



Residuals and Biosolids 2010 Leveraging Biosolids in the Energy-Climate Era

May 23 – 26, 2010
Savannah International Trade and Convention Center
Savannah, Georgia, USA



*Conference **Workshop** and **Opening General Session** materials available online

Session 1: Renewable Power
Sunday, May 23, 2010
1:30pm-4:45pm

- 1A 1:30pm Energy Recovery Options: What Is Their True Value?**
Patricia Scanlan, *Black & Veatch*
- 1B 2:00pm The Power of Renewable Energy – NEORSD's Experience**
James E Welp, *Black & Veatch*
- 1C 2:30pm Maximizing Benefits from Renewal Energy at Blue Plains AWWTP**
Alan B Cooper, *Parsons Water & Infrastructure*

3:00pm Networking Break

- 1D 3:45pm Renewable Energy from Combined Treatment of Municipal Sewage Solids and Pulp & Paper Mill Waste at the Gippsland Water Factory**
Michael Walkowiak, *CH2M HILL*
- 1E 4:15pm Digester Improvements for Efficiency and Energy**
Ralph "Rusty" B Schroedel, Jr., *AECOM*
- Alternate From Brown to Green- Reducing Carbon Footprint via Biogas Cogeneration in a Phased Digestion Process Producing Class A Biosolids**
Sudhakar Viswanathan, *Degremont Technologies*

Session 2: ATAD and Composting Success Stories

Sunday, May 23, 2010

1:30pm-4:45pm

- 2A 1:30pm "Second Generation" ATAD - A-Tad Better? - Two Case Studies of Conversion from "First Generation" to "Second Generation" ATAD Systems**
David W. Oerke, *CH2M Hill*
- 2B 2:00pm The Benefits of the SNDR to the City of Delphos ThermAer ATAD Treatment Process**
Kim Riddell, *City of Delphos*
- 2C 2:30pm Largest Municipal ATAD - Class A Biosolids at Middletown WWTP**
Tony L. Pevec, *CDM*
- 3:00pm Networking Break*
- 2D 3:45pm Spotsylvania County's Compost Facility-Expanding A Successful Operation**
Benjamin L. Loveday, *Spotsylvania County*
- 2E 4:15pm Spotsylvania County's New Improved Composting Facility with State of the Art Odor Control**
Todd O. Williams, *CH2M HILL, INC.*

Session 3: Young Professionals I

Sunday, May 23, 2010

1:30pm-4:45pm

- 3A 1:30pm Part One - A Case Study of Projecting the Costs and Land Requirements for a Sustainable Biosolids Land-Application Program for Columbus, Ohio**
Aaron B Stephens, Material Matters, Inc
- 3B 2:00pm Barriers to Implementation of the 2008 Farm Bill Conservation Programs and Their Implications in Manure Management**
Kari B Fitzmorris, Georgia Southern University
- 3C 2:30pm Impact of Series Digestion on Process Stability and Performance**
Thomas Chapman, Brown and Caldwell
- 3:00pm Networking Break*
- 3D 3:45pm Behaviour of Volatile Sulfur Compounds in Mesophilic and Thermophilic Anaerobic Digestion**
Weiwei Du, University of Waterloo
- 3E 4:15pm Performance Validation of the first US Installation of the Patented MONASHELL Biological Air Treatment System**
Brendan Naples, Bord na Mona Environmental Products U.S. Inc

Session 4: Dewatering
Sunday, May 23, 2010
1:30pm-4:45pm

4A 1:30pm Freeze-Thaw Treatment of RBC Sludge: A Sustainable Option for Sludge Dewatering in Cold Regions
Banu Ormeci, *Carleton University*

4B 2:00pm Pilot Scale Evaluation of Electro-Osmotic Enhanced Dewatering at the Plum Island Water Pollution Control Plant
J. Scott Abrams, *Hazen and Sawyer*

4C 2:30pm Optimizing Sludge Dewatering by Using the Kemicond Process with Bucher Hydraulic Filter Press - Full Scale Experiences at KAPALLA WWTP
Andreas Thunberg, *Käppala Association*

3:00pm Networking Break

4D 3:45pm Getting What You Paid For DCWASA's Blue Plains Wastewater Treatment Plant's Improved Polymer Evaluation and Quality Control
Peter LaMontagne, *Peter LaMontagne PE*

4E 4:15pm Dewatering Automation and Optimization at the Morris Forman Water Quality Treatment Center
Robert W Bates, *Louisville Metropolitan Sewer District*

Alternate Chemical Conditioning Optimization for Geotextile Tubes & Other Dewatering Techniques
Brian J Mastin, *MAST Environmental Solutions Inc.*

Alternate Realizing the Full Potential of Electro-dewatering -- Nazareth, PA Demonstrates Low Odor Class A Biosolids Options
Ralph J Eschborn, *AECOM*

Session 5: GHG Inventory Development and Biosolids-Related Reductions
Monday, May 24, 2010
1:30pm-4:45pm

5A 1:30pm Modeling Greenhouse Gas Reduction as an Economic Factor in New York City Biosolids Management Planning
Raymond Pun, *CDM*

5B 2:00pm DCWASA's Certifiable, Utility-Wide GHG Inventory and Associated Biosolids Improvement Reductions
John Loyal Willis, *Brown and Caldwell*

5C 2:30pm Metro District: Quantifying Biosolids Sustainability Options
Richard D Kuchenrither, *Black & Veatch*

3:00pm Networking Break

5D 3:45pm NEORSD's Progressive Approach for Sustainable Biosolids Management
Robert P. Dominak, *Northeast Ohio Regional Sewer District*

5E 4:15pm Biosolids Management Optimization and Alternatives Analysis Based on Greenhouse Gas Emissions
Samuel S. Jeyanayagam, *Malcolm Pirnie, Inc.*

Alternate Calculate Greenhouse Gas Emissions from Biosolids to Energy Processes
Brian Copeland, *Brown and Caldwell*

Session 6: Sludge Minimization and Anaerobic Digestion

Monday, May 24, 2010

1:30pm-4:45pm

- 6A 1:30pm Effects of Activated Sludge Reactor and EPS on Anaerobic Digestion and Sludge pretreatment**
Chul Park, University of Massachusetts Amherst
- 6B 2:00pm The Comparison of Biological Sludge Reduction Processes**
Chul Park, University of Massachusetts Amherst
- 6C 2:30pm High Percent Biosolids Digestion with Innovative Low Energy Technology**
Brian E Healy, Baswood

3:00pm Networking Break

- 6D 3:45pm Dual Zone Mixing System Anaerobic Digester Facilities**
Sidney E. Clark, Biogas, Inc.
- 6E 4:15pm Volatile Solid and Volatile Organic Sulfur Compound Reduction Using Multiple-Stage Thermo and Mesophilic Anaerobic Digesters**
Jongmin Kim, Virginia Polytechnic Institute and State University

Session 7: Biosolids Programs and Master Planning

Monday, May 24, 2010

1:30pm-4:45pm

- 7A 1:30pm Cost Control and Risk Reduction - Precepts for DC WASA's Biosolids Program in the Age of Sustainability**
Perry L. Schafer, *Brown and Caldwell*
- 7B 2:00pm Seventeen Agencies Team to Convert Biosolids to Energy for Regional Solution**
Rebecca Overacre, *Carollo Engineers*
- 7C 2:30pm The Business Case for Optimizing the Operations, Maintenance, and Distribution of Pierce County's Biosolids Fertilizer Manufacturing Facility**
Steffran Neff, *Brown and Caldwell*

3:00pm Networking Break

- 7D 3:45pm Beneficial Utilization of Digester Gas - Making Sustainable Choices for On-site Energy Production**
Charles Michael Bullard, *Hazen and Sawyer, PC*
- 7E 4:15pm \$322 Million Biosolids Plan for DCWASA - Three Difference Procurement Methods and a Major Sole Source Process Not Previously Constructed in the United States**
Philip B. Braswell, *Brown and Caldwell*
- Alternate PRASA Strategies for Energy Reduction in Biosolids Management**
Jorge Ivan Camacho, *CH2MHILL*

Session 8: Value-Added Products

Monday, May 24, 2010

1:30pm-4:45pm

8A 1:30pm TBD

8B 2:00pm OSTARA Start-Up
Rob Bauer, *Clean Water Services*

8C 2:30pm Fats, Oils and Grease Marketing Analysis
Carlos De Leon, *Black & Veatch*

3:00pm Networking Break

8D 3:45pm Biosolids Application for Passive Vegetalisation of a Lateritic Soil Previously Used for Pine Production
Pascal Pagand, *University of New Caledonia*

8E 4:15pm Effect of Poultry Litter Amendment on Fungal Activity and Microbial Dynamics in the Presence of Pesticide Mixture: Potential for Pesticide Removal from Contaminated Soil
Nanh Lovanh, *USDA-ARS*

Alternate Effect of Sludge Type on Acidogenic Fermentation
Qiuyan Yuan, *University of Manitoba*

Session 9: CHP Overview

Tuesday, May 25, 2010

8:30am-11:45am

9A 8:30am Energy Balance in a Novel Approach to Sludge Processing
Giuseppe Mininni, *CNR-Water Research Institute*

9B 9:00am The Opportunities for and Benefits of Combined Heat and Power at Wastewater Treatment Facilities
Neeharika Naik-Dhungel, *United States Environmental Protection Agency*

9C 9:30am Design of the SHAFDAN Digestion and Cogeneration Facility
David L Parry, *CDM*

10:00am Networking Break

9D 10:45am State of the Science on Cogeneration of Heat and Power from Anaerobic Digestion of Municipal Biosolids
James E Smith, Jr., *US Environmental Protection Agency*

9E 11:15am Optimization of Biogas Production and Use
Dustin Levi Craig, *CDM*

Session 10: Anaerobic Digestion Pretreatment for Enhanced Performance
Tuesday, May 25, 2010
8:30am-11:45am

10A 8:30am Evaluation Methodology Framework for Processes to Reduce Waste Activated Solids
Drury D. Whitlock, *CH2M HILL*

10B 9:00am An Assessment of the Feasibility of Employing BAP Tests for Characterizing Anaerobic Biodegradability of Raw and Pretreated WAS
Peiman Kianmehr, *University of Waterloo*

10C 9:30am Enhancement of Sludge Reduction and Methane Production Rates Using Difference Pretreatment Methods Applied Prior to Small Scale Laboratory Anaerobic Digesters
Dilek Faika Sanin, *Middle East Technical University*

10:00am Networking Break

10D 10:45am Impacts of Thermal Hydrolysis on Biosolids Quality Parameters: Dewaterability, Odors, Indicators and Pathogens
Sudhir Murthy, *DCWASA*

10E 11:15am Effect of Microsludge on Anaerobic Digester Performance at Des Moines Wastewater Reclamation Facility
Julian Sandino, *CH2M HILL*

Alternate Enhancement of Anaerobic Digestion Processes using Pulse Power Technology
Ketan D. Patel, *US Environmental Protection Agency*

Alternate Sewage Sludge Volume Minimization through Homogenization
Frank R. Kolb, *Engineering Consultants Dr.-Ing Kolb*

Session 11: International Recycle Treatment and Thermal Processes
Tuesday, May 25, 2010
8:30am-11:45am

This session includes invited speakers and will be determined closer to the conference.

Session 12: Addressing Odor and Perceived Risks of Land Application
Tuesday, May 25, 2010
8:30am-11:45am

**12A 8:30am The New Canadian Standard for Biosolids Quality (CAN/BNQ):
A Sound and Consensus-Based Approach**
Marc Hebert, *Quebec Ministry of Sustainable development,
Environment and Parks*

**12B 9:00am Protecting Groundwater Quality at Biosolids Land Application
Sites using EPA's Multimedia, Multi-Pathway, Multi-Receptor
Exposure and Risk Assessment (3MRA) Technology**
Michael J. McFarland, *Utah State University*

**12C 9:30am Development of a Quantitative Microbial Risk Assessment for
Biosolids-Associated Pathogens**
Jingjie Teng, *Drexel University*

10:00am Networking Break

**12D 10:45am Statistical Confidence of Field Olfactometry and Biosolids
Odor Assessment**
Robin C Brandt, *Penn State University*

**12E 11:15am Odour classification of biosolids to mitigate nuisances : a
Quebec approach**
Marc Hebert, *Quebec Ministry of Sustainable development,
Environment and Parks*

**Alternate Behaviour of Fecal Contamination Indicators (Fecal Coliforms,
Somatic Phages and Helminth Eggs) in Biosolid-Soil Mixtures for
Ryegrass Sward Farming**
Maria Claudia Campos, *Pontificia Universidad Javeriana*

**Alternate Advances in Biosolids Disinfection? Stabilization utilizing Sulfuric
Acid**
Robert S. Reimers, *Tulane University*

Session 13: Power Generation from Residuals - Case Studies

Tuesday, May 25, 2010

1:30pm-4:45pm

13A 1:30pm Energy Efficiency for Biosolids Treatment: An Update of Best Practices and Case Studies

Lauren Fillmore, *Water Environment Research Foundation*

13B 2:00pm The Influence on Digestion and Advanced Digestion on the Environmental Impacts of Incinerating Sewage Sludge - A Case Study from the UK

Bill P F Barber, *United Utilities*

13C 2:30pm Sparked by Stimulus Funding and Fueled by Digester Gas - A Gas to Energy Facility Goes in at F. Wayne Hill Water Resources Center, Gwinnett County, GA

Robert H. Forbes, Jr., *CH2MHILL, Inc.*

3:00pm Networking Break

13D 3:45pm A Perfect Synergy of Pathogen Reduction and Renewable Energy - The Columbus Water Works CBFT and Cogeneration System Project

Randy Shaw, *Brown and Caldwell*

13E 4:15pm Unique Engine Control Upgrade to Blend Natural Gas and Biogas for Engine Generators

Shaun T. OKelley, *Kansas City Water Services*

Session 14: Thermophilic Digestion and Cambi

Tuesday, May 25, 2010

1:30pm-4:45pm

14A 1:30pm Culturing Non-Culturable E. coli after Thermal Treatment
Matthew J. Higgins, *Bucknell University*

14B 2:00pm Evaluating the Time-Temperature Requirement for E. coli Destruction using the Live/Dead Test
Wade Brooks Yankey, *Penn State Harrisburg*

14C 2:30pm Conversion Strategies and Evaluation of the Transition from Mesophilic to Thermophilic Anaerobic Digestion of Municipal Sludge
Spyros G Pavlostathis, *Georgia Institute of Technology*

3:00pm Networking Break

14D 3:45pm Energy Prices and Carbon Footprint Cause a Reversal Of Raw Sludge Drying In Favour of Advanced Digestion with Thermal Hydrolysis and Cake Recycling in a Number of UK Plants
Keith Martin Panter, *Ebcor Ltd*

14E 4:15pm The Case for the Biodegradation Pathway for Energy Recovery from Biosolids
Hari Santha, *Black & Veatch*

Session 15: Post-Aerobic Digestion and Recycled Nutrient Treatment/Use
Tuesday, May 25, 2010
1:30pm-4:45pm

15A 1:30pm Combining Mesophilic Anaerobic Digestion with Post-Aerobic Digestion to Enhance Solids Reduction and Reduce Sidestream Ammonia
Adrienne Menniti, CH2M HILL

15B 2:00pm Nitrogen Removal from Mesophilically Digested Anaerobic Sludge by Various Modes of Sequential Aeration
Jongmin Kim, Virginia Polytechnic Institute and State University

15C 2:30pm Determination of Oxygen Utilization during Post-Aerobic Digestion of Anaerobically Digested Biosolids
Christopher A Wilson, Virginia Polytechnic Institute and State University

3:00pm Networking Break

15D 3:45pm Greenhouse Gas Emission Reductions from Improved Anaerobic Digestion and Methanol Replacement via Focused Pulsed Treatment of Wastewater Sludge
James E. Banaszak, OpenCEL

15E 4:15pm Co-processing of Water Treatment Residuals and Wastewater Sludge to Control Water Soluble Phosphorus in Biosolids
Malcolm Taylor, The Pennsylvania State University

Alternate To Digest or Not Digest. Impact of Anaerobic Digestion on Biological Phosphorous Removal in Camp Creek, GA, Advanced Water Reclamation Facility
Eugenio Giraldo, American Water

Session 16: Land Application and Fertilizers

Tuesday, May 25, 2010

1:30pm-4:45pm

- 16A 1:30pm A Case for the Safety And Sustainability of Class B Biosolids Land Application - Results of Microconstituent and Pathogen Research in Gainesville, FL**
Paul Davis, *Gainesville Regional Utilities*
- 16B 2:00pm Know Thy Opponent and Respect Them**
Wayne H. Ludwig, Jr., *Harford County Department of Public Works*
- 16C 2:30pm An Uncertain Future: Management of Class B Biosolids in Florida**
Michael Scullion, *CDM*
- 3:00pm Networking Break*
- 16D 3:45pm Part Two - A Case Study of Energy Use and GHG Emissions for Land Application of Biosolids at Columbus Ohio**
Trudy E Johnston, *Material Matters, Inc*
- 16E 4:15pm Full Scale Testing of Sewage Sludge Chemical Processing and Exothermic Drying Producing an Organically-Enhanced Granular Nitrogen Sulfur Fertilizer**
David A Weber, *Unity Envirotech*
- Alternate Microconstituents in Biosolids: Canadian Activities**
Hugh D Monteith, *Hydromantis, Inc.*

Session 17: Incineration and Drying

Wednesday, May 26, 2010

8:30am-11:45am

17A 8:30am The Power of Sludge - Maximizing Energy Recovery at the Woodward Avenue WWTP
Deborah E Ross, *AECOM*

17B 9:00am New Bioenergy Technology in Operation: The Rialto SlurryCarb Facility
Raymond J. Kearney, *EnerTech Environmental, Inc.*

17C 9:30am Feeding FOG to Thermal Oxidation Units-Its All in the Presentation!
Timothy G. Shea, *CH2MHILL*

10:00am Networking Break

17D 10:45am Beyond the Norm: Energy Recovery to the "Max"
James Rowan, *Black & Veatch*

17E 11:15am STEADIGRO7 (th), Catalyst for the Paradigm Shift from Sludge as a Waste to Biosolids as a Value Based Resource A Case Study of the Evolution of the Derry Township Municipal Authority's Solids Handling Program
Trudy E Johnston, *Material Matters, Inc*

Alternate Evaluation of Solar Technology in a Biosolids Drying Application
Natalie V. Sierra, *San Francisco Public Utilities Commission*

Alternate On Line Cake & Liquid Solids Measurement
Peter Brady, *Alpine Technology, Inc.*

Session 18: Anaerobic Digestion Start-up, Operation, and Capacity
Wednesday, May 26, 2010
8:30am-11:45am

18A 8:30am Two for the Price of One: Increasing Digester Capacity while Reducing Filamentous Bulking through Co-thickening at Tacoma CTP
Kimberly A. Kelsey, Brown and Caldwell

18B 9:00am Simultaneous Optimization of Sludge Storage and Anaerobic Digester Gas Production by High-solid Biosolid Hydrolysate Recirculation
Ajay Singh, Lystek International Inc.

18C 9:30am City of Honolulu, Hawaii Sand Island Egg Shaped Digester Start-Up Considerations
Sidney E. Clark, Biogas, Inc.

10:00am Networking Break

18D 10:45am Easy to Own Anaerobic Digesters: A Case Study of the Dry Creek WWTP in Nashville, TN
Doug Yarosz, Brown and Caldwell

18E 11:15am Digester Foaming: Getting A Grip On It
Gary F Shimp, Black & Veatch

Alternate Understanding Anaerobic Digestion Performance Through Pilot Scale Experiments
Jonathan Keaney, Brown and Caldwell

Session 19: Young Professionals II

Wednesday, May 26, 2010

8:30am-11:45am

- 19A 8:30am Energy from Residuals - Comparing Anaerobic Digestion to Drying/Gasification Model**
Nalan Tepe-Sencayir, *AECOM*
- 19B 9:00am Effects of the Main Activated Sludge Process Configuration on Sludge Minimization Technology**
James C Steffen, *Siemens Water Technologies*
- 19C 9:30am Biopolymers and Cations During WAS Stabilization with an AnMBR Process and Their Contribution to Membrane Fouling**
Martha Dagneu, *University of Waterloo*

10:00am Networking Break

- 19D 10:45am Developing a Sustainable Biosolids Management Program for Pasco County, Florida**
John T Hahn, *CH2M HILL*
- 19E 11:15am Developing a Capital Improvements Plan for the 64 Dry Ton Per Day Jea Buckman Regional Residuals Management Facility**
Engin Guven, *CDM*

Session 20: Land Application and Agriculture

8:30am-11:45am

Wednesday, May 26, 2010

**20A 8:30am Pathogen Behaviour Assessment During Biosolid Application
in Soils Used for Pasture at a Dairy Cattle Farm**
Marie Claudia Campos, Pontificia Universidad Javeriana

20B 9:00am Effects of Application Rates and Duration on Biological
Mary-Vaughn V Johnson, USDA-Agricultural Research Service

20C 9:30am Fate of Biosolids Pollutants on Disturbed Western Rangelands
Michael J. McFarland, Utah State University

10:00am Networking Break

**20D 10:45am Manure Management Update: Regulatory Trends and
Emerging Issues**
Lynne H. Moss, CDM

20E 11:15am Poultry Industry Trends for Litter Usage
Dana M Miles, USDA-ARS