tuesday, May 15   | 7:30 AM – 5:00 PM  |
| Wednesday, May 16 | 7:30 AM – 5:00 PM  |
| Thursday, May 17  | 8:00 AM – 5:00 PM  |
| Friday, May 18    | 8:00 AM – 11:45 AM |

## PRESENTER AND MODERATOR INFORMATION

**All presenters, alternates, and moderators should sign in at the conference Registration Desk and attend their assigned briefing.**

Presenters, alternates, and session moderators, participating Wednesday through Friday should attend the briefing. Speakers should attend only once unless they are speaking on two different days. The Speaker Briefing and room schedule is as follows:

|   |                   |
|---|-------------------|
| Wednesday, May 16 — Room: West 105 ABC<br>*Sessions 1 through 7 | 7:15 AM – 8:15 AM |
| Thursday, May 17 — Room: West 105 ABC<br>*Sessions 8 through 25 | 7:15 AM – 8:15 AM |

## **COMMITTEE MEETINGS**

### **Wednesday, May 16**

#### **NBP Advisory Committee**

4:00 PM - 5:00 PM

Room: West 211 A

### **Thursday, May 17**

#### **Carbon Resource and Recovery Subcommittee**

11:45 AM – 12:45 PM

Room: West 212 ABC

#### **Bioenergy Technology Subcommittee**

12:30 PM – 1:30 PM

Room: West 213 AB

#### **Specialty Conference Subcommittee**

1:00 PM – 2:00 PM

Room: West 212 ABC

#### **Sustainable Residuals Use Subcommittee**

2:00 PM – 3:00 PM

Room: West 213 AB

#### **ABBA Subcommittee**

3:00 PM – 4:00 PM

Room: West 212 ABC

#### **Outreach and Education Subcommittee**

4:00 PM – 5:00 PM

Room: West 213 AB

### **Friday, May 18**

#### **Residuals and Biosolids Committee**

7:00 AM – 8:30 AM

Room: West 211 A



## RECEPTION AND MEAL FUNCTIONS

### Networking Reception

### Exhibit Hall

The Networking Reception is your opportunity to view the exhibits, renew acquaintances, and make new contacts. Light hors d'oeuvres and refreshments will be served.

Wednesday, May 16  
4:45 PM – 6:15 PM

### Luncheons

### Exhibit Hall

Lunch will be provided for all full conference, daily registrants, exhibitors, students, and expo-only. Please advise staff as soon as possible if you have any special dietary requirements. The luncheons will be held in the Exhibit Hall.

**Wednesday, May 16**  
11:45 AM – 1:30 PM

**Thursday, May 17**  
11:45 AM – 1:30 PM

### Networking Breaks

The Networking Breaks will be held:

**Tuesday, May 15**  
**West Meeting Room Foyer**  
10:00 AM – 10:30 AM and 3:00 PM – 3:30 PM

**Wednesday, May 16**  
**West Hall 1-2**  
10:00 AM – 10:45 AM and 3:00 PM – 3:45 PM

**Thursday, May 17**  
**West Hall 1-2**  
10:00 AM – 10:45 AM and 3:00 PM – 3:45 PM

**Friday, May 18**  
**West Meeting Room Foyer**  
10:00 AM – 10:15 AM

## CONTINUING EDUCATION

### **NEW for the Residuals and Biosolids Conference™ 2018 - Continuing Education files available online on May 19!**

You will be able to view your participation details and access your Continuing Education Credits for Workshops and Technical Sessions online. Attendees will have immediate access to their certificates and transcripts through an online portal for 1 year after this event. After that time CE files will have to be requested by email through WEF's customer service group. These details will be posted on the CS page of WEF.org and emailed to event participants after the conference. **These details will be posted on the CS page of WEF.org and emailed to event participants after the conference.**

#### **How Do I Receive Credit For this Conference?**

To receive credit for all technical sessions and pre-conference workshops, please scan your badge when entering and exiting that activity.

Attendees that do not use the badge scanning system will have to submit their CE Request Form to the Registration Desk at the end of the conference.

#### **Pre-Conference Workshops:**

WEF offers Continuing Education Units (CEUs) for participation in workshops. **One CEU is the equivalent to 10 hours** of training or formal instruction. These are distributed for structured, relevant professional training above and beyond that of initial certification or employment in a particular field.

#### **Technical Sessions:**

WEF offers Professional Development Hours (PDHs) for participation in technical sessions. **A PDH is defined as one hour** spent engaged in an activity that contributes to the advancement or enhancement of professional skills or scientific knowledge of a professional engineer or operator.

#### **When Will I Receive Credits For this Conference?**

Certificates will be available immediately upon receiving the website link after the conference.

Please keep in mind that although WEF does provide these files, most states will require the individual licensee to report continuing education credits.

**Note:** *Educational Credits will not be recorded and documentation will not be distributed unless the attendee is a confirmed registrant of this event and the proper steps are completed as indicated in the directions provided.*

## CONTINUING EDUCATION

### Are WEF Continuing Education Credits Approved in My State?

WEF applies for approval in many states and will be happy to work with individuals and Member Associations for additional state or agency approvals upon request. In addition, WEF has been approved as a Training Provider through the following:

The Florida Board of Professional Engineers, the New York State Department of Education, and the Ohio EPA. Many other states accept WEF PDH credits and WEF CEU credits without issue. For example: California (CWEA), Nevada, and New Jersey.

### What Else Do I Need to Know?

WEF follows the International Association of Continuing Education and Training (IACET) guidelines along with state-specific regulations to achieve strict policies and procedures regarding its Continuing Education Program. WEF calculates education credits following a standardized method that is the most widely accepted by certification and licensing agencies. However, many states differ in the type and/or number of credits they will approve for educational events. Because of this, participants are responsible for exploring their state requirements and for ensuring that WEF conference credits are accepted.

### Service and Support...

In keeping with IACET guidelines, WEF maintains a database of all continuing education files for a minimum of 7 years. You may contact WEF's Customer Service Team between the hours of 8:30am and 5:00pm EST, Monday through Friday to request these files. Please call 1-800-666-0206 or submit an email request to [csc@wef.org](mailto:csc@wef.org).

### State Credit Calculations:

\*Some state licensing boards will accept CEUs for session under 3 hours in length. Some use different acronyms for training credits. In most instances the credits issued by WEF can be converted to meet state specific requirements that vary from the system used by WEF. This is usually managed at the state level using the following conversion method:

**1.0 CEU = 10 Hours** of session time

**1.0 PDH = 1 Hour** of session time

**1.0 Contact Hour = 1 Hour** of session time

For example: **1.2 CEU Credits = 12.0 PDH Credits** or **17.0 PDH Credits** could equate to **1.7 CEU Credits** depending on individual state regulations.

*\*CEU & PDH credits are available for Workshops to Professional Engineers licensed in the state of New York (NYSED).*

**For more information regarding WEF's Continuing Education Program, please visit [www.wef.org/residualsbiosolids](http://www.wef.org/residualsbiosolids)**

## ONLINE PROCEEDINGS

Conference proceedings, consisting of manuscripts for each presentation, have been made available through an online portal. Advance registrants within Full Conference, Daily, Student, and Exhibiting categories will receive access to the RBC 2018 online proceedings on the day prior to the conference. Onsite registrants will receive an access link following the event's conclusion.

Copies of proceedings may be ordered after the conference at the member rate of \$100 USD/nonmember rate of \$150 USD. All orders will be processed after conclusion of the conference. You may call 1-800-666-0206, or visit [www.wef.org/ShopWEF](http://www.wef.org/ShopWEF) and ask for Stock Number – CPRB1804

## MOBILE APP

### Get More Out of Residuals and Biosolids



WEF is pleased to offer the ***WEF Events Mobile App*** which includes Residuals and Biosolids. Features include floor plans, enhanced exhibitor directory listings, a global search function, and a schedule that can incorporate both sessions and your own personal agenda items.

Download the ***WEF Events Mobile App*** now for access to all current and future WEF events. Search "WEF Events" in the Google Play OR Apple App Store. All other web-enabled devices can access the app via the web at [m.core-apps.com/wefevents](http://m.core-apps.com/wefevents).

***We need your feedback! Please provide feedback on individual presentations, sessions, workshops, and more on the mobile app!***

## SPONSORS

We would like to thank the following sponsoring companies for their contributions to the conference and program.



[www.hdrinc.com](http://www.hdrinc.com)

Bronze Elite

---



[www.aecom.com](http://www.aecom.com)

Lanyard



[www.insinkerator.com](http://www.insinkerator.com)

Opening General Session



[www.komline.com](http://www.komline.com)

Conference Program

*Booth 514*



[www.nefcobiosolids.com](http://www.nefcobiosolids.com)

Conference Program

*Booth 707*

## WEF POLICIES & POSITIONS

### **WEF's Vision**

A community of empowered professionals creating a healthy global water environment.

### **Core Values**

Leadership, Passion, Scholarship, and Collaboration, and Service

### **WEF Policies**

WEF respects and takes the broadest view of human diversity and inclusion and is committed to providing a professional, safe, and welcoming environment at its events for all water professionals and their guests. WEF expects all sponsors, speakers, attendees, media, exhibitors and other participants to uphold our commitment to diversity and inclusion by helping us provide a positive conference environment for everyone.

For more information, please see WEF's Diversity and Inclusivity Policy, as well as WEF's Non-Discrimination and Harassment Policy at [www.wef.org/about/about-wef](http://www.wef.org/about/about-wef).

### **Reporting Concerns**

If you have any concerns during this conference, please stop by the conference registration desk in the West Hall 1-2 Lobby of the Phoenix Convention Center or you may email the WEF Executive Director Dr. Eileen O'Neill at [eoneill@wef.org](mailto:eoneill@wef.org).

## WEF SOCIAL MEDIA POLICY

WEF strongly encourages the use of social media to share your experiences at our event. This includes sharing interesting quotes or information, taking pictures with colleagues, and using the event hashtag. However, to protect intellectual property, videotaping, filming, or live-streaming of any workshop or technical session presentation, or exhibit booth is prohibited. Any participant violating this policy must relinquish the media and may be removed from the conference. Also, promotional or commercial use of photographs taken at WEFTEC and other WEF conferences is strictly prohibited. If you are interested in content, materials, or products, please consider talking to the speaker or exhibitor, who may provide the information or grant permission.

## CONFERENCE SAFETY AND SECURITY

WEF works hard to provide a comfortable and safe environment during our meetings and events, including contracting with private security firms and off-duty police officers when required. Your help also is needed to provide a safe and secure environment. WEF recommends that you follow these safety guidelines:

1. **Share your plans.** Advise a family member or friend of your travel plans, including the dates you will be gone, how you will travel to the meeting or event, and where you are staying;
2. **Protect your identity.** Wear your name badge only inside the meeting or event venue; remove and secure your name badge when going to and from the venue; when disposing of your name badge, scratch out or destroy your name and/or the QR code to protect your personal information;
3. **Plan for an emergency.** Be aware of your surroundings. Know where the nearest exits are located. Use the buddy system. Exchange contact information with another event attendee. In case of a venue evacuation, agree where you will meet up. Call for help if your buddy doesn't meet up at the agreed location within a reasonable amount of time.
4. **See something, say something.** If you see something that raises a safety or security concern, please follow the instructions printed on the back of your name badge to alert security personnel.

### **Phoenix Convention Center Emergency Plan:**

Anyone witnessing a safety, security, or medical-related incident in or near the Phoenix Convention Center should:

**Call House Security at 602-262-7271 or Dial 85 from any house phone.**

#### **Phoenix Convention Center**

100 N 3rd St, Phoenix, Arizona 85004

Phone: 602-262-6225

## PRE- CONFERENCE WORKSHOPS

### **Pre-Conference Workshops**

**Tuesday, May 15th**

*(Separate registration fees apply)*

#### **Workshop A: On Main Street: A Reflection and Review of Driving Net Zero from Operating Facilities**

There are those that feel our industry often spends more time during conferences evaluating what something will do and not how it has done. So it is time to reflect with some new voices. This workshop will focus on open discussions by industry experts which showcase innovation with respect to driving net zero. We welcome you to a truly fun and interactive day, with the hope of transforming communication and idea sharing to help push the boundaries of technologies with a pinch of reality.

#### **Workshop B: High Quality Biosolids: Using Odor Predictors and Making Resilient Biosolids Products to Expand and Sustain Customers**

This workshop is based on nearly complete WRF research on high quality biosolids (HQB) from wastewater. Included in the research are four (4) tasks associated with defining HQB, developing HQB products and demonstrating their use in urban settings, developing criteria to market HQB into high value markets, and using social media to communicate with HQB community, customers, and the public.

#### **Workshop C: Renewable Identification Numbers: Risk Management in an Uncertain Future of the Renewable Fuel Standard**

Renewable NG from wastewater residuals is valued at over \$30/Million BTU via the Renewable Fuel Standard (RFS) incentives; however, if the RFS fundamentally changes, the cost to produce the RNG could be greater than the wholesale value of NG. This leaves public entities in the precarious position of developing capital plans in the face of significant uncertainty. The intent of this workshop is to educate attendees about the RFS program so they can make informed decisions about biogas use.

## FACILITY TOUR

### **Facility Tour**

**Thursday, May 17 8:30 AM – 12:30 PM**

*Meet at the Registration desk at 8:15 AM*

#### **City of Surprise, Tour of the Solar Thermal Floor Enhanced Solar Greenhouse Biosolids Drying Project, and the Gateway Community College/City of Surprise Training Center**

The Solar project goal is to dry dewatered biosolids utilizing the energy of the sun to achieve high quality, dried Biosolids. The Gateway Community College/City of Surprise Training Center is a joint effort by the college and the City to provide a "hands on" training opportunity for students that are interested in joining the Water/Wastewater Fields at an actual facility. This facility includes a Lecture/Classroom, Laboratory, and even a Confined Space training area.



## OPENING GENERAL SESSION

### Opening General Session

Wednesday, May 15

8:30 AM – 10:00 AM

**Moderators:** Dave Quinby, *City of Surprise, AZ*; Rudy Kilian, *Carollo*

- 8:30 AM**            **Welcome to RBC 2018!**  
Dave Quinby, *City of Surprise, AZ, 2018 Conference Co-Chair*  
Rudy Kilian, *Carollo, 2018 Conference Co-Chair*
- 8:40 AM**            **Welcome from WEF**  
Jamie Eichenberger, *HDR, WEF Board of Trustees*
- 8:45 AM**            **Welcome from AZ Water**  
Patty Kennedy, *WEF Delegate for AZ Water*
- 8:50 AM**            **Update on California Initiatives to Address Climate  
Change, and the Wastewater Sectors Collaborative Rule**  
Greg Kester, *CA Association of Sanitation Agencies*
- 9:20 AM**            **Urban Wastewater Planning—Desert Edition**  
Kathryn Sorenson, *City of Phoenix Water Services Department*
- 9:55 AM**            **Looking Ahead to Residuals and Biosolids 2019**  
Richard Tsang, *CDM Smith, National Specialty Conference  
Committee Vice Chair*
- 10:00 AM**          **Session Adjourns for Networking Break and Exhibit Hall  
Opening**

*Sponsored by: InSinkEerator*

## MOBILE SESSION

### Mobile Session

**Wednesday, May 16**

**10:35 AM – 11:45 AM**

Participants are invited to join this session's technical presentations, held within each exhibitor's booth on the conference exhibit floor. The four participating exhibitors will present concurrently at 10:45 AM, 11:05 AM, and 11:25 AM. Participants are invited to attend their top three presentations in the order of their choice.

|          |   |
|----------|---|
| 10:35 AM | Mobile Session Introduction at entrance to exhibit hall |
| 10:45 AM | 4 Simultaneous Presentation A                           |
| 11:05 AM | 4 Simultaneous Presentation B                           |
| 11:25 AM | 4 Simultaneous Presentation C                           |

**Booth: 614**      **Two years experiences of operation and maintenance of an alkali thermochemical hydrolysis process for anaerobic digestion pretreatment**  
*Zhongtian Li, Centrisys, CNP*

**Booth: 701**      **Hydraulic Mixing Optimization in Anaerobic Digesters**  
*Thomas Mangione, Evoqua*

**Booth 808:**      **Four Case Studies - Applications of Bio-augmentation & Bio-Catalysis for Enhancing Biological Treatment**  
*Malcolm Fabiyi, Drylet, LLC*

**Booth: 203**      **Sludge Odor Control Program at Bergen Point Wastewater Treatment Plant, Suffolk County, NY**  
*Inken Mello, USP Technologies*

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

## TECHNICAL PROGRAM

### **Session 01: Product Development**

**Wednesday, May 16**

**10:45 AM – 11:45 AM**

**Room: West 101 AB**

**Moderators:** Jeff LeBlanc, Denali Water Solutions; Todd Williams, JACOBS

**10:45 AM            Developing Products with Thermally-Hydrolyzed Biosolids At DC Water**

William Brower, Chris Peot, DC Water & Sewer Authority;  
Adrian Romero, Jacobs

**11:15 AM            Biosolids Market Analysis for a Strategic Long-term Biosolids Management Program**

Irene Okioga, Jackie Jarrell, Jean Creech, Charlotte Water;  
Jonathan Lapsley, Richard Tsang, CDM Smith

**Alternate            Urban Biocycle Concept: From Wastewater Treatment to Resource Recovery**

Joerg Blischke, Black & Veatch

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

## TECHNICAL PROGRAM

### Session 02: Codigestion

Wednesday, May 16

1:30 PM – 4:45 PM

Room: West 101 AB

**Moderators:** Annette Reese, Black & Veatch (Retired); Toshio Shimada, Carollo Engineers

- 1:30 PM**            **Anaerobic Co-Digestion of Condensate from Biosolids Pyrolysis**  
Seyedehfatemeh Seyedj, Kaushik Venkiteshwaran, Marquette University; Daniel Zitomer, Marquette University Haggerty Eng Hall
- 2:00 PM**            **Getting to Zero with Co-Digestion - Defining the Road to Energy Neutrality**  
Becky Gherini, Katherine Eve, Carollo Engineers, Inc.; Curtis Bosick, Union Sanitary District; Rashi Gupta, Carollo Engineers
- 2:30 PM**            **Mesophilic Anaerobic Co-digestion of Manure and Thickened Waste Activated Sludge at Different Mixing Ratios**  
Anahita Rabii, Yaser Dahman, Elsayed Elbeshbishy, Ryerson University
- 3:00 PM**            **Networking Break in Exhibit Hall**
- 3:45 PM**            **Leveraging Codigestion for Municipal Biogas Sludge Drying; Sustainable Goals - Proven Technology**  
Rob Mangrum, Mangrum Consulting & Design; Sharon Foley, Robert Hevener, Harrisonburg Rockingham Regional Sewer Authority
- 4:15 PM**            **Do You Really Want that FOG? Some Considerations for Starting a FOG Codigestion Program**  
Scott Carr, Edmund Kobylinski, Jorj Long, Rachel Swezy, Black & Veatch; Douglas Nolkemper, Johnson County Wastewater
- Alternate**            **Preparing for a Class A Future – San Francisco’s New Biosolids Initiatives**  
Natalie Sierra, Brown and Caldwell; Manon Fisher, San Francisco Public Utilities Commission; Karri Ving, City and County of San Francisco
- 4:45 PM**            **Session Adjourns for Networking Reception in Exhibit Hall**

## TECHNICAL PROGRAM

### Session 03: Dewatering Mechanisms and Methods

Wednesday, May 16

1:30 PM – 4:45 PM

Room: West 103 AB

**Moderators:** Matthew Higgins, Bucknell University; Christine Radke, The Water Research Foundation

- 1:30 PM**      **Lessons Learned From Assessment of Four Laboratory-Scale Sludge Dewaterability Methods Used During an Anaerobic Digestion Pilot Performed at the Robert W. Hite Treatment Facility**  
Isaac Avila, Blair Wisdom, Caleb Frandsen, Anna Schroeder, Quintin Schermerhorn, Metro Wastewater Reclamation District; Linda Figueroa, Junko Munakata Marr, Colorado School of Mines; Julia Kopp, Kläranlagen Beratung Kopp; Mario Benisch, HDR Engineering Inc; Matthew Higgins, Bucknell University
- 2:00 PM**      **Evaluating the Impacts of WAS Release on Anaerobic Digestion and Dewatering at Robert W. Hite Treatment Facility**  
Blair Wisdom, Isaac Avila, Elisabeth Werth, Liam Cavanaugh, Metro Wastewater Reclamation District; Wendell Khunjar, Hazen and Sawyer; Daniel Freedman, MWH Global; Matthew Higgins, Bucknell University
- 2:30 PM**      **Sludge Characteristics that Impact Dewatering of Anaerobically Digested Biosolids at Multiple Facilities**  
Jose Bicudo, Samantha Morris, Jordan Gerber, Brett Crowley, Region of Waterloo Water Svcs Div; Wayne Parker, niversity of Waterloo; Matthew Higgins, Bucknell University; Dominika Celmer-Repin, Region of Waterloo Water Svcs Div
- 3:00 PM**      **Networking Break in Exhibit Hall**
- 3:45 PM**      **A Survey of WRRF Biosolids Identifying the Parameters Affecting Dewatering and the Effect of THP**  
Jeffrey Nicholson, Virginia Tech/ HRSD; Steven Beightol, Matthew Higgins, Bucknell University; Christopher Wilson, HRSD
- 4:15 PM**      **Effect of Potassium and Sodium on The Dewatering of Mesophilic Anaerobic Digestate**  
Zwelani Ngwenya, Jacobs Engineering Group; Matthew Higgins, Steven Beightol, Bucknell University

Session 03 Continues on next page

## TECHNICAL PROGRAM

**(Continued) Session 03: Dewatering Mechanisms and Methods**

**Wednesday, May 16**

**1:30 PM – 4:45 PM**

**Room: West 103 AB**

**Moderators:** Matthew Higgins, Bucknell University; Christine Radke, The Water Research Foundation

**Alternate**            **Geobag for Sludge Drying The Good, The Bad and The Messy**

James Huchel, City of Flagstaff

**Alternate**            **Debunking the Myth of Centrifuges: Centrifuges as an Energy Hog**

Nathaniel Nowicki, Peiyu Tan, Hiroko Yoshida, Centrisys Corporation

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

## TECHNICAL PROGRAM

### Session 04: Emerging Contaminants

Wednesday, May 16

1:30 PM – 3:00 PM

Room: West 102 ABC

**Moderators:** Jean Creech, Charlotte Water; Adrian Romero, Jacobs

- 1:30 PM**            **The Fate of Microplastic in Wastewater Solids Treatment: Degradation of PE and PHB Microbeads in Aerobic and Anaerobic Digestion**  
Teigan Gulliver, HDR, Inc.; Junko Munakata-Marr, Linda Figueroa, Colorado School Of Mines; Allison Pieja, Molly Morse, Mango Materials
- 2:00 PM**            **Fate of Ammonia, Solids, Sterols, Pharmaceuticals and Polycyclic Aromatic Hydrocarbons in Anaerobic Digestion and Intermittent Aeration of Mixed Sludge**  
Muneer Ahmad, Cigdem Eskicioglu, University of British Columbia
- 2:30 PM**            **A Reduction in Triclosan and Triclocarban in Water Reclamation Plant Influent, Outfall, and Biosolids Following the U.S. FDA's 2013 Proposed Rulemaking on Antibacterial Products**  
Dominic Brose, Metropolitan Water Reclamation District Chicago; Kuldip Kumar, MWRD of Greater Chicago At Cicero Stickney WTP; Anna Liao, M&R, MWRDC
- 3:00 PM**            **Session Adjourns for Networking Break in Exhibit Hall**

## TECHNICAL PROGRAM

### Session 05: Sidestream Management

Wednesday, May 16

1:30 PM – 3:00 PM

Room: West 104 AB

**Moderators:** Lisa Melton, Hazen and Sawyer; Jason Joynes, Town of Florence

- 1:30 PM**            **Vivianite Occurrence and Remediation Techniques in Biosolids Pre-treatment Process**  
Bipin Pathak, Ahmed Al-Omari, DC Water & Sewer Authority; Scott Smith, Wilfrid Laurier University; Nicholas Passarelli, Ryu Suzuki, Salil Kharkar, Christine Debarbadillo, DC Water & Sewer Authority
- 2:00 PM**            **Wards Island WWTP Advanced Biosolids Handling and Sidestream Treatment Enhancements**  
Eric Auerbach, Arcadis; Mauro Orpianesi; Allen Deur, YCDEP; Dimitrios Katehis, Arcadis
- 2:30 PM**            **Calcite Precipitate in Biosolids Handling Processes: A Case Study**  
Micah Blate, Mohammad Abu-Orf, Wendell Khunjar, Hazen and Sawyer; Jose Bicudo, Nathan Morris, Regional of Waterloo Water Services Div
- Alternate**            **Lost Crystals– Investigating When Nutrient Recovery Isn't Meeting Low-P Expectations**  
Thomas Johnson, Leon Downing, William Leaf, Colin Fitzgerald, CH2M; Adrian Romero, Jacobs
- 3:00 PM**            **Session Adjourns for Networking Break in Exhibit Hall**



## TECHNICAL PROGRAM

### **Session 06: THP Technology**

**Wednesday, May 16**

**3:45 PM – 4:45 PM**

**Room: West 102 ABC**

**Moderators:** Bipin Pathak, DC Water; Engin Guven, Black & Veatch

**3:45 PM**

#### **Finding the Best Solution for Cooling on Thermal Hydrolysis Projects**

Greg Knight, Dave Long, Black & Veatch; Michael Bullard, Amy Hanna, Hazen and Sawyer; Erika Bailey, TJ Lynch, City of Raleigh

**4:15 PM**

#### **Thermal Hydrolysis Full Scale System Performance**

Todd Williams, Marialena Hatzigeorgiou, CH2M now JACOBS, USA; Peter Burrowes, CH2M now JACOBS, CANADA

**Alternate**

#### **Optimized Sludge Thickening Process Control Using Real Time Controller Sludge Thickening Polymer Optimization Gravity Belt Thickeners Pima County Tres Rios WRF**

Houssam El Jerdi, Pima County RWRD; Michael Hernandez, Hach

**4:45 PM**

**Session Adjourns for Networking Reception in Exhibit Hall**

## TECHNICAL PROGRAM

### **Session 07: Master Planning I**

**Wednesday, May 16**

**3:45 PM – 4:45 PM**

**Room: West 104 AB**

**Moderators:** Dave Quinby, City of Surprise, Arizona; Trudy Johnston, Material Matters Inc

**3:45 PM            Ultimate Combination of Sustainable Biosolids Treatment Technologies**

Dale Gabel, Peter Burrowes, CH2M; Rajkumar Rath, City and County of Honolulu; Leighton Lum, RM Towill Corporation; Bruce Johnson, David Oerke, CH2M

**4:15 PM            A Streamlined Approach to Multi Facility Master Planning with Triple Bottom Line Optimization**

Paul Knowles, Vera Gouchev, Emanuel Psaltakis, Hazen and Sawyer; Robert Sharp, Manhattan College; Matthew VanHorne, Hazen and Sawyer; Thomas Lauro, Westchester County DEF

**Alternate            Fundamental Improvements to Anaerobic Digestion Systems at Water Resource Recovery Facilities**

David Parry, Cameron Clark, Corey Klibert, Paul Steele, CH2M

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

## TECHNICAL PROGRAM

### Session 08: THP Master Planning

Thursday, May 17

8:30 AM – 11:45 AM

Room: West 101 AB

**Moderators:** Richard Tsang, CDM Smith; Greg Woodward, Stantec

- 8:30 AM**            **Centralized Biosolids Processing with Thermal Hydrolysis and Anaerobic Digestion**  
Chris Moline, HDR; Matthew Higgins, Bucknell University; Kevin Selock, WSSC; Dale Belschner, Piscataway WWTP; Lawrence Hentz, Brian Balchunas, Atkins
- 9:00 AM**            **Model Development to Compare the Impacts of Thermal Pretreatment on Waste Activated Sludge**  
Wayne Parker, University of Waterloo; Brian Jo, CH2M; Peiman Kianmehr, American University in Dubai
- 9:30 AM**            **Optimizing THP – The Intermediate Thermal Hydrolysis Process**  
Ester Rus, Aurelien Perrault, Nick Mills, A Shana, O Molokwu, Thames Water; Paal Yahre Nilsen, CAMBI
- 10:00 AM**           **Networking Break in Exhibit Hall**
- 10:45 AM**           **Evaluation of Thermal Hydrolysis and Incineration of Sludge for Energy Recovery at an Advanced Water Reclamation Facility**  
Peter Burrowes, Julian Sandino, CH2M; Per Nielsen, VCS Denmark; Adrienne Willoughby, CH2M
- 11:15 AM**           **Combining Thermal Hydrolysis with Incineration and Downstream Thermal Processes to Optimize Energy Recovery from Sewage Sludge**  
William Barber, Cambi Inc; Paul Christy, RDP Technologies
- Alternate**           **Trinity River Authority of Texas Starts Move from Lime Stabilization to Thermal Hydrolysis and Anaerobic Digestion**  
Samir Mathur, CDM Smith Inc; Tom Jacobs, Trinity River Authority
- Alternate**           **Re-Feeding of Hydrolyzed Biosolids to Anaerobic Digestion for Enhanced Biogas Generation; Case Study at Fairfield-Suisun Sewer District**  
James Dunbar, Rick Mosher, Lystek International Inc.; Gregory Baatrup, Fairfield Suisun Sewer District; Ajay Singh, Lystek International Inc.
- 11:45 AM**           **Session Adjourns for Luncheon in Exhibit Hall**

## TECHNICAL PROGRAM

### **Session 09: Regulatory Changes and Impact to Biosolids Management**

**Thursday, May 17**

**8:30 AM – 10:00 AM**

**Room: West 102 ABC**

**Moderators:** Natalie Sierra, Brown and Caldwell

- 8:30 AM**            **The Anatomy of an 'Objective' Legislative Research Study on Biosolids**  
Robert Crockett, Virginia Biosolids Council
- 9:00 AM**            **Protecting Beneficial Use – Current Legal Issues Regarding Land Application**  
James Slaughter, Beveridge & Diamond, P.C.; Layne Baroldi, Orange County Sanitation District
- 9:30 AM**            **Regulatory Reaction to PFAS Disrupts Residuals Recycling**  
Ned Beecher, NEBRA
- Alternate**            **Fresh Look at County-wide Biosolids Management**  
Prabhushankar Chandrasekeran, Trung Le, Ken Eyre, Greeley & Hansen; Chris Saunders, Anne Arundel County Bureau of Utility Operations
- 10:00 AM**            **Session Adjourns for Networking Break in Exhibit Hall**

## TECHNICAL PROGRAM

### **Session 10: P3 Partnerships in Biosolids: Why P3 Makes Sense to Balance Risks and Costs in Biosolids Management**

**Thursday, May 17**

**8:30 AM – 10:00 AM**

**Room: West 103 AB**

**Moderators:** David McNeil, City of Tempe; Houssam Eljerdi, Pima County

The session will present alternative project delivery from 3 biosolids related projects. The presenters will focus on why the alternative delivery was selected and the benefits for the delivery of the project.

- 8:30 AM**                      **Resource Recovery at the Source: Tempe's P3 for Municipal FOG Recovery**  
David McNeil, City of Tempe
- 9:00 AM**                      **Ameresco's P3 Approach for Biogas Recovery at Phoenix's 91<sup>st</sup> Avenue WWTP**  
Jim Bier, Ameresco
- 9:30 AM**                      **Key Ingredients of a Successful Biosolids P3**  
Layne Baroldi, Synagro
- 10:00 AM**                      **Session Adjourns for Networking Break in Exhibit Hall**

## TECHNICAL PROGRAM

### **Session 11: Biofuels and Bioproducts from Wet and Gaseous Waste Feedstocks**

**Thursday, May 17**

**8:30 AM – 10:00 AM**

**Room: West 104 AB**

**Moderator:** Mark Philbrick, DOE

This session will include a sample of DOE's recent waste-to-energy awards. Information about DOE's Small Business Innovation Research (SBIR) program, and examples of cutting edge research in producing biofuels and bioproducts from residuals and biosolids.

#### **Speakers:**

Mark Philbrick, Department of Energy

Jeff Moeller, WERF

James Oyler, Genifuel Corporation

Yaniv Scherson, Stanford

Deepak Dugar, Visolis

Michael Guarnieri, National Renewable Energy Laboratory

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

## TECHNICAL PROGRAM

### **Session 12: Resource Recovery**

**Thursday, May 17**

**10:45 AM – 11:45 AM**

**Room: West 104 AB**

**Moderators:** James E Smith Jr, Independent Consultant; Toshio Shimada, Carollo Engineers

- 10:45 AM**      **Primary Sludge to Valuable Chemicals, Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>), In Microbial Electrochemical Cells - H<sub>2</sub>O<sub>2</sub> Production and In-Situ Sludge Treatment**  
Dongwon Ki, Rick Kupferer, César Torres, Arizona State University
- 11:15 AM**      **Biologically Enhanced Primary Treatment: A Summary of Experience from Pilot, Demonstration, And Full-Scale Systems**  
Michael Doyle, Argun Erdogan, Nathan Antonneau, Evoqua Water Technologies LLC; Bruce Johnson, CH2M; Roger Babcock, U H Civil Engineering Dept; Tiow Wong, R M Towill Corporation; Houssam Eljerdi, Pima County RWRD
- Alternate**      **Turning Summer Heat Into Savings - Maximizing Energy Recovery From Combustion Turbine Exhaust**  
Anna Munson, Jay Kemp, Black & Veatch
- 11:45 AM**      **Session Adjourns for Luncheon in Exhibit Hall**

## TECHNICAL PROGRAM

### Session 13: Odors

Thursday, May 17

10:45 AM – 11:45 AM

Room: West 102 ABC

**Moderators:** Aaron Stephens, Material Matters, Inc.; Jean Creech  
Charlotte Water

- 10:45 AM**      **Impact of Biosolids Treatment and Storage Conditions on Odor Production: Thermal Hydrolysis-Anaerobic Digestion Vs Alkaline Stabilization**  
Adrian Romero, CH2M; Mark Ramirez, DC Water; Alba Torrents, University of Maryland, College Park
- 11:15 AM**      **Characteristics of Nuisance Odor Emissions from the Sludge Drying Process**  
Yuge Bian, Fuqiang Liu, UCLA; August Bruchet, Suez Environmental Le PECQ, France; Mel Suffet, UCLA
- Alternate**      **Automated Dosing of Hydrogen Peroxide Based on Real-Time Hydrogen Sulfide Measurements in an Aerated Sludge Holding Tank and Belt Filter Presses at the Norfolk, Nebraska Water Pollution Control Plant**  
Michael Nelson, USP Technologies; Todd Boling, City of Norfolk WPC
- 11:45 AM**      **Session Adjourns for Luncheon in Exhibit Hall**



## TECHNICAL PROGRAM

### **Session 14: Beneficial Use of Biogas: Treatment**

**Thursday, May 17**

**10:45 AM – 11:45 AM**

**Room: West 103 AB**

**Moderators:** Jay Kemp, Black & Veatch; Ralph Eschborn, AECOM

- 10:45 AM**      **A Simple and Energy Efficient Approach to Cleaning Biogas**  
Lindsey Busch, Carollo Engineers; Sidharta Arora; Sean Snyder, Unison Solutions, Inc.; Donald Miller, Sanitary District of Decatur
- 11:15 AM**      **Ammonia Laden Digester Gas: The Next Frontier in NOx Emissions Control**  
Jason Wisner, Jim Schettler, Nate Luong, Brown and Caldwell
- Alternate**      **Understanding Design Standards and Codes for Biogas Systems**  
Regina Hanson, Varec Biogas; Shayla Allen; Jim Groman, Varec Biogas
- 11:45 AM**      **Session Adjourns for Luncheon in Exhibit Hall**

## TECHNICAL PROGRAM

### Session 15: Master Planning II

Thursday, May 17

1:30 PM – 4:45 PM

Room: West 104 AB

**Moderator:** Steve Wilson, Brown and Caldwell

- 1:30 PM**            **Developing a Biosolids Strategy with the Community – A Modified Approach to Long-term Biosolids Planning at the Region of Waterloo**  
Kaoru Yajima, Regional of Waterloo Water Services Division
- 2:00 PM**            **Tale of Two Florida Cities - Competition and Innovation Drive Biosolids Management toward the Private Sector**  
Robert Forbes, Gregory Brubaker, Juan Aceituno P.E., CH2M; Manuel Moncholi, Brian Roche, JEA
- 2:30 PM**            **Weighing the Options: A Comprehensive Approach to Long-Term Biosolids Management**  
Matthew VanHorne, Hazen and Sawyer; Joshua Palombo, Cape May County MUA; Micah Blate, Julian Chianelli, Hazen and Sawyer
- 3:00 PM**            **Networking Break in Exhibit Hall**
- 3:45 PM**            **Regulations Drive Nutrient Recovery and Reuse at Winnipeg's Largest Treatment Facility: The Winnipeg North End Sewage Treatment Plant Upgrade Project**  
Damian Kruk, Charles Goss, James Marx, Keith Sears, Simon Baker, AECOM
- 4:15 PM**            **When Does It Make Sense to Put All Your Eggs in One Basket and When Does It Not: A Case Study of Biosolids Process Centralization**  
Sebastian Smoot, HDR; Mike Gallagher, City of Baltimore; Maia Tatinclaux; Lawrence Hentz, Atkins; Thomas Kochaba, HDR Engineering
- Alternate**            **Selecting an Advanced Anaerobic Digestion Configuration and Biogas Management Strategy for the City of Tampa**  
Kurt Pfeffer, Jacob Porter, Bryan Lisk, Hazen and Sawyer; Michael Bullard, Hazen and Sawyer; Karloren Guzman, City of Tampa Wastewater Department; Mitchel Chiavaroli, McKim & Creed Inc
- 4:45 PM**            **Session Adjourns**

## TECHNICAL PROGRAM

### Session 16: Anaerobic Digestion

Thursday, May 17

1:30 PM – 4:45 PM

Room: West 103 AB

**Moderators:** Rusty Schroedel, AECOM; Scott Carr, Black & Veatch

**1:30 PM**            **Using Struvite Precipitation to Remove Colloidal Material from Acid-Phase Digestion and the Effect on Downstream Gas-Phase Digestion**

Marco Denee, AECOM; Cigdem Eskicioglu, University of British Columbia

**2:00 PM**            **Energy Production Requires Energy Input to Digesters - A Review of Digester Mixing and Development of Improved Digester Mixing Design Methodologies**

Steve Krugel, Donnie Stallman, Brown and Caldwell

**2:30 PM**            **Microbial Electrochemical Cells as An Alternative to Biochemical Methane Potential Tests for Analyzing Batch Anaerobic Digestion Kinetics**

Collette Wilson, Steven Hart, Sarah Brown, Michlle Young, Dongwon Ki, Arizona State University; César Torres, Arizona State University

**3:00 PM**            **Networking Break in Exhibit Hall**

**3:45 PM**            **The Effect of Free Nitrous Acid Pretreatment on The Anaerobic Digestibility of Thickened Waste Activated Sludge**

Frances Okoye, Ryerson University; Dang Ho, Western University; Siva Sarathy, Trojan UV; Wayne Parker, University of Waterloo; Elsayed Elbeshbishy, University of Ontario Mississauga

**4:15 PM**            **Improved Characterization of Anaerobic Digestion Kinetics of Mixed Sludges With and Without Thermally Pretreated WAS**

Steven Hart, Michlle Young, Dongwon Ki, Sarah Brown, Collette Wilson, Arizona State University; Prathap Parameswaran, Dept of Civil Engineering Kansas State University; César Torres, Arizona State University

**Alternate**            **Taking a Bite Out of Digester Cleaning Costs**

Jesus Rodriguez, JWC Environmental

**4:45 PM**            **Session Adjourns**

## TECHNICAL PROGRAM

### **Session 17: Charting New Research in Residuals and Biosolids**

**Thursday, May 17**

**1:30 PM – 3:00 PM**

**Room: West 101 AB**

**Moderators:** Christine Radke, Lola Olabode, The Water Research Foundation

Interactive session for residuals and biosolids professionals to inform WRF of research needs. Includes an overview of WRF's major projects in this field.

#### **Session Breakdown:**

- 1:30 PM**            **Welcome, Session Overview, and History of WRF Biosolids Research**  
Christine Radke, WRF
- 1:40 PM**            **Trends, Myths, and Realities of Organics in Biosolids**  
Ned Beecher, NEBRA
- 1:50 PM**            **Preliminary Research Needs Discussion**  
Christine Radke, WRF
- 1:55 PM**            **Current WRF Research Projects:**
- A) Pathogen and Indicator Organism Inactivation in Class A Biosolids Produced by Low-Tech Methods (NTRY11T15)**  
Jennifer Becker, Michigan Tech University
  - B) High Quality Biosolids Criteria and Public Acceptance" (NTRY7R15)**  
Trudy Johnston, Material Matters
  - C) Developing Exposure and Toxicity Data for Trace Organics in Biosolids" (TOBI2R15)**  
Drew McAvoy, University of Cincinnati
- 2:25 PM**            **Research Needs Discussion**  
Lola Olabode, WRF
- 2:45 PM**            **Prioritization of Research Needs**  
Lola Olabode, WRF
- 2:55 PM**            **Next Steps and Wrap Up**  
Christine Radke, WRF
- 3:00 PM**            **Session Adjourns for Networking Break in Exhibit Hall**

## TECHNICAL PROGRAM

### Session 18: Dewatering Practice and Planning

Thursday, May 17

1:30 PM – 3:00 PM

Room: West 102 ABC

**Moderators:** Mark Lang, AECOM; Jim Welp, Black & Veatch

- 1:30 PM**            **Impact of Iron Salt Addition on Solids Production and Operations**  
Perry Schafer, Henryk Melcer, Brown and Caldwell
- 2:00 PM**            **State-of-the-Practice for Dewatering of Thermally Hydrolyzed Digested Biosolids**  
David Oerke, Jacobs CH2M; Matthew Higgins, Bucknell University; Sudhir Murthy, DC Water; Heidi Bauer, Jacobs CH2M; Salil Kharkar, Christine Debarbadillo, DC Water; Carolyn Chiu, Rosanna Tse, Humphrey Ho, San Francisco Public Utilities Commission; Keith Panter, Ebcor Ltd; Paul Fountain, hames Water; Sam Rizzi, Brett Reistad, Ryan Campbell, Jacobs CH2M
- 2:30 PM**            **Giving a New Life to a 20-Year Old Facility: Fountain Hills WWTP Solids Handling System Improvement Project**  
Jun Wang, Carollo Engineers; Dana Trompke, Fountain Hills Sanitary District; Kirk Gardiner, Andrew Gilmore, Carollo Engineers; Clark Moskop, Fountain Hills Sanitary District
- Alternate**            **Overcoming Obstacles with a Difficult to Handle Sludge - Centrifuge Piloting at Miami's Central District WWTP**  
Manuel Moncholi; Charles Goss, AECOM; Brian Stitt, AECOM; Ismael Diaz, Gannett Fleming
- 3:00 PM**            **Session Adjourns for Networking Break in Exhibit Hall**

## TECHNICAL PROGRAM

### **Session 19: Creating a Brand and a Following: Branding Biosolids for a Long Term Sustainable Practice**

**Thursday, May 17**

**3:45 PM – 4:45 PM**

**Room: West 101 AB**

**Moderators:** Rudy Kilian, Carollo; Bob Forbes, CH2M

The session will present the experience from utilities that have gone beyond producing biosolids and have developed a brand and a quality controlled product. The presenters will focus on the efforts to develop the brand and the benefits from having a material differentiated from generic biosolids.

- 3:45 PM**                    **Introductions from Co-Moderators**
- 3:50 PM**                    **Branding Steps, Impacts, and Realities**  
Ron Alexander, R. Alexander Associates, Inc.
- 4:00 PM**                    **TAGRO: Evolution of a Brand**  
Daniel Thompson, City of Tacoma
- 4:10 PM**                    **Rolling Out Our Bloom Biosolids Brand**  
Chris Peot, DC Water  
Bill Brower, DC Water
- 4:20 PM**                    **Facilitated Panel Discussion**
- 4:45 PM**                    **Session Adjourns**

## TECHNICAL PROGRAM

### **Session 20: Land Application**

**Thursday, May 17**

**3:45 PM – 4:45 PM**

**Room: West 102 ABC**

**Moderators:** A R Rubin, NCSU; Steve Wilson, Brown and Caldwell

- 3:45 PM**            **Soil Microbiome Response to Land Application of Wastewater Treatment Biosolids**  
Kevin Lambirth, UNCC; Jean Creech, Charlotte Water; Cynthia Gibas, UNCC
- 4:15 PM**            **Competition Between Herbaceous Vegetation and Conifer Seedlings on a Biosolids Amended Mine Site**  
Janelle Hunt, Metro Vancouver; Katie McMahan; Gabriel Holmes, Mount Polley Mining Corporation
- 4:45 PM**            **Session Adjourns**

## TECHNICAL PROGRAM

### Session 21: Codigestion: Food Waste

Friday, May 18

8:30 AM – 11:45 AM

Room: West 101 AB

**Moderators:** Patrick Dube, Water Environment Federation; David McNeil, City of Tempe, AZ

- 8:30 AM**            **Addressing Operational Side Effect of Co-digestion of Organic Wastes**  
Alan Appleton, Tanja Rauch-Williams, Rashi Gupta, Carollo Engineers; Mark Greene, O'Brien & Gere Engineers Inc; Stefan Grimberg, Clarkson University
- 9:00 AM**            **Evaluation and Optimization of Co-Digestion Capacity Through Biodegradability Test Assays**  
Toshio Shimada, Carollo Engineers; Walter Collins, Little Rock Wastewater; Spyros Pavlostathis, Georgia Institute of Technology; Rodolfo Kilian, Carollo, Engineers
- 9:30 AM**            **Managing an Ever Changing Stream of Organic Materials for Co-Digestion at the Hermitage Municipal Authority - From Impounded Honey and Rotten Vegetables to Biogas Success**  
Jason Wert, RETTTEW; Thomas Darby, City of Hermitage
- 10:00 AM**           **Networking Break**
- 10:15 AM**           **Food Waste Digestion at Inland BioEnergy in Chino, CA- Processing of Pre-Consumer and Industrial Food Waste and Biogas Yields**  
Christian Tasser, Carollo Engineers; Alfredo Ferrin
- 10:45 AM**           **Evaluation of High Strength Wastes for Co-Digestion Using A Bench Scale Approach**  
Jody Barksdale, Gresham Smith and Partners; Nolton Johnson, City of Atlanta; Spyros Pavlostathis, Georgia Institute of Technology; Daniel Shaw, Black and Veatch; Giny Jacob, Gresham Smith and Partners
- 11:15 AM**           **Tipping the Balance in Favor of Class A – Integration of Economics, Community Reuse Potential, Program Risk, and Good Neighbor Ethics Drive the Shift to Thermal Drying**  
Steve Wilson, Brown and Caldwell; John Peterson, Clark Regional Wastewater District; Frank Dick, City of Vancouver Engineering
- 11:45 AM**           **Conference Adjourns**



## TECHNICAL PROGRAM

### Session 22: Beneficial Use of Biogas: Planning and Use

Friday, May 18

8:30 AM – 11:45 AM

Room: West 102 ABC

**Moderators:** Nathan Antonneau, Evoqua Water Technologies LLC; Dale Gabel, CH2M

- 8:30 AM**            **Should I Use My Digester Gas? Should I Co-Digest?**  
Rusty Schroedel, AECOM
- 9:00 AM**            **Developing a Cutting Edge, Closed-Loop Organics-to-Energy Project – Roseville Case Study**  
Alison Nojima, Adam Ross, Brown and Caldwell; Kenneth Glotzbach, Todd Jordan, George Hanson, City of Roseville
- 9:30 AM**            **"Looking Forward" – Making Informed Decisions on Long Term Biogas Utilization Strategies**  
Bryan Lisk, Hazen and Sawyer
- 10:00 AM**           **Networking Break**
- 10:15 AM**           **Turning Gas Into Green - Beneficial Use of the Energy Content of WWTP Digester Gas from Smaller Facilities**  
Garth Bowers, Paul Stout, Cornerstone Environmental Group, A Tetra Tech Company
- 10:45 AM**           **Road Trip: Arriving at a New Vehicle Fuel Production System for Biogas Use**  
Daniel Hull, Brown & Caldwell; Robert Taylor, Washington Suburban Sanitary Commission; John Willis, Brown and Caldwell; Jeremy Holland, HDR Engineering Inc
- 11:15 AM**           **Lessons Learned from Planning, Designing, Constructing, and Commissioning Biogas-Fueled Cogeneration Systems**  
David Parry, Cameron Clark, Timothy Bauer, Brett Reistad, CH2M
- Alternate**           **Application to use Anaerobic Digestion (AD) Sludge for Enriching a Methanotrophic Mixed Culture with High Polyhydroxyalkanoates (PHAs) Production Capability**  
Ahmed Fergala, Ahmed Alsayed, York University; Saif Khattab, Reyerson University; Megan Rameriz, Universidad International; Ahmed Eldyasti, York University
- 11:45 AM**           **Conference Adjourns**

## TECHNICAL PROGRAM

### Session 23: Thermal Processes

Friday, May 18

8:30 AM – 10:00 AM

Room: West 103 AB

**Moderators:** Charles Goss, AECOM; Art Umble, Stantec

- 8:30 AM**            **Synergistic Thermal Processing of Dry Sludge Chaff and Incinerator Ash for Energy and Resource Recovery**  
Zhongzhe Liu, Marquette University; Daniel Zitomer, Marquette University Haggerty Eng Hall; Patrick McNamara, Marquette University
- 9:00 AM**            **Adopting Innovative Technology - Challenges and Lessons Learned from A Utility's Perspective**  
Richard Tsang, CDM Smith; Hunter Carson, Thomas Hartye, Peter Weed, MSD of Buncombe County, NC; Jonathan Lapsley, CDM Smith
- 9:30 AM**            **Seizing the Opportunity for Improved Energy Efficiency of an Existing Fluid Bed Incinerator**  
Webster Hoener, Chris Dormier, Black & Veatch; Felicia Bergeron, Sewerage and Water Board of New Orleans
- 10:00 AM**           **Session Adjourns for Networking Break**

## TECHNICAL PROGRAM

### **Session 24: Greenhouse Gas Management**

**Friday, May 18**

**8:30 AM – 10:00 AM**

**Room: West 104 AB**

**Moderators:** Wendy Barrott, Great Lakes Water Authority; David Oerke, CH2M

- 8:30 AM**                    **Sidestream Management as Part of an Energy Optimization Roadmap for an Advanced BNR Facility**  
Soeren Eriksen, Nerea Uri, Per Nielsen, Ib Pedersen, Mikkel Andersen, VCS Denmark Ltd; Julian Sandino, CH2M
- 9:00 AM**                    **Quantifying the GHG-Emission Reductions from DC Water's Digestion/Cambi/CHP Upgrades**  
John Willis, Brown and Caldwell; William Brower, Chris Peot, DC Water & Sewer Authority
- 9:30 AM**                    **Curbing Greenhouse Gas Emissions Through Codigestion**  
Michael Theodoulou, GE Water & Process Technologies; Indra Maharjan, Ontario Clean Water Agency; Ed Dujlovic, Stratford
- Alternate**                    **Stack Emission Tests Results from Existing and New High Temperature Fluid Bed Municipal Sludge Incinerators Operating in US and Ontario (CA)**  
Levent Takmaz, Ky Dangtran, SUEZ
- 10:00 AM**                    **Session Adjourns for Networking Break**

## TECHNICAL PROGRAM

### Session 25: Class A Technologies

Friday, May 18

10:15 AM – 11:45 AM

Room: West 103 AB

**Moderator:** Terry Lowe, City of Surprise, Arizona; Doug Kobrick, Hazen and Sawyer

- 10:15 AM**      **Pilot Scale Evaluation of a Two-Stage, Low-Cost Low-Tech Class A Biosolids Treatment Process**  
Karina Eyre, Tanner Keyzers, Jennifer Becker, Eric Seagren, Christa Meingast, Michigan Technological University
- 10:30 AM**      **Low-Cost, Low-Tech Biosolids Treatment via Long-Term Storage: A Comparison of Two Pilot-Scale Studies**  
Jennifer Becker, Karina Eyre, Tanner Keyzers, Christa Meingast, Eric Seagren, Michigan Technological University
- 10:45 AM**      **Nampa's Sundried Biosolids Story**  
Shelby Smith, Michael Zeltner, Brown and Caldwell; Steven Drangsholt, HDR Inc; Andy Zimmerman, City of Nampa WWTP
- 11:15 AM**      **Solar Heated Thermal Floor Enhanced Solar Greenhouse Biosolids Drying**  
Patrick Goodfellow, Ric Traeger, Brown and Caldwell; Philip Wolstenholme, Brown and Caldwell; Warren Dancer, Suneel Garg, City of Surprise
- Alternate**      **Product Development Research with Lystek Class A Liquid Biosolids**  
Ronald Alexander, R Alexander Associates Inc; Michael Dougherty, Lystek International
- 11:45 AM**      **Conference Adjourns**

## PRESENTATIONS AT-A-GLANCE

| Wednesday, May 16 |   |   |  |  |
|-------------------|---|---|--|--|
| Room              | West 101 AB   | West 102 ABC  | West 103 AB  | West 104 AB  |
| <b>Session</b>    | <b>Session 01: Product Development</b>  |   |  |  |
| <b>10:45 AM</b>   | Developing Products with Thermally-Hydrolyzed Biosolids At DC Water   |   |  |  |
| <b>11:15 AM</b>   | Biosolids Market Analysis for a Strategic Long-term Biosolids Management Program                            |   |  |  |
| <b>Alternate</b>  | Urban Biocycle Concept: From Wastewater Treatment to Resource Recovery                                      |   |  |  |
| Room              | West 101 AB   | West 102 ABC  | West 103 AB  | West 104 AB  |
| <b>Session</b>    | <b>Session 02: Codigestion</b>  | <b>Session 04: Emerging Contaminants</b>  | <b>Session 03: Dewatering Mechanisms and Methods</b>   | <b>Session 05: Sidestream Management</b>   |
| <b>1:30 PM</b>    | Anaerobic Co-Digestion of Condensate from Biosolids Pyrolysis   | The Fate of Microplastic in Wastewater Solids Treatment: Degradation of PE and PHB Microbeads in Aerobic and Anaerobic Digestion  | Lessons Learned From Assessment of Four Laboratory-Scale Sludge Dewaterability Methods Used During an Anaerobic Digestion Pilot Performed at the Robert W. Hite Treatment Facility | Vivianite Occurrence and Remediation Techniques in Biosolids Pre-treatment Process   |
| <b>2:00 PM</b>    | Getting to Zero with Co-Digestion - Defining the Road to Energy Neutrality                                  | Fate of Ammonia, Solids, Sterols, Pharmaceuticals and Polycyclic Aromatic Hydrocarbons in Anaerobic Digestion and Intermittent Aeration of Mixed Sludge                           | Evaluating the Impacts of WAS Release on Anaerobic Digestion and Dewatering at Robert W. Hite Treatment Facility   | Wards Island WWTP Advanced Biosolids Handling and Sidestream Treatment Enhancements  |
| <b>2:30 PM</b>    | Mesophilic Anaerobic Co-digestion of Manure and Thickened Waste Activated Sludge at Different Mixing Ratios | A Reduction in Triclosan and Triclocarban in Water Reclamation Plant Influent, Outfall, and Biosolids Following the U.S. FDA's 2013 Proposed Rulemaking on Antibacterial Products | Sludge Characteristics that Impact Dewatering of Anaerobically Digested Biosolids at Multiple Facilities   | Calcite Precipitate in Biosolids Handling Processes: A Case Study                    |
| <b>Alternate</b>  |   |   |  | Lost Crystals— Investigating When Nutrient Recovery Isn't Meeting Low-P Expectations |

## PRESENTATIONS AT-A-GLANCE

| <b>Wednesday, May 16</b> |  |   |  |   |
|--------------------------|--|---|--|---|
| Room                     | West 101 AB  | West 102 ABC  | West 103 AB  | West 104 AB   |
| <b>Session</b>           | <b>Session 02: Codigestion (Continued)</b>   | <b>Session 06: THP Technology</b>   | <b>Session 03: Dewatering Mechanisms and Methods (Continued)</b>   | <b>Session 07: Master Planning I</b>  |
| <b>3:45 PM</b>           | Leveraging Codigestion for Municipal Biogas Sludge Drying; Sustainable Goals - Proven Technology | Finding the Best Solution for Cooling on Thermal Hydrolysis Projects  | A Survey of WRRF Biosolids Identifying the Parameters Affecting Dewatering and the Effect of THP                       | Ultimate Combination of Sustainable Biosolids Treatment Technologies  |
| <b>4:15 PM</b>           | Do You Really Want that FOG? Some Considerations for Starting a FOG Codigestion Program          | Thermal Hydrolysis Full Scale System Performance  | Effect of Potassium and Sodium on The Dewatering of Mesophilic Anaerobic Digestate                                     | A Streamlined Approach to Multi Facility Master Planning with Triple Bottom Line Optimization   |
| <b>Alternate</b>         | Preparing for a Class A Future – San Francisco’s New Biosolids Initiatives                       | Optimized Sludge Thickening Process Control Using Real Time Controller Sludge Thickening Polymer Optimization Gravity Belt Thickeners Pima County Tres Rios WRF | Geobag for Sludge Drying The Good, The Bad and The Messy   | Fundamental Improvements to Anaerobic Digestion Systems at Water Resource Recovery Facilities   |
| <b>Alternate</b>         |  |   | Debunking the Myth of Centrifuges: Centrifuges as an Energy Hog  |   |
| <b>Thursday May 17</b>   |  |   |  |   |
| Room                     | West 101 AB  | West 102 ABC  | West 103 AB  | West 104 AB   |
| <b>Session</b>           | <b>Session 08: THP Master Planning</b>   | <b>Session 09: Regulatory Changes and Impact to Biosolids Management</b>  | <b>Session 10: P3 Partnerships in Biosolids: Why P3 Makes Sense to Balance Risks and Costs in Biosolids Management</b> | <b>Session 11: Biofuels and Bioproducts from Wet and Gaseous Waste Feedstocks</b>   |
| <b>8:30 AM</b>           | Centralized Biosolids Processing with Thermal Hydrolysis and Anaerobic Digestion                 | The Anatomy of an ‘Objective’ Legislative Research Study on Biosolids   | Resource Recovery at the Source: Tempe’s P3 for Municipal FOG Recovery   | This session will include a sample of DOE’s recent waste-to-energy awards. Information about DOE’s Small Business Innovation Research (SBIR) program, and examples of cutting edge research in producing biofuels and bioproducts from residuals and biosolids. |
| <b>9:00 AM</b>           | Model Development to Compare the Impacts of Thermal Pretreatment on Waste Activated Sludge       | Protecting Beneficial Use – Current Legal Issues Regarding Land Application   | Ameresco’s P3 Approach for Biogas Recovery at Phoenix’s 91st Avenue WWTP   |   |
| <b>9:30 AM</b>           | Optimizing THP – The Intermediate Thermal Hydrolysis Process                                     | Regulatory Reaction to PFAS Disrupts Residuals Recycling  | Key Ingredients of a Successful Biosolids P3   |   |
| <b>Alternate</b>         |  | Fresh Look at County-wide Biosolids Management  |  |   |

## PRESENTATIONS AT-A-GLANCE

| Thursday May 17  |  |   |   |  |
|------------------|--|---|---|--|
| Room             | West 101 AB  | West 102 ABC  | West 103 AB   | West 104 AB  |
| <b>Session</b>   | <b>Session 08: THP Master Planning (Continued)</b>   | <b>Session 13: Odors</b>  | <b>Session 14: Beneficial Use of Biogas: Treatment</b>  | <b>Session 12: Resource Recovery</b>   |
| <b>10:45 AM</b>  | Evaluation of Thermal Hydrolysis and Incineration of Sludge for Energy Recovery at an Advanced Water Reclamation Facility                                  | Impact of Biosolids Treatment and Storage Conditions on Odor Production: Thermal Hydrolysis-Anaerobic Digestion Vs Alkaline Stabilization   | A Simple and Energy Efficient Approach to Cleaning Biogas   | Primary Sludge to Valuable Chemicals, Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> ), In Microbial Electrochemical Cells - H <sub>2</sub> O <sub>2</sub> Production and In-Situ Sludge Treatment |
| <b>11:15 AM</b>  | Combining Thermal Hydrolysis with Incineration and Downstream Thermal Processes to Optimize Energy Recovery from Sewage Sludge                             | Characteristics of Nuisance Odor Emissions from the Sludge Drying Process   | Ammonia Laden Digester Gas: The Next Frontier in NOx Emissions Control  | Biologically Enhanced Primary Treatment: A Summary of Experience from Pilot, Demonstration, And Full-Scale Systems   |
| <b>Alternate</b> | Trinity River Authority of Texas Starts Move from Lime Stabilization to Thermal Hydrolysis and Anaerobic Digestion   | Automated Dosing of Hydrogen Peroxide Based on Real-Time Hydrogen Sulfide Measurements in an Aerated Sludge Holding Tank and Belt Filter Presses at the Norfolk, Nebraska Water Pollution Control Plant | Understanding Design Standards and Codes for Biogas Systems   | Turning Summer Heat Into Savings - Maximizing Energy Recovery From Combustion Turbine Exhaust  |
| <b>Alternate</b> | Re-Feeding of Hydrolyzed Biosolids to Anaerobic Digestion for Enhanced Biogas Generation; Case Study at Fairfield-Suisun Sewer District                    |   |   |  |
| Room             | West 101 AB  | West 102 ABC  | West 103 AB   | West 104 AB  |
| <b>Session</b>   | <b>Session 17: Charting New Research in Residuals and Biosolids</b>  | <b>Session 18: Dewatering Practice and Planning</b>   | <b>Session 16: Anaerobic Digestion</b>  | <b>Session 15: Master Planning II</b>  |
| <b>1:30 PM</b>   | Interactive session for residuals and biosolids professionals to inform WRF of research needs. Includes an overview of WRF's major projects in this field. | Impact of Iron Salt Addition on Solids Production and Operations  | Using Struvite Precipitation to Remove Colloidal Material from Acid-Phase Digestion and the Effect on Downstream Gas-Phase Digestion                | Developing a Biosolids Strategy with the Community – A Modified Approach to Long-term Biosolids Planning at the Region of Waterloo   |
| <b>2:00 PM</b>   |  | State-of-the-Practice for Dewatering of Thermally Hydrolyzed Digested Biosolids   | Energy Production Requires Energy Input to Digesters - A Review of Digester Mixing and Development of Improved Digester Mixing Design Methodologies | Tale of Two Florida Cities - Competition and Innovation Drive Biosolids Management toward the Private Sector   |

## PRESENTATIONS AT-A-GLANCE

| <b>Thursday May 17</b> |   |   |   |   |
|------------------------|---|---|---|---|
| Room                   | West 101 AB   | West 102 ABC  | West 103 AB   | West 104 AB   |
| 2:30 PM                |   | Giving a New Life to a 20-Year Old Facility: Fountain Hills WWTP Solids Handling System Improvement Project   | Microbial Electrochemical Cells as An Alternative to Biochemical Methane Potential Tests for Analyzing Batch Anaerobic Digestion Kinetics | Weighing the Options: A Comprehensive Approach to Long-Term Biosolids Management  |
| Alternate              |   | Overcoming Obstacles with a Difficult to Handle Sludge - Centrifuge Piloting at Miami's Central District WWTP |   |   |
| Room                   | West 101 AB   | West 102 ABC  | West 103 AB   | West 104 AB   |
| Session                | <b>Session 19: Creating a Brand and a Following: Branding Biosolids for a Long Term Sustainable Practice</b>  | <b>Session 20: Land Application</b>   | <b>Session 16: Anaerobic Digestion</b>  | <b>Session 15: Master Planning II</b>   |
| 3:45 PM                | The session will present the experience from 3-4 utilities that have gone beyond producing biosolids and have developed a brand and a quality controlled product. The presenters will focus on the efforts to develop the brand and the benefits from having a material differentiated from generic biosolids. Speaker information coming soon. | Soil Microbiome Response to Land Application of Wastewater Treatment Biosolids                                | The Effect of Free Nitrous Acid Pretreatment on The Anaerobic Digestibility of Thickened Waste Activated Sludge                           | Regulations Drive Nutrient Recovery and Reuse at Winnipeg's Largest Treatment Facility: The Winnipeg North End Sewage Treatment Plant Upgrade Project |
| 4:15 PM                |   | Competition Between Herbaceous Vegetation and Conifer Seedlings on a Biosolids Amended Mine Site              | Improved Characterization of Anaerobic Digestion Kinetics of Mixed Sludges With and Without Thermally Pretreated WAS                      | When Does It Make Sense to Put All Your Eggs in One Basket and When Does It Not: A Case Study of Biosolids Process Centralization                     |
| Alternate              |   |   | Taking a Bite Out of Digester Cleaning Costs  | Selecting an Advanced Anaerobic Digestion Configuration and Biogas Management Strategy for the City of Tampa  |
| <b>Friday, May 18</b>  |   |   |   |   |
| Room                   | West 101 AB   | West 102 ABC  | West 103 AB   | West 104 AB   |
| Session                | <b>Session 21: Codigestion: Food Waste</b>  | <b>Session 22: Beneficial Use of Biogas: Planning and Use</b>   | <b>Session 23: Thermal Processes</b>  | <b>Session 24: Greenhouse Gas Management</b>  |
| 8:30 AM                | Addressing Operational Side Effect of Co-digestion of Organic Wastes  | Should I Use My Digester Gas? Should I Co-Digest?   | Synergistic Thermal Processing of Dry Sludge Chaff and Incinerator Ash for Energy and Resource Recovery                                   | Sidestream Management as Part of an Energy Optimization Roadmap for an Advanced BNR Facility  |
| 9:00 AM                | Evaluation and Optimization of Co-Digestion Capacity Through Biodegradability Test Assays   | Developing a Cutting Edge, Closed-Loop Organics-to-Energy Project – Roseville Case Study                      | Adopting Innovative Technology - Challenges and Lessons Learned from A Utility's Perspective  | Quantifying the GHG-Emission Reductions from DC Water's Digestion/Cambi/CHP Upgrades  |



## PRESENTATIONS AT-A-GLANCE

| Friday, May 18 |  |  |   |  |
|----------------|--|--|---|--|
| Room           | West 101 AB  | West 102 ABC   | West 103 AB   | West 104 AB  |
| 9:30 AM        | Managing an Ever Changing Stream of Organic Materials for Co-Digestion at the Hermitage Municipal Authority - From Impounded Honey and Rotten Vegetables to Biogas Success | "Looking Forward" – Making Informed Decisions on Long Term Biogas Utilization Strategies   | Seizing the Opportunity for Improved Energy Efficiency of an Existing Fluid Bed Incinerator   | Curbing Greenhouse Gas Emissions Through Codigestion   |
| Alternate      |  |  |   | Stack Emission Tests Results from Existing and New High Temperature Fluid Bed Municipal Sludge Incinerators Operating in US and Ontario (CA) |
| Room           | West 101 AB  | West 102 ABC   | West 103 AB   | West 104 AB  |
| Session        | Session 21: Codigestion: Food Waste  | Session 22: Land Application   | Session 25: Class A Technologies  |  |
| 10:15 AM       | Food Waste Digestion at Inland BioEnergy in Chino, CA- Processing of Pre-Consumer and Industrial Food Waste and Biogas Yields  | Turning Gas Into Green - Beneficial Use of the Energy Content of WWTP Digester Gas from Smaller Facilities   | 10:15 AM Pilot Scale Evaluation of a Two-Stage, Low-Cost Low-Tech Class A Biosolids Treatment Process<br>10:30 AM Low-Cost, Low-Tech Biosolids Treatment via Long-Term Storage: A Comparison of Two Pilot-Scale Studies |  |
| 10:45 AM       | Evaluation of High Strength Wastes for Co-Digestion Using A Bench Scale Approach   | Road Trip: Arriving at a New Vehicle Fuel Production System for Biogas Use   | Nampa's Sundried Biosolids Story  |  |
| 11:15 AM       | Tipping the Balance in Favor of Class A – Integration of Economics, Community Reuse Potential, Program Risk, and Good Neighbor Ethics Drive the Shift to Thermal Drying    | Lessons Learned from Planning, Designing, Constructing, and Commissioning Biogas-Fueled Cogeneration Systems   | Solar Heated Thermal Floor Enhanced Solar Greenhouse Biosolids Drying   |  |
| Alternate      |  | Application to use Anaerobic Digestion (AD) Sludge for Enriching a Methanotrophic Mixed Culture with High Polyhydroxyalkanoates (PHAs) Production Capability | Product Development Research with Lystek Class A Liquid Biosolids   |  |

## SESSIONS AT A GLANCE

| Session Number                        | Session Title   | Time            | Credits  | Room         |
|---------------------------------------|---|-----------------|----------|--------------|
| <b>Tuesday, May 15<sup>th</sup></b>   |   |                 |          |              |
| <b>Workshop A</b>                     | On Main Street: A Reflection and Review of Driving Net Zero from Operating Facilities                                 | 8:30am-5:00pm   | 0.6 CEUs | West 103 AB  |
| <b>Workshop B</b>                     | High Quality Biosolids: Using Odor Predictors and Making Resilient Biosolids Products to Expand and Sustain Customers | 8:30am-5:00pm   | 0.6 CEUs | West 102 ABC |
| <b>Workshop C</b>                     | Renewable Identification Numbers: Risk Management in an Uncertain Future of the Renewable Fuel Standard               | 1:30am-5:00pm   | 0.3 CEUs | West 104 AB  |
| <b>Wednesday, May 16<sup>th</sup></b> |   |                 |          |              |
| <b>OGS</b>                            | Opening General Session   | 8:30am-10:00am  | 1.5 GCHs | ?            |
| <b>Session 1</b>                      | Product Development   | 10:45am-11:45pm | 1.0 PDHs | West 101 AB  |
| <b>Session 2</b>                      | Codigestion   | 1:30pm-4:45pm   | 2.5 PDHs | West 103 AB  |
| <b>Session 3</b>                      | Dewatering Mechanisms and Methods   | 1:30pm-4:45pm   | 2.5 PDHs | West 103 AB  |
| <b>Session 4</b>                      | Emerging Contaminants   | 1:30pm-3:00pm   | 1.5 PDHs | West 102 ABC |
| <b>Session 5</b>                      | Sidestream Management   | 1:30pm-3:00pm   | 1.5 PDHs | West 104 AB  |
| <b>Session 6</b>                      | THP Technology  | 3:45pm-4:45pm   | 1.0 PDHs | West 102 ABC |
| <b>Session 7</b>                      | Master Planning I   | 3:45pm-4:45pm   | 1.0 PDHs | West 104 AB  |
| <b>Thursday, May 17<sup>th</sup></b>  |   |                 |          |              |
| <b>Session 8</b>                      | THP Master Planning   | 8:30am-11:45am  | 2.5 PDHs | West 101 AB  |
| <b>Session 9</b>                      | Regulatory Changes and Impact to Biosolids Management   | 8:30am-10:00am  | 1.5 PDHs | West 102 ABC |
| <b>Session 10</b>                     | P3 Partnerships in Biosolids: Why P3 Makes Sense to Balance Risks and Costs in Biosolids Management                   | 8:30am-10:00am  | 1.5 PDHs | West 103 AB  |
| <b>Session 11</b>                     | Biofuels and Bioproducts from Wet and Gaseous Waste Feedstocks  | 8:30am-10:00am  | 1.5 PDHs | West 104 AB  |
| <b>Session 12</b>                     | Resource Recovery   | 10:45am-11:45pm | 1.0 PDHs | West 101 AB  |
| <b>Session 13</b>                     | Odors   | 10:45am-11:45pm | 1.0 PDHs | West 102 ABC |
| <b>Session 14</b>                     | Beneficial Use of Biogas: Treatment   | 10:45am-11:45pm | 1.0 PDHs | West 103 AB  |
| <b>Session 15</b>                     | Master Planning II  | 1:30pm-4:45pm   | 2.5 PDHs | West 104 AB  |
| <b>Session 16</b>                     | Anaerobic Digestion   | 1:30pm-4:45pm   | 2.5 PDHs | West 103 AB  |
| <b>Session 17</b>                     | Charting New Research in Residuals and Biosolids  | 1:30pm-3:00pm   | 1.5 PDHs | West 101 AB  |
| <b>Session 18</b>                     | Dewatering Practice and Planning  | 1:30pm-3:00pm   | 1.5 PDHs | West 102 ABC |
| <b>Session 19</b>                     | Creating a Brand and a Following: Branding Biosolids for a Long Term Sustainable Practice                             | 3:45pm-4:45pm   | 1.0 PDHs | West 101 AB  |
| <b>Session 20</b>                     | Land Application  | 3:45pm-4:45pm   | 1.0 PDHs | West 102 ABC |
| <b>Friday, May 18<sup>th</sup></b>    |   |                 |          |              |
| <b>Session 21</b>                     | Codigestion: Food Waste   | 8:30am-11:45am  | 3.0 PDHs | West 101 AB  |
| <b>Session 22</b>                     | Beneficial Use of Biogas: Planning and Use  | 8:30am-11:45am  | 3.0 PDHs | West 102 ABC |
| <b>Session 23</b>                     | Thermal Processes   | 8:30am-10:00am  | 1.5 PDHs | West 103 AB  |
| <b>Session 24</b>                     | Greenhouse Gas Management   | 8:30am-10:00am  | 1.5 PDHs | West 104 AB  |
| <b>Session 25</b>                     | Class A Technologies  | 10:15am-11:45am | 1.5 PDHs | West 103 AB  |

# THE EXHIBITION

## Exhibition Schedule

**Wednesday, May 16**    **10:00 am – 6:15 pm** ..... **Exhibit Hall Open**  
10:00 am – 10:45 am ..... Networking Break  
10:30 am – 11:45 am ..... Mobile Session  
11:45 am – 1:30 pm ..... Luncheon  
3:00 pm – 3:45 pm ..... Networking Break  
4:45 pm – 6:15 pm ..... Networking Reception

**Thursday, May 17**    **10:00 am – 3:45 pm** ..... **Exhibit Hall Open**  
10:00 am – 10:45 am ..... Networking Break  
11:45 am – 1:30 pm ..... Luncheon  
3:00 pm – 3:45 pm ..... Networking Break

*Children under 18 entering the Exhibition must be accompanied by a parent or guardian at all times. The parent or guardian must obtain a child badge at registration, and assumes all risk and responsibility for the child's safety.*

*Due to the proprietary nature of the displays, photography of displays and materials is forbidden without exhibitors' express permission.*



## EXHIBITORS

As of 5/1/2018

**Alfa Laval, Inc ..... Booth 708**

[www.alfalaval.us](http://www.alfalaval.us)

Phone: 512-632-8158

5400 International Trade Dr

Richmond, VA 23231

Alfa Laval is a leading global supplier of thickening, dewatering, filtration, fluid control, heat recovery, and packaged plant equipment and services for industrial and municipal water and wastewater applications.

**Alpine Technology, Inc ..... Booth 409**

[www.alpinetechnology.com](http://www.alpinetechnology.com)

Phone: 512-328-5829

1906 Winter Park Rd

Austin, TX 78746

Alpine Technology supports municipal and industrial incineration, mono-incineration, gasification, large thermal drying, Waste 2 Energy, and associated Organic Rankine Cycle (ORC) projects.

**Anaergia, Inc ..... Booth 623**

[www.anaergia.com](http://www.anaergia.com)

Phone: 905-766-3333 x230

4210 S Service Rd

Burlington, ON L7L 4X5

Canada

Anaergia delivers solutions that recover resources and valuable products from waste and offset local fossil fuel consumption, reach municipal greenhouse gas reduction targets and improve the quality of life for partnering communities.

**ANDRITZ Separation, Inc ..... Booth 500**

[www.andritz.com](http://www.andritz.com)

Phone: 817-419-1756

1010 Commercial Blvd S

Arlington, TX 76001

ANDRITZ offers state-of-the-art products in the areas of filtration, dewatering, and thickening with different types of machinery such as thickeners, centrifuges, screw presses, disc filters, belt presses, screens, filter presses, and dryers.

**Anuvia Plant Nutrients ..... Booth 307**

[www.anuviaplantnutrients.com](http://www.anuviaplantnutrients.com)

Phone: 413-530-5310

PO Box 220

Zellwood, FL 32798

Anuvia is focused on a new and innovative way of manufacturing highly efficient plant nutrients for use in turf and agriculture industries. Anuvia provides an avenue for organic materials to be used in a resource efficient and environmentally friendly manner.

## EXHIBITORS

### **Aries Clean Energy ..... Booth 621**

www.ariesenergy.com  
Phone: 615-471-9299  
3148 Owen Dr, Ste 101  
Antioch, TN 37013

Aries Clean Energy provides a multi-patented technology that can handle your waste in a turnkey gasification solution. This approach provides proven environmental benefits, while simplifying your overall waste handling process.

### **BCR..... Booth 207**

www.bcrinc.com  
Phone: 904-819-9170 x130  
6621 Southpoint Dr N, Ste 200  
Jacksonville, FL 32216

BCR helps evaluate and select the best solution for Class A and B biosolids so customers can streamline processes and reduce the costs and risks associated with environmentally responsible biosolids management.

### **BDP Industries, Inc ..... Booth 314**

www.bdpindustries.com  
Phone: 518-796-1440  
PO Box 118  
Greenwich, NY 12834

BDP Industries is a leading supplier of dewatering, thickening, and composting equipment. The company's products include belt presses, screw presses, gravity belt thickeners, rotary drum thickeners, and in-vessel composting systems.

### **Berlie Technologies, Inc ..... Booth 320**

www.berliefalco.com  
Phone: 514-219-7347  
1245 rue Industrielle  
LA Prairie, QC J5R 2E4  
Canada

Berlie Technologies engineers, manufactures and installs, in turnkey projects, biosolids dewatering and drying Equipment and systems. Belt filter presses, belt dryers, rotary (drum) dryers.

### **Biolynceus Biological Solutions ..... Booth 717**

www.solidsreduction.com  
Phone: 970-586-3391  
PO Box 1499  
Estes Park, CO 80517

BioLynceus provides organic nutrients, (F:M), biological nutrient removal, solids handling and candy carbon to optimize wastewater operations. ProBiotic scrubber programs offer BNR, F:M, candy carbon, carbon source, solids handling, BOD optimization, and TSS optimization.

## EXHIBITORS

**Boerger, LLC..... Booth 303**

www.boerger.com

Phone: 612-435-7320

2860 Water Tower Pl

Chanhassen, MN 55317

Börger develops, manufactures and sells rotary lobe pumps, macerating technology and feeding technology for the conveyance of low to high viscous and abrasive materials.

**BOS Solutions, Inc ..... Booth 802**

www.bos-solutions.com

Phone: 877-267-3434

10740 N Gessner Rd, Ste 330

Houston, TX 77064

We are the leading provider of solids and liquids waste separation solutions. BOS' services and equipment have been utilized to remove solids from liquid slurry, greatly reducing waste disposal costs.

**Brown Bear Corporation..... Booth 509**

www.brownbearcorp.com

Phone: 641-322-4220

PO Box 29

Corning, IA 50841

Manufacturer of mobile equipment used for dewatering and composting of sludge. Also, off road vehicles for land application of sludge.

**CAMBI, Inc ..... Booth 521**

www.cambi.com

Phone: 610-601-4324

279 Great Valley Pkwy

Malvern, PA 19355

Cambi is the leading provider of technology to convert sludge to renewable energy and high-quality biosolids. With more than 58 plants worldwide using Cambi THP and 21 countries adopting our technology, Cambi serves more than 53 million people around the globe.

**CB&I..... Booth 200**

www.cbi.com

Phone: 832-513-1000

2103 Research Forest Dr

The Woodlands, TX 77380

CB&I (NYSE:CBI) is a leading provider of technology and infrastructure for the energy industry.

**Cemen Tech ..... Booth 205**

https://cementech.com

Phone: 800-247-2464

1700 N 14th St

Indianola, IA 50125

Cemen Tech is the world's largest manufacturer of volumetric proportioning and continuous concrete mixing solutions.

## EXHIBITORS

### **Centrisys/CNP ..... Booth 614**

[www.centrisys.com](http://www.centrisys.com)

Phone: 262-654-6006

9586 58th Pl

Kenosha, WI 53144

Centrisys manufactures dewatering centrifuges and sludge thickeners in the U.S., and provides global service/parts for all centrifuge brands. CNP, a division of Centrisys, designs and supplies nutrient recovery and biosolids treatment optimization systems.

### **Charter Machine Company ..... Booth 502**

[www.chartermachine.com](http://www.chartermachine.com)

720 W Prospect Ave

North Wales, PA 19454

Formerly Roediger Pittsburgh. Belt filter presses, gravity belt thickeners, sieve drum concentrators, conveyors, polymer systems.

### **Custom Conveyor Corporation ..... Booth 616**

[www.customconveyorcorp.com](http://www.customconveyorcorp.com)

Phone: 763-367-6200

20550 Commerce Blvd

Rogers, MN 55374

Custom Conveyor Corp specializes in material handling solutions for municipal water and wastewater treatment facilities and general industrial applications.

### **Denali Water Solutions, LLC ..... Booth 206**

[www.denaliwater.com](http://www.denaliwater.com)

Phone: 479-498-0500

3308 Bernice Ave

Russellville, AR 72802

Denali is one of the largest services providers in North America. Our services include dewatering, dredging, composting, land application and an array of environmental reporting and permitting services.

### **DMT Clear Gas Solutions ..... Booth 422**

[www.dmt-cgs.com](http://www.dmt-cgs.com)

Phone: 971-336-2963

19125 SW 125th Ct

Tualatin, OR 97062

There is no doubt that DMT should be your choice when it comes to biogas upgrading and resource recovery. With over 30 years of experience we serve our customers and help them with their environmental challenges



## EXHIBITORS

### **Dorset Green Machines bv ..... Booth 201**

www.dorset.nu

Phone: 00310-642373-730

Weverij 26

Aalten, GLD 7122 MS

Netherlands

Dorset Green Machines, a Dutch machine manufacturing enterprise. Our focus is on commercially attractive solutions for treatment of biomass waste products. We are specialists in using available residual heat for drying biomasses.

### **Drylet, LLC ..... Booth 808**

www.drylet.com

Phone: 346-980-9568

5000 Gulf Fwy, Bldg 4, Rm 103

Houston, TX 77023

Drylet is the award-winning manufacturer of an advanced, patented biocatalysis particle for delivering microbes. Its technology reduces biosolids by up to 50% in municipal wastewater treatment. Easy-to-use and scalable, it requires no capital expense.

### **Emerald Technical Services ..... Booth 722**

Phone: 864-229-6213

PO Box 49757

Greenwood, SC 29649

### **Evoqua Water Technologies, LLC..... Booth 701**

www.evoqua.com

Phone: 724-772-1327

210 Sixth Ave, Ste 3300

Pittsburgh, PA 15222

Evoqua Water Technologies delivers high performance technologies for primary and secondary clarification, biological treatment, ultrafiltration, tertiary filtration, anaerobic digestion, odor control, UV, and disinfection.

### **FKC Co, Ltd..... Booth 609**

www.fkcscrewpress.com

Phone: 360-452-9472

2708 W 18th St

Port Angeles, WA 98363

FKC manufactures screw presses for various dewatering applications and rotary screens for thickening and screening applications. Class A biosolids can also be produced with the FKC screw press.

## EXHIBITORS

**Flottweg Separation Technology, Inc ..... Booth 406**

[www.flottweg.com](http://www.flottweg.com)

Phone: 859-448-2331

*10700 Toebben Dr*

*Independence, KY 41051*

Flottweg offers high performance industrial centrifuges, belt presses, and complete custom-designed processing systems for all types of liquid-solid and liquid-liquid-solid separation applications.

**Fluid Dynamics, part of PSG, a Dover Co ..... Booth 204**

[www.fluidynamics1.com](http://www.fluidynamics1.com)

Phone: 215-699-8700

*295 Dekalb Pike*

*North Wales, PA 19454*

20 years experience and thousands of installations, qualifies Fluid Dynamics as a leading supplier of liquid and dry polymer preparation systems for water and wastewater applications.

**Fournier Industries, Inc..... Booth 615**

[www.fournierindustries.com](http://www.fournierindustries.com)

Phone: 418-423-4241

*3787 Frontenac Blvd W*

*Thetford Mines, QC G6H 2B5*

*Canada*

The FOURNIER PRESS is in the forefront of municipal and industrial sludge dewatering technology. The company's technical abilities and expertise involve design, lab and pilot testing, commissioning and training. The FOURNIER PRESS' performance can be demonstrated through the use of our mobile units.

**GEA Group..... Booth 508**

[www.gea.com](http://www.gea.com)

Phone: 201-637-9864

*100 Fairway Ct*

*Northvale, NJ 07647*

GEA Group offers centrifugal technology for the treatment of water and wastewater, including decanters for dewatering and thickening sludge volumes, and treatment of drinking water.

**Greener Day Solutions.....Booth 516**

[www.greenerdaysolutions.com](http://www.greenerdaysolutions.com)

Phone: 928-300-4939

*3527 W Denali Ct*

*Anthem, AZ 85086*

## EXHIBITORS

**Gryphon Environmental..... Booth 806**

www.gryphonenvironmental.com

Phone: 270-485-2680

2920 Fairview Dr

Owensboro, KY 42303

Innovative biosolids drying technology for any size of application.

**Haarslev Industries ..... Booth 403**

www.haarslev.com

Phone: 816-799-0808

9700 NW Conant Ave

Kansas City, MO 64153

Haarslev is a global leader in manufacturing of thermal process equipment with approximately 500 operational plants around the world. Haarslev offers Belt and disc dryers, continuous THP and cooling and dilution control systems.

**Hayward Gordon ..... Booth 220**

www.haywardgordon.com

Phone: 937-234-3810

5 Brigden Gate

Halton Hills, ON L7G 0A3

Canada

Hayward Gordon designs and manufactures nozzle mixing systems for anaerobic digesters. We also manufacture a line of hard metal, specialty centrifugal pumps.

**Hiller Separation & Process, LLC ..... Booth 423**

www.hiller-us.com

Phone: 512-525-2515

1010 Mclean S

Lampasas, TX 76650

Manufacturer of dewatering equipment.

**HML..... Booth 301**

www.hml.com

Phone: 765-288-1124

912 W McGalliard Rd

Muncie, IN 47303

Environmental testing laboratory.

**Huber Technology, Inc..... Booth 300**

www.huber-technology.com

Phone: 704-990-2053

9735 Northcross Center Ct, Ste A

Huntersville, NC 28078

HUBER offers a complete line of sludge treatment solutions including screening, thickening, dewatering, drying, and utilization, all from one source. Innovative, durable, and precise, HUBER stainless steel equipment is built to last.

## EXHIBITORS

**International Dioxide, Inc..... Booth 522**

[www.idiclo2.com](http://www.idiclo2.com)

Phone: 401-619-1104

40 Whitecap Dr

North Kingstown, RI 02852

International Dioxide offers world-class expertise in the design, fabrication, installation, and operation of CIO<sup>2</sup> water treatment technology to provide unrivalled levels of reliability, safety and cost efficiency in water treatment facilities.

**Ishigaki USA, Ltd..... Booth 801**

[www.ishigakiusa.com](http://www.ishigakiusa.com)

Phone: 603-433-3334

280 Heritage Ave, Unit J

Portsmouth, NH 03801

Ishigaki USA specializes in screw press technology to dewater municipal and industrial waste water sludge. We lead the wastewater filtration technology market with over 800 installations worldwide.

**JDV Equipment Corp..... Booth 720**

[www.jdvequipment.com](http://www.jdvequipment.com)

Phone: 281-658-1810

1 Princeton Ave

Dover, NJ 07801

JDV Equipment Corporation is a leading manufacturer and provider of safe, environmentally friendly processing equipment and services for water treatment, wastewater treatment, industrial and agricultural applications.

**Jim Myers & Sons (JMS)..... Booth 520**

[www.jmsequipment.com](http://www.jmsequipment.com)

Phone: 704-554-8397

5120 Westinghouse Blvd

Charlotte, NC 28273

JMS is a leader in water and wastewater equipment and systems. JMS equipment is designed and manufactured in Charlotte, NC and includes receiving stations, bio-stabilization systems, dried biosolids systems, and truck load-out stations



**Komline-Sanderson..... Booth 514**

[www.komline.com](http://www.komline.com)

Phone: 908-234-1000 x321

PO Box 257

Peapack, NJ 07977

Since 1946, Komline-Sanderson has provided the highest quality equipment for applications including drying, wastewater treatment, sludge processing, and air pollution control.

## EXHIBITORS

### **Kruger (Veolia Water Technologies)..... Booth 315**

www.veoliawatertech.com

Phone: 919-800-9221

4001 Weston Pkwy

Cary, NC 27513

Kruger, a Veolia business, offers resilient, efficient and robust solutions including biosolids, optimization, clarification, separation, and biological treatment with low installation costs and rapid startup, optimizing energy and savings.

### **KWS Manufacturing ..... Booth 420**

www.kwsmfg.com

Phone: 800-543-6558

3041 Conveyor Dr

Burleson, TX 76028

Founded in 1972, KWS Manufacturing Company, Ltd. is the leader in the design and manufacture of conveying equipment for the bulk material handling industry.

### **Lystek International, Inc ..... Booth 321**

www.lystek.com

Phone: 519-584-5437

1425 Bishop St N, Unit 16

Cambridge, ON N1R 6J9

Lystek's proven, award-winning, low temperature, low cost Thermal Hydrolysis Process can be leveraged to convert digested or undigested biosolids into • A Class A EQ biofertilizer • Biogas for green energy • Carbon source for BNR

### **Merrell Bros, Inc ..... Booth 714**

www.merrellbros.com

Phone: 800-663-8830

8811 W 500 N

Kokomo, IN 46901

Merrell Bros., Inc. is one of the leading Biosolids Management Companies in the United States providing a complete range of residuals services. We stand on our reputation of professional, ethical and dependable service you can trust.

### **MLM Conveying Systems, Inc ..... Booth 218**

www.mlmconveying.com

Phone: 416-277-4262

19609 96th Ave

Langley, BC V1M 3C9

Canada

ML Separation & Conveying, Inc. manufactures mechanical equipment for wastewater screening applications and material handling of solids, specializing in shaftless screw technology.

## EXHIBITORS

### **Nalco, An Ecolab Company..... Booth 816**

www.nalco.com

Phone: 470-233-3960

1601 W Diehl Rd

Naperville, IL 60563

NALCO Water, An Ecolab Company provides PURATE™ chlorine dioxide technology for biosolids odor control, FLOCMaster™ dewatering technology, and CORESHELL™ flocculant polymer and ULTRION™ coagulant polymer products for sludge dewatering.



### **NEFCO..... Booth 707**

www.nefcobiosolids.com

Phone: 617-773-3131

500 Victory Rd

North Quincy, MA 02171

NEFCO is the leader in biosolids solutions. We have the experience to design a complete biosolids processing facility, the ability to tailor the treatment process to suit your needs and the financial backing necessary to fully privatize your project.

### **Olympic Equipment..... Booth 617**

www.foodwasteseparator.com

Phone: 888-449-0026

PO Box 3227

Newport Beach, CA 92659

Olympic Environmental is the exclusive Scott Turbo Separator dealer for CA, AZ, NV, UT, and HI.

### **Orege North America, Inc ..... Booth 214**

www.orege.com/en

Phone:

1121 W 8th St

Wilmington, DE 19806

High performance and innovative solutions for the conditioning of sludge and the treatment of complex effluents.

### **Ostara Nutrient Recovery Technologies ..... Booth 316**

www.ostara.com

Phone: 619-478-6969

690 - 1199 W Pender St

Vancouver, BC V6E 2R1

Canada

Ostara's Pearl® and WASSTRIP® technologies sustainably transform phosphorus and nitrogen recovered from municipal and industrial wastewater treatment facilities into a high-value, eco-friendly fertilizer, sold and marketed by Ostara as Crystal Green®.

## EXHIBITORS

**Ovivo USA, LLC..... Booth 501**

www.ovivowater.com  
Phone: 512-834-6042  
2404 Rutland Dr  
Austin, TX 78758

Ovivo is a global provider of equipment, technology and systems producing the purest water and treating the most challenging wastewater in the industry.

**Parkson Corporation..... Booth 703**

www.parkson.com  
Phone: 954-974-6610  
1401 W Cypress Creek Rd, Ste 100  
Ft Lauderdale, FL 33309

Parkson is a supplier of equipment and solutions for industrial and municipal wastewater applications. We design, engineer and assemble products that provide customers with advanced screening, biological, filtration and biosolids management solutions.

**Penn Valley Pump Co, Inc ..... Booth 715**

www.pennvalleypump.com  
Phone: 215-343-8750  
998 Easton Rd  
Warrington, PA 18976

The Double Disc Pump™ provides the lowest lifecycle cost of any positive displacement pump on the market with our "unique" design proven to reduce wear. The pump provides virtually maintenance free pumping of a variety of sludges and slurries.

**Prime Solution, Inc..... Booth 400**

www.psirotary.com  
Phone: 269-694-6666  
610 S Platt St  
Otsego, MI 49078

Simple and effective patented Rotary technology for thickening and dewatering of biosolids. Prime Rotary Thickener and Fan Press are compact, enclosed and almost maintenance free.

**Process Engineered Water Equipment, LLC..... Booth 814**

www.pewe-llc.com  
Phone: 360-798-9268  
19215 SE 34th St, Ste 106-202  
Camas, WA 98607

PEWE manufactures a complete wastewater equipment portfolio including the ASO MBBR, SuperSkreen, DeWater Systems, Dissolved Air Flotation (DAF), PolyAccu Dose, Oil/Water Separator, Plate Settler and Command Control system.

## EXHIBITORS

**Process Wastewater Technologies, Inc. .... Booth 507**

www.pwtech.us

Phone: 410-238-7977

9004 Yellow Brick Rd, Ste D

Rosedale, MD 21237

Provider of the world's leading range of screening technologies for CSO/SSO treatment, unique biological wastewater treatment processes, and the Volute Dewatering Press sludge dewatering system.

**Putzmeister America, Inc..... Booth 221**

www.PMSolids.com

Phone: 262-497-0292

1733 90th St

Sturtevant, WI 53177

Putzmeister Solid Pumps supplies systems for the transport and storage of sludges and solids. Services include: planning and engineering, consultation, equipment and parts, installation and commissioning at project, and aftermarket support.

**RDP Technologies, Inc..... Booth 811**

www.rdptech.com

Phone: 610-650-9900

960 Brook Rd Ste 8

Conshohocken, PA 19428

Innovative products for water and wastewater treatment.

**Schwing Bioset, Inc..... Booth 517**

www.schwingbioset.com

Phone: 715-247-3433

350 SMC Dr

Somerset, WI 54017

We are your one-stop biosolids management provider offering struvite recovery, screw press dewatering, Class A alkaline stabilization, fluid bed drying, sliding frame & live bottom silos, piston pumps, conveyors, turn-key installations, and more.

**Scicorp International Corporation ..... Booth 803**

www.scicorp.net

Phone: 800-897-2053

3300 Ridgeway Dr, Apt 300

Mississauga, ON L5L 5Z9

Canada

Odor control AND rapid sludge reduction.



## EXHIBITORS

### **Sentrimax Centrifuges ..... Booth 210**

[www.sentrimax.com](http://www.sentrimax.com)

Phone: 844-327-3632

9440 60 Ave NW

Edmonton, AB T6E 0C1

Canada

Sentrimax Centrifuge is dedicated to providing the highest standard of certified service and repairs and employing the highest quality parts for virtually any municipal or industrial decanter centrifuge.

### **SNF Polydyne ..... Booth 421**

[www.polydyneinc.com](http://www.polydyneinc.com)

Phone:

1 Chemical Plant Rd

Riceboro, GA 31323

SNF Polydyne Inc. is a leading manufacturer of coagulant and flocculant water treatment polymers focused exclusively on their application in municipal water and sewage treatment plants. Leading supplier of liquid/dry polymer preparation systems.

### **SPIRAC (USA), INC..... Booth 601**

[www.spirac.com](http://www.spirac.com)

Phone: 770-632-9833

75 Jackson St, Ste 300

Newnan, GA 30263

SPIRAC® is an innovator and world leader in solids receiving, conveying, storing and outloading. Municipal dewatered sludge handling and storage systems are our primary focus, however SPIRAC® also offers conveying, dewatering and washing solutions for screenings and grit handling.

### **SUEZ..... Booth 807**

[www.suezwatertechnologies.com](http://www.suezwatertechnologies.com)

Phone: 484-459-3762

4636 Somerton Rd

Trevoze, PA 19053

SUEZ's Water Technologies & Solutions business offers the most comprehensive set of chemical and equipment solutions and services available, helping our customers manage and optimize their water resources and process challenges across industries.

### **Sustainable Generation / Gore Cover ..... Booth 306**

[www.sustainable-generation.com](http://www.sustainable-generation.com)

Phone: 866-204-0165

105 Vieves Way

Elkton, MD 21921

An authorized GORE® Cover Sales and Service Provider for North America, Sustainable Generation delivers first hand owner/operator knowledge and the reliability of the GORE® Cover system.

## EXHIBITORS

### **Swaby Lobeline Pump Co..... Booth 800**

www.lobelinepump.com

Phone: 773-626-1400

5420 W Roosevelt Rd, Ste 300

Chicago, IL 60644

Manufacturer of sump pumps for lift stations, centrifugal pumps special alloys—rotary lobe pumps "Lobeline" for all sludges high viscosities and abrasive applications.

### **Synagro Technologies ..... Booth 606**

www.synagro.com

Phone: 443-489-9083

435 Williams Ct, Ste 100

Baltimore, MD 21220

Synagro provides environmentally sustainable solutions for commercial and municipal organizations that generate organic by-products by transforming industrial and municipal waste into environmentally friendly resources that benefit our communities.

### **Thermal Process Systems..... Booth 402**

www.thermalprocess.com

Phone: 219-663-1034

1841 E Summit St

Crown Point, IN 46307

Thermal Process System's ThermAer™ Process provides aerobic digestion for excellent TS and VS reduction while producing Class A biosolids without the need for an external heat source.

### **Trident Processes, LLC ..... Booth 212**

www.tridentprocesses.com

Phone: 800-799-3740

2238 Queen St, Unit 101

Abbotford, BC V2T 0B7

Canada

Trident Processes LLC provides solid-liquid separation equipment and custom solutions for wastewater and sludge treatment, biosolids dewatering and nutrient recovery applications under the Trident™ brand.

### **UGSI Solutions, Inc ..... Booth 202**

www.ugsicorp.com

Phone: 856-896-2160

1901 W Garden Rd

Vineland, NJ 08360

UGSI Chemical Feed is the leader in chemical feed and polymer activation with PolyBlend® dry and emulsion polymer feed systems, Encore® diaphragm metering pumps, dry chemical feed systems and Varea-Meter® variable area flow meters.

**EXHIBITORS**

**Unison Solutions, Inc..... Booth 607**

www.unisonsolutions.com

Phone: 563-585-0967

5451 Chavenelle Rd

Dubuque, IA 52002

Unison Solutions, Inc. is an industry leader in biogas upgrading and conditioning systems. Based in Iowa, Unison Solutions provides all facets of a biogas upgrading system from the design of equipment, through fabrication, start-up, and after market service.

**USP Technologies ..... Booth 203**

www.usptechnologies.com

Phone: 404-352-6070 x109

900 Circle 75 Pkwy, Ste 1330

Atlanta, GA 30339

US Peroxide is a leading provider of hydrogen peroxide-based, full-service treatment programs. We specialize in odor control with turn-key solutions for municipal and industrial wastewater, refinery applications, air quality treatment, and remediation.

**Valmet..... Booth 407**

www.valmet.com

Phone: 678-772-9584

2425 Commerce Ave, Ste 100

Duluth, GA 30096

Valmet provides solids measurements for cake, centrate, and suspended solids applications. Valmet also provides automation, controls and sampling solutions to the municipal and industrial sectors.

**Varec Biogas..... Booth 401**

www.varec-biogas.com

Phone: 714-220-9920

5362 Oceanus Dr, Ste A

Huntington Beach, CA 92649

Varec Biogas product range includes digester cover accessories, gas control devices, digester gas cleaning systems and flares. Varec Biogas is the industry standard for expertise, service and product reliability.



**Vaughan Company, Inc..... Booth 415**

www.chopperpumps.com

Phone: 360-249-4042

364 Monte Elma Rd

Montesano, WA 98563

Vaughan chopper pumps and Triton screw centrifugal pumps are available in several configurations and sizes to suit most needs for agricultural, municipal and industrial processing applications. All Vaughan chopper pumps include a written Performance Guarantee - your assurance of clog-free operation

## EXHIBITORS

**VeloDyne - Velocity Dynamics, Inc ..... Booth 706**

[www.velodynesystems.com](http://www.velodynesystems.com)

Phone: 303-530-3298

543 S Pierce Ave

Louisville, CO 80027

VeloDyne - Velocity Dynamics, Inc. is a manufacturer of advanced liquid and dry polymer activation technologies and chemical storage, metering, mixing, delivery and control systems.

**Vogelsang ..... Booth 506**

[www.vogelsangusa.com](http://www.vogelsangusa.com)

Phone: 330-296-3820

PO Box 751

Ravenna, OH 44266

Vogelsang positive displacement, rotary lobe pumps and in-line grinders provide quality, technologically advanced, economical solutions to all your wastewater pumping needs.

**WesTech Engineering, Inc..... Booth 308**

[www.westech-inc.com](http://www.westech-inc.com)

Phone: 801-265-1000

3665 SW Temple

Salt Lake City, UT 84115

WesTech Engineering provides digester covers, both beam and truss type, DuoSphere™ gas holders for biogas storage and Extreme Duty™ sludge mixers to optimize digester tank performance and technologies for harnessing biogas to energy.

**World Water Works, Inc. .... Booth 216**

[www.worldwaterworks.com](http://www.worldwaterworks.com)

Phone: 201-803-8807

4000 SW 113th St

Oklahoma City, OK 73173

World Water Works, Inc. is an innovator in the wastewater treatment industry, driven to help industrial and municipal customers find wastewater treatment solutions that deliver clean water, perform better, recover resources and save money.

## PRESENTER AND MODERATOR DIRECTORY

**Muneer Ahmad**, University of British Columbia, **Speaker Session 04**

**Ronald Alexander**, R Alexander Associates Inc, **Speaker Session 25**

**Shayla Allen**, Arcadis, **Speaker Session 14**

**Nathan Antonneau**, Evoqua Water Technologies LLC, **Speaker Session 12, Moderator Session 22**

**Alan Appleton**, Carollo Engineers, **Speaker Session 21**

**Eric Auerbach**, Arcadis, **Speaker Session 05**

**Isaac Avila**, Metro Wastewater Reclamation District, **Speaker Session 03**

**William Barber**, Cambi Inc, **Speaker Session 08**

**Jody Barksdale**, Gresham Smith and Partners, **Speaker Session 21**

**Layne Baroldi**, Orange County Sanitation District, **Speaker Session 10**

**Wendy Barrott**, Great Lakes Water Authority, **Moderator Session 24**

**Jennifer Becker**, Michigan Technological University, **Speaker Session 25**

**Ned Beecher**, NEBRA, **Speaker Session 09**

**Yuge Bian**, UCLA, **Speaker Session 13**

**Jose Bicudo**, Regional of Waterloo Water Services Div, **Speaker Session 03**

**James Bier**, AMERESCO, **Speaker Session 10**

**Micah Blate**, Hazen and Sawyer, **Speaker Session 05**

**Joerg Blischke**, Black & Veatch, **Speaker Session 01**

**Garth Bowers**, Cornerstone Environmental Group, A Tetra Tech Company, **Speaker Session 22**

**Dominic Brose**, Metropolitan Water Reclamation District Chicago, **Speaker Session 04**

**William Brower**, DC Water, **Speaker Session 01**

**Peter Burrowes**, CH2M now JACOBS, CANADA, **Speaker Session 08**

**Lindsey Busch**, Carollo Engineers, **Speaker Session 14**

**Scott Carr**, Black & Veatch, **Speaker Session 02, Moderator Session 16**

**Prabhushankar Chandrasekeran**, Greeley and Hansen LLC, **Speaker Session 09**

**Jean Creech**, Charlotte Water, **Moderator Session 13, 04**

**Robert Crockett**, Virginia Biosolids Council, **Speaker Session 09**

**Marco Denee**, AECOM, **Speaker Session 16**

**Michael Doyle**, Evoqua Water Technologies, LLC, **Speaker Session 12**

**Patrick Dube**, Water Environment Federation, **Moderator Session 21**

**Deepak Dugar**, Visolis, **Speaker Session 11**

**James Dunbar**, Lystek International Limited, **Speaker Session 08**

**Houssam Eljardi**, Pima County RWRD, **Speaker Session 06, Moderator Session 10**

**Soeren Eriksen**, VCS Denmark Ltd, **Speaker Session 24**

**Ralph Eschborn**, AECOM, **Moderator Session 14**

**Karina Eyre**, Michigan Technological University, **Speaker Session 25**

**Ahmed Fergala**, York University, **Speaker Session 22**

**Robert Forbes**, CH2M, **Speaker Session 15, Moderator Session 19**

**Dale Gabel**, CH2M, **Speaker Session 07, Moderator Session 22**

**Becky Gherini**, Carollo Engineers, **Speaker Session 02**

**Patrick Goodfellow**, Brown and Caldwell, **Speaker Session 25**

**Charles Goss**, AECOM, **Moderator Session 23**

**Michael Guarnieri**, National Renewable Energy Laboratory, **Speaker Session 11**

**Teigan Gulliver**, HDR, Inc., **Speaker Session 04**

## PRESENTER AND MODERATOR DIRECTORY

**Engin Guven**, Black & Veatch, **Moderator Session 06**

**Regina Hanson**, Varec Biogas, **Speaker Session 14**

**Steven Hart**, Arizona State University, **Speaker Session 16**

**Matthew Higgins**, Bucknell University, **Moderator Session 03**

**Webster Hoener**, Black & Veatch, **Speaker Session 23**

**James Huchel**, City of Flagstaff, **Speaker Session 03**

**Daniel Hull**, Brown & Caldwell, **Speaker Session 22**

**Janelle Hunt**, Metro Vancouver, **Speaker Session 20**

**Brian Jo**, CH2M, **Speaker Session 08**

**Thomas Johnson**, CH2M, **Speaker Session 05**

**Trudy Johnston**, Material Matters Inc, **Moderator Session 07**

**Jason Joynes**, Town of Florence, **Moderator Session 05**

**Jay Kemp**, Black & Veatch, **Moderator Session 14**

**Dongwon Ki**, Arizona State University, **Speaker Session 12**

**Rudy Kilian**, Carollo Engineers, **Moderator Session 19**

**Greg Knight**, Black & Veatch, **Speaker Session 06**

**Paul Knowles**, Hazen and Sawyer, **Speaker Session 07**

**Steve Krugel**, Brown and Caldwell, **Speaker Session 16**

**Damian Kruk**, AECOM, **Speaker Session 15**

**Kevin Lambirth**, UNCC, **Speaker Session 20**

**Mark Lang**, AECOM, **Moderator Session 18**

**Jeff LeBlanc**, Denali Water Solutions, **Moderator Session 01**

**Bryan Lisk**, Hazen and Sawyer, **Speaker Session 22**

**Zhongzhe Liu**, Marquette University, **Speaker Session 23**

**Terry Lowe**, City of Surprise, **Moderator Session 25**

**Rob Mangrum**, Mangrum Consulting & Design, **Speaker Session 02**

**Samir Mathur**, CDM Smith Inc, **Speaker Session 08**

**David McNeil**, City of Tempe, AZ, **Speaker Session 10, Moderator Session 10, 21**

**Lisa Melton**, Hazen and Sawyer, **Moderator Session 05**

**Jeff Moeller**, WRF, **Speaker Session 11**

**Chris Moline**, HDR, **Speaker Session 08**

**Manuel Moncholi**, Miami Dade Water and Sewer Department, **Speaker Session 18**

**Anna Munson**, Black & Veatch, **Speaker Session 12**

**Michael Nelson**, USP Technologies, **Speaker Session 13**

**Zwelani Ngwenya**, Jacobs Engineering Group, **Speaker Session 03**

**Jeffrey Nicholson**, Virginia Tech/ HRSD, **Speaker Session 03**

**Alison Nojima**, Brown and Caldwell, **Speaker Session 22**

**Nathaniel Nowicki**, Centrisys, **Speaker Session 03**

**David Oerke**, CH2M, **Speaker Session 18, Moderator Session 24**

**Irene Okioga**, Charlotte Water - City of Charlotte, **Speaker Session 01**

**Lola Olabode**, WRF, **Moderator Session 17**

**Frances Okoye**, Ryerson University, **Speaker Session 16**

**James Oyler**, Geniefuel Corporation, **Speaker Session 11**

**David Parry**, CH2M, **Speaker Session 07, Speaker Session 22**

**Bipin Pathak**, DC Water, **Speaker Session 05, Moderator Session 06**

## PRESENTER AND MODERATOR DIRECTORY

**Kurt Pfeffer**, Hazen and Sawyer, **Speaker Session 15**

**Mark Philbrick**, Department of Energy, **Coordinator Session 11**

**Amit Pramanik**, WRF, **Speaker Session 17**

**Dave Quinby**, Surprise Arizona, **Moderator Session 07**

**Anahita Rabii**, Ryerson University, **Speaker Session 02**

**Christine Radke**, WRF, **Moderator Session 03, 17**

**Annette Reese**, Black & Veatch (retired), **Moderator Session 02**

**Jesus Rodriguez**, JWC Environmental, **Speaker Session 16**

**Adrian Romero**, Jacobs, **Moderator Session 04, Speaker Session 13**

**A R Rubin**, NCSU, **Moderator Session 20**

**Ester Rus**, Thames Water, **Speaker Session 08**

**Perry Schafer**, Brown and Caldwell, **Speaker Session 18**

**Yaniv Scherson**, Stanford, **Speaker Session 11**

**Rusty Schroedel**, AECOM, **Moderator Session 16, Speaker Session 22**

**Seyedehfatemeh Seyedi**, Marquette University, **Speaker Session 02**

**Toshio Shimada**, Carollo Engineers, **Moderator Session 02,12, Speaker Session 21**

**Natalie Sierra**, Brown and Caldwell, **Moderator Session 09, Speaker Session 02**

**James Slaughter**, Beveridge & Diamond, P.C., **Speaker Session 09**

**Shelby Smith**, Brown and Caldwell, **Speaker Session 25**

**James E Smith Jr**, Independent Consultant, **Moderator Session 12**

**Sebastian Smoot**, HDR, **Speaker Session 15**

**Aaron Stephens**, Material Matters, Inc., **Moderator Session 13**

**Levent Takmaz**, SUEZ, **Speaker Session 24**

**Christian Tasser**, Carollo Engineers, **Speaker Session 21**

**Michael Theodoulou**, GE Water & Process Technologies, **Speaker Session 24**

**Richard Tsang**, CDM Smith, **Moderator Session 08, Speaker Session 23**

**Art Umble**, Stantec, **Moderator Session 23**

**Matthew VanHorne**, Hazen and Sawyer, **Speaker Session 15**

**Jun Wang**, Carollo Engineers, **Speaker Session 18**

**Jim Welp**, Black & Veatch, **Moderator Session 18**

**Jason Wert**, RETTTEW, **Speaker Session 21**

**Todd Williams**, JACOBS, **Speaker Session 06, Moderator Session 01**

**John Willis**, Brown and Caldwell, **Speaker Session 21, 24, Moderator Session 15, 20**

**Collette Wilson**, Arizona State University, **Speaker Session 16**

**Blair Wisdom**, Metro Wastewater Reclamation District, **Speaker Session 03**

**Jason Wiser**, Brown and Caldwell, **Speaker Session 14**

**Greg Woodward**, Stantec Consulting Inc., **Moderator Session 08**

**Kaoru Yajima**, Region of Waterloo Water Services Division, **Speaker Session 15**

**Michael Zeltner**, Brown and Caldwell, **Speaker Session 25**

**Andy Zimmerman**, City of Nampa WWTP, **Speaker Session 25**

## CONFERENCE SCHEDULE AT-A-GLANCE

### Tuesday, May 15

---

|                   |  |
|-------------------|--|
| 7:30 AM – 5:00 PM | Registration                           |
| 8:30 AM – 5:00 PM | Workshops A, B                         |
| 1:30 PM – 5:00 PM | Workshop C                             |
| 5:30 PM – 7:30 PM | AZ Water - Friends of Biosolids Social |

### Wednesday, May 16

---

|                     |                          |
|---------------------|--------------------------|
| 7:30 AM – 5:00 PM   | Registration             |
| 8:30 AM – 10:00 AM  | Opening General Session  |
| 10:00 AM – 6:15 PM  | Exhibit Hall Open        |
| 10:35 AM – 11:45 AM | Mobile Session           |
| 10:45 AM – 11:45 AM | Technical Session 1      |
| 11:45 AM – 1:30 PM  | Luncheon in Exhibit Hall |
| 1:30 PM – 4:45 PM   | Technical Sessions 2, 3  |
| 1:30 PM – 3:00 PM   | Technical Sessions 4, 5  |
| 3:45 PM – 4:45 PM   | Technical Sessions 6, 7  |
| 4:45 PM – 6:15 PM   | Networking Reception     |

### Thursday, May 17

---

|                     |                               |
|---------------------|-------------------------------|
| 8:00 AM – 5:00 PM   | Registration                  |
| 8:30 AM – 11:45 AM  | Technical Session 8           |
| 8:30 AM – 10:00 AM  | Technical Sessions 9, 10, 11  |
| 8:30 AM – 12:30 PM  | Tour                          |
| 10:00 AM – 3:45 PM  | Exhibit Hall Open             |
| 10:45 AM – 11:45 AM | Technical Sessions 12, 13, 14 |
| 11:45 AM – 1:30 PM  | Luncheon in Exhibit Hall      |
| 1:30 PM – 4:45 PM   | Technical Sessions 15, 16     |
| 1:30 PM – 3:00 PM   | Technical Sessions 17, 18     |
| 3:45 PM – 4:45 PM   | Technical Sessions 19, 20     |

### Friday, May 18

---

|                     |                           |
|---------------------|---------------------------|
| 8:00 AM – 11:45 AM  | Registration              |
| 8:30 AM – 11:45 AM  | Technical Sessions 21, 22 |
| 8:30 AM – 10:00 AM  | Technical Sessions 23, 24 |
| 10:15 AM – 11:45 AM | Technical Session 25      |



## UPCOMING EDUCATION & TRAINING EVENTS

### **Nutrient Removal and Recovery Conference 2018**

June 18 - 21, 2018  
Raleigh, North Carolina  
[www.wef.org/nutrients](http://www.wef.org/nutrients)

### **Disinfection and Reuse Symposium 2018**

July 29 - 31, 2018  
Portland, Oregon  
[www.wef.org/disinfectionreuse](http://www.wef.org/disinfectionreuse)

### **WEFTEC 2018**

September 29 - October 3, 2018  
New Orleans, Louisiana  
[www.weftec.org](http://www.weftec.org)



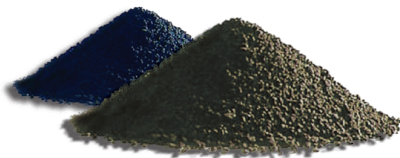
# biosolids drying systems



*There is a difference!*

Komline-Sanderson's indirectly heated paddle dryers produce 90+% dry solids Class A Exceptional Quality biosolids and provide:

- **Easier operation**
- **Minimal off-gas volume**
- **Lower maintenance cost**
- **Higher energy efficiency**



call: **1 800 225 5457**

fax: **1 800 329 7457**

mail: **12 Holland Av  
Peapack, NJ 07977**

e-mail: **[info@komline.com](mailto:info@komline.com)**

web: **[www.komline.com](http://www.komline.com)**



**Komline-Sanderson**



# EMPOWERING COMMUNITIES WITH SUSTAINABLE SOLUTIONS

**NEFCO** partners with public- and private-sector clients to design, construct, and operate innovative biosolids management systems throughout North America. Our highly treated Class A biosolids product—ideal as a premium fertilizer or alternative combustion fuel—reflects the latest in clean, sustainable technologies.



If you're a community or industry seeking cost-effective, integrated solutions to protect natural resources and reduce fossil fuel use, **partner with NEFCO—a trusted industry leader for more than 25 years.**



617.773.3131

500 Victory Road  
North Quincy, MA 02171  
info@nefcobiosolids.com  
[www.nefcobiosolids.com](http://www.nefcobiosolids.com)

# NEFCO

*Recycle, Renew, Restore*