

February 14 - 17, 2022

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Welcome to GWMS 2022!

Thank you for joining the eighth Global Waste Management Symposium (GWMS).

We're so glad to bring you North America's leading technical conference for the presentation of applied and fundamental research and case studies on waste management.

This is your best opportunity to share ideas and problem solve with peers, researchers, vendors, and thought leaders in the global waste community.

At GWMS, get ready to enjoy:

- **Three days of world-class content and breakthrough research.**
- **100+ innovative oral and poster presentations.**
- **Plenty of networking opportunities during the Monday, Tuesday and Wednesday receptions.**
- **Golfing at John Fought-designed Players Course.**

GWMS would not be possible without the generous support of our sponsors, presenters, partners and most of all, our attendees. Thank you for your support!

Enjoy your time at Global Waste Management Symposium 2022!



Tell Us What You Think with **slido**

We will be using Slido to allow you to express your opinion in surveys for each session during GWMS. We will also offer up one or two live poll questions that you can participate in as well.

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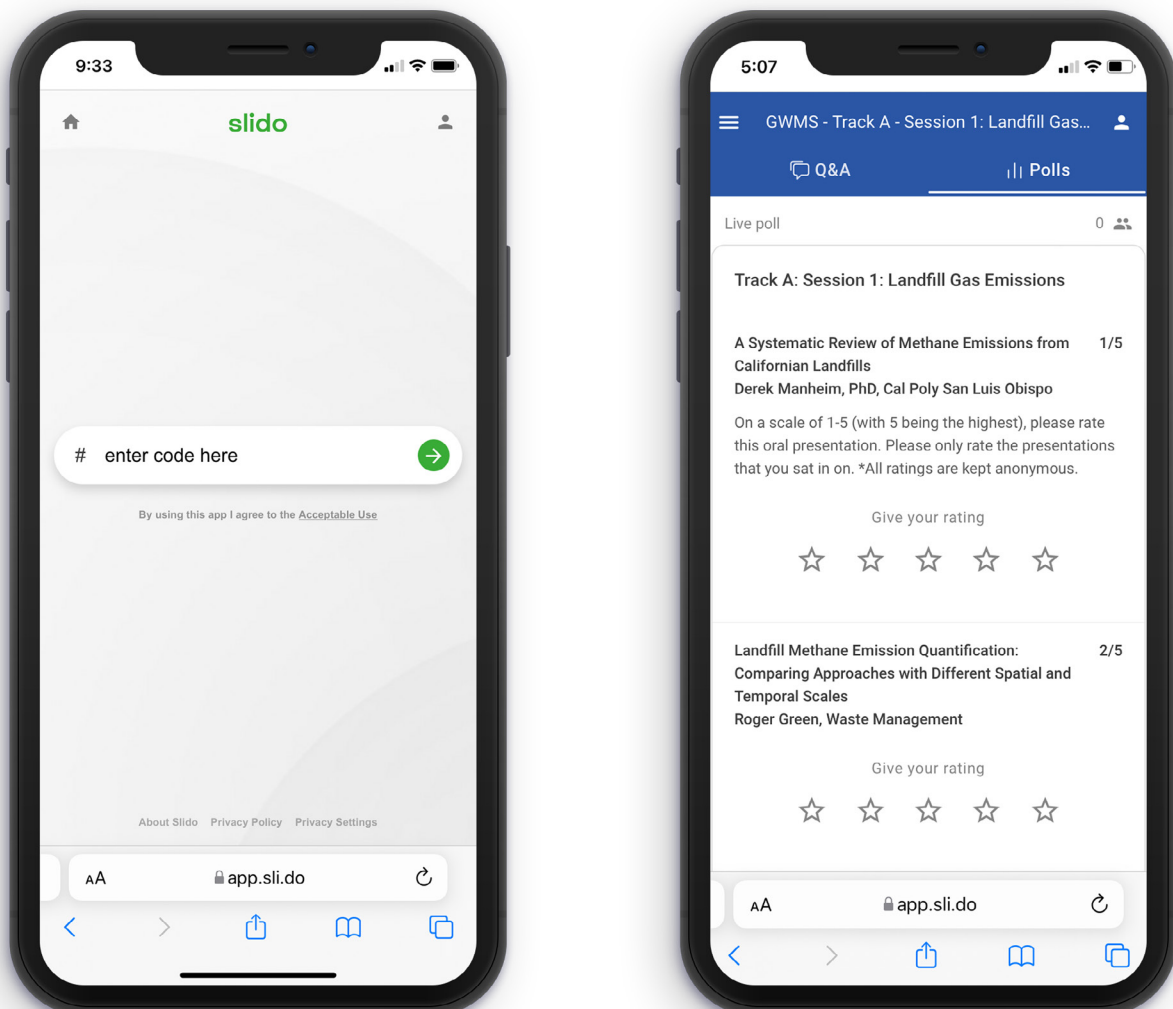
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It will literally take you less than 1 minute to complete the short Session Survey.

If you share some additional comments it may take longer. We welcome them if you have the time!

Thank you! Your feedback shapes our future events.



Conference Agenda

Monday, February 14, 2022

1:00pm to 6:00pm Registration

5:00pm to 7:00pm Welcome Reception - The Grove (Outside)

Tuesday, February 15, 2022

7:00am - 6:00pm Registration

7:30am - 8:30am Continental Breakfast

8:30am - 9:45am Welcome & Keynote

9:45am - 10:15am Coffee Break

Session One		
Track A: Landfill Gas Emissions Moderator: Robert Gardner, PE, BCEE, SCS Engineers Room: Desert Visa A-C Slido Event Survey #: GWMS1A	Track B: Waste Characterization Moderator: Andy Nickodem, Golder Associates, Inc. Room: Desert Visa D-E Slido Event Survey #: GWMS1B	Track C: PFAS Characterization Moderator: Joe Benco, Republic Services Room: Grand Salon A-D Slido Event Survey #: GWMS1C
<i>Landfill Methane Emission Quantification: Comparing Approaches with Different Spatial and Temporal Scales</i> Roger Green , Waste Management	<i>Overview of Issues and Methods for Microplastics in Solid Waste Management</i> Ali Teymouri , PhD, Brown and Caldwell	<i>PFAS Issues Facing Landfills</i> Stephen Zemba , Sanborn, Head & Associates
<i>A Systematic Review of Methane Emissions from Californian Landfills</i> Tarek Abichou , Florida State University	<i>Describing Differences in Waste Composition</i> Yiyi Wang , PhD, Stony Brook University	<i>Per- and polyfluoroalkyl Substances Systems Analysis Tool (PFAS_SAT)</i> Mojtaba Sardarmehni , North Carolina State University
<i>Estimates of Waste Sector Greenhouse Gas and Short-Lived Climate Pollutant Emissions in Lebanon using SWEET</i> Alex Stege , SCS Engineers	<i>Determining Variation in Waste Generation</i> Firman Firmansyah , Waste Data and Analysis Center, Stony Brook University	<i>Longer-Term Trends in Leachate PFAS Concentrations at Midwestern Landfills</i> Terry Johnson , PG, Waste Management
		<i>Characterization and Quantification of Per- and Polyfluoroalkyl Substances in Landfill Gas from U.S. Landfills</i> Florentino De la Cruz , PhD, North Carolina State University

12:00pm - 1:30pm Lunch & Poster Viewing

Session Two		
Track A: Organics Management Moderator: Tony Pelletier, PE, Civil & Environmental Consultants, Inc. Room: Desert Visa A-C Slido Event Survey #: GWMS2A	Track B: Landfill Gas Management & Regulations Moderator: Amy Banister, Waste Management Room: Desert Visa D-E Slido Event Survey #: GWMS2B	Track C: PFAS Treatment in Leachate Moderator: Prentiss Shaw, PE, Tetra Tech Room: Grand Salon A-D Slido Event Survey #: GWMS2C
<i>Understanding Organics Management Across Canada: A Look at the Policies, Accessibility, and Infrastructure Used to Manage Organics</i> Suzie Boxman , PhD, Environmental Research & Education Foundation	<i>What's Next for Landfill Gas Emissions Regulations (US & Canada)</i> Amy Banister , Waste Management	<i>Direct PFAS Removal from Raw Leachate A Case Study: Regional Waste Management Facility (RWMF), NT, Australia</i> Clifford Duckworth, Beng, CPEng, RPEQ , The Water and Carbon Group
<i>Strategic Planning and an Environmental Management System lead Chicago to Composting for High Quality Class A Production</i> Daniel Collins , PE, MWRD Greater Chicago (Retired)	<i>Who, What, When, Where, & Why Solving the Mystery of Landfill Air Regulations, Permitting, and Compliance</i> Julie Hall , Weaver Consultants Group	<i>PFAS Treatment through Destruction not Transfer Technologies and Case Study on Electron Beam Destruction of PFAS</i> Tyler Brown , PE, Tetra Tech
<i>Understanding Potential Food Waste Generation for Facility Planning</i> Debra Darby , CCP, Tetra Tech	<i>A Comparison of Modeled versus Actual Landfill Gas Collection in Select Eastern U.S. Landfills</i> Mousa Maimoun , PhD, PE, LaBella Associates	<i>Electrochemical Transformations of Perfluoroalkyl Acid (PFAA) Precursors and PFAAs in Landfill Leachates</i> Vanessa Maldonado , Michigan State University/Fraunhofer USA Inc.
<i>Clean Compost from a High Diversion Organics Processing Facility: Low PFAS and Higher Crop Yields</i> Luc De Baere , DRANCO NV	<i>Zero-Emission Solar/AC Piston Pumping Boosts RNG in Landfills and WTE</i> Mark Bertane , Blackhawk Technology Company	<i>Sustainable Mitigation of Per and Poly-fluoroalkyl Substances (PFAS) and Recalcitrant Organic Matter (DOM) from Landfill Leachate using Modified Coal Fly-Ash (CFA)</i> Harsh Patel , MS, North Carolina A&T State University
<i>Case Study: Food Waste to RNG Fuel in Los Angeles County</i> Mike Michels , PE, Tetra Tech		<i>Thermal Treatment of Wastewater Solids and PFAS</i> Ali Teymouri , PhD, Brown and Caldwell

Tuesday, February 15, 2022

3:30pm - 4:00pm Coffee Break

4:00pm - 5:15pm

Session Three

Track A: Environmental Justice Moderator: Gail Lobin, FTI Consulting Room: Desert Visa A-C Slido Event Survey #: GWMS3A	Track B: Odor Moderator: Greg Cekander, Waste Management Room: Desert Visa D-E Slido Event Survey #: GWMS3B	Track C : Slope Stability Evaluation Moderator: Steve Menoff, PE, Civil & Environmental Consultants, Inc. Room: Grand Salon A-D Slido Event Survey #: GWMS3C
<i>Waste Not - Environmental Justice Impact on the Waste Industry</i> Michael Trupin , Trinity Consultants	<i>What Causes Odor Complaints at Landfills? Analysis of Odor and Complaint Data from a Midwestern Landfill</i> Craig Benson , PhD, PE, NAE, University of Wisconsin at Madison	<i>Landfill Slope Monitoring and Evaluation</i> David Spang , PE, Civil & Environmental Consultants, Inc.
<i>Recent Environmental Justice Policy Developments</i> Michael Jensen , Waste Management	<i>Sulfide and Sulfate Production from Solidified Industrial Sludge Waste</i> Alborz Fathinezhad , Louisiana State University	<i>Using Vibrating Wire Piezometers for MSW Pore Pressure Evaluation and Landfill Stability</i> Eric Chiado , PE, Civil & Environmental Consultants, Inc.
<i>Federal and State Environmental Justice Laws, Regulations and Key Cases</i> Kendra Sherman , Squire Patton Boggs (US) LLP	<i>A Novel, Mixed Metal Ferric Iron Solution for Sustainable, Low-cost Hydrogen Sulfide Control</i> Deane Little , PhD, New Sky Energy	<i>Decision Protocol for 2D vs. 3D Slope Stability Analysis</i> Johnny Vastag , EIT, Bunnell-Lammons Engineering

5:15pm to 6:45pm Reception & Poster Viewing

Wednesday, February 16, 2022

6:30am - 5:30pm Registration

7:00am - 8:15am Continental Breakfast

8:30am - 10:00am

Session Four

Track A: Leachate Treatment I Moderator: Dave Vladic, PE, Republic Services Room: Desert Visa A-C Slido Event Survey #: GWMS4A	Track B: Solid Waste Planning Moderator: George Duvendack, Waste Connections Room: Desert Visa D-E Slido Event Survey #: GWMS4B	Track C: Waste Stability Moderator: Bo McCoy, PE, Waste Management Room: Grand Salon A-D Slido Event Survey #: GWMS4C
<i>Evolution of Leachate Management/Treatment Strategies for Solid Waste Landfills in Florida</i> Kwasi Badu-Tweneboah , Geosyntec Consultants	<i>Update of ISWA's Task Force on Closing Dumpsites Initiative - A Recent Study</i> James Law , SCS Engineers	<i>Subsurface Investigation of a MSW Landfill for Site Specific Parameters</i> Christopher Dohner , PE, Civil & Environmental Consultants, Inc.
<i>Innovative Use of Engine Exhaust to Treat Reverse Osmosis Concentrate</i> Steve Gabrielle , Energy Power Partners	<i>Less Waste, Better Baltimore: The City's Master Plan for Solid Waste Management and Recycling</i> Sean O'Donnell , PhD, Geosyntec Consultants	<i>Influence of Exploration & Production Waste on Solid Waste Hydraulic Conductivity</i> Sajjad Karimi , Colorado State University
<i>Off-the-Shelf Wastewater Treatment Software Models: Is there a Utility in Biological Leachate Treatment?</i> Jason Lewandowski , PE, Ramboll	<i>Case Study: Innovative Approaches to a Holistic Solid Waste Management System</i> Cristina Albuino , PE, Onondaga County Resource Recovery Agency	<i>Different Liquid Level Conditions in Landfills and Methods to Evaluate</i> Timothy Mitchell , PE, Civil & Environmental Consultants, Inc.
		<i>Removing a Buttress Berm that was Constructed to Prevent Landfill Instability</i> Majdi Othman , PhD, Geosyntec Consultants

10:00am - 10:30am Coffee Break

Wednesday, February 16, 2022

10:30am - 12:00pm

Session Five

Track A: Anaerobic Digestion Moderator: Thomas G. Pullar, PE, EARTHRES Room: Desert Visa A-C Slido Event Survey #: GWMS5A	Track B: Waste Collection & Diversion Moderator: Park Gamble, Routeware, Inc. Room: Desert Visa D-E Slido Event Survey #: GWMS5B	Track C: Landfill Operations & Design Moderator: Gregory P. Werner, PE, Civil & Environmental Consultants, Inc. Room: Grand Salon A-D Slido Event Survey #: GWMS5C
<i>Anaerobic Digester and Digestate Composting Emissions at Yolo County</i> Ramin Yazdani , PhD, PE, University of California at Davis	<i>Case Study of MSW Diversion in Barnstable County, MA</i> Debra Darby , CCP, Tetra Tech	<i>Landfill Design in the Era of Climate Change: A Case Study of Resilience and Adaptation Measures</i> Leticia Nocko , Geosyntec Consultants
<i>Decarbonization Potential of Renewable Natural Gas from Anaerobic Digestion of Organic Food Waste</i> Alexandros Karauskakis , PhD, Bioenergy Devco	<i>Benefits of Back Hauling</i> Arnold Bowers , ENGIE Impact	<i>Landfill/dumpsite Mining and Remediation: A Review on Projects Worldwide</i> Gomathy Radhakrishna Iyer , SCS Engineers
<i>Solid State Anaerobic Digestion of Mixed Solid Wastes: the Beneficial Effects of Food Waste Addition</i> Temesgen Fitamo , PhD, University of Toronto	<i>Comparison of Collection Frequency and Efficiency: Traditional Street Containers and Sensor Equipped Underground Containers</i> Jay Wheeler , Underground Refuse Systems	<i>Overcoming Infrastructure Challenges to Create Additional Airspace-Adventures with Valley Fills</i> Logan Rohr , Tetra Tech
<i>Organics Recycling from MSW with Anaerobic Digestion</i> Yaniv Scherson , PhD, PE, Anaergia		

12:00pm - 1:30pm

Lunch & Poster Viewing

1:30pm - 3:00pm

Session Six

Track A: Recycling Moderator: Michelle Leonard Room: Desert Visa A-C Slido Event Survey #: GWMS6A	Track B: Emissions Monitoring Technology Moderator: Daniel Fellon, PE, ARM Group Room: Desert Visa D-E Slido Event Survey #: GWMS6B	Track C: Emerging Challenges in Leachate Management Moderator: Matt Stutz, Weaver Consultants Room: Grand Salon A-D Slido Event Survey #: GWMS6C
<i>Tracking the Increasing Occurrence of Facility Fires Across the Waste Management System</i> Ryan Fogelman , JD, MBA, Early Fire Protection Solutions	<i>A Novel Continuous Monitoring Approach for Measuring Methane Emissions at Landfills</i> Anna Scott , PhD, Project Canary	<i>High-Strength Municipal Solid Waste Leachate Pretreatment—Aerobic or Anaerobic?</i> Kerim Temel , Brown and Caldwell
<i>Factors that Impact Contamination in Recyclables</i> Stacey Demers , SCS Engineers	<i>Using Ambient Methane Concentrations Measured via SEM, Drone, and Stationary Sensors to Estimate Fugitive Total Landfill Methane Emissions</i> Tarek Abichou , Florida State University	<i>"No, I'm breaking up with YOU!" – Leaving Your WWTP Relationship Before They Cut You Off – Data-Driven Validation of Newer Technologies for On-Site Leachate Disposal</i> Brad Granley , PE, Leachate Management Specialists
<i>Successful Near-Term and Longer-Term Strategies for Reducing Recycling Contamination</i> Ann Gibbs-Vander Vliet , Skumatz Economic Research Associates, Inc.	<i>Drone-Based Systems for Cost-Effective Emissions Quantification and Renewable Natural Gas Production Management</i> Andrew Aubrey , PhD, SeekOps Inc.	<i>Occurrence and Treatment of New Emerging Contaminants Landfill Leachate</i> Renzun Zhao , PhD, PE, North Carolina A&T State University
<i>Rubber Modified Asphalt as a Solution to Global Waste Tire Management</i> H. Barry Takallou , PhD, PE, CRM Company	<i>Intercomparison Between Gas Mapping Lidar and Tracer Correlation Methods for Landfill Methane Emissions Quantification</i> Michael Thorpe , PhD, Bridger Photonics, Inc	<i>Developing a Roadmap for Managing Future Leachate Challenges Based on Lessons from the Past</i> Stephen Batiste , PE, Brown and Caldwell

3:00pm - 3:30pm

Coffee Break



Wednesday, February 16, 2022

3:30pm - 4:45pm

Session Seven

Track A: Liners Moderator: Doug Junk, Geo-Logic Associates Room: Desert Visa A-C Slido Event Survey #: GWMS7A	Track B: Elevated Temperature Landfills Moderator: Michael Beaudoin, PE, Republic Services Room: Desert Visa D-E Slido Event Survey #: GWMS7B	Track C: Leachate Treatment II Moderator: Nelson Breeden, Waste Connections Room: Grand Salon A-D Slido Event Survey #: GWMS7C
<i>Strategies and Technologies for Accelerated Measurement of Geosynthetic Performance Properties</i> Sam Allen , TRI Environmental, Inc.	<i>Elevated Temperatures in Municipal Solid Waste Landfills Due to Exothermic Abiotic Reactions</i> Debra Reinhart , PhD, PE, BCEE, University of Central Florida	<i>Enhancing Ammonia-nitrogen Removal from Landfill Leachate using a Droplet Spraying/Misting System: A Case Study at the Three Rivers Solid Waste Authority Landfill</i> Suzie Boxman , PhD, Environmental Research & Education Foundation
<i>Performance Evaluation of Four Landfill Liner Systems using Numerical Modeling and Life Cycle Assessment</i> James Tinjum , PE, PhD, University of Wisconsin-Madison	<i>Experimental Measurement of Heat Production from Al Corrosion under Landfill-Relevant Conditions</i> Morton Barlaz , PhD, PE, North Carolina State University	<i>Collaborative Effort to Evaporate Reverse Osmosis Concentrate</i> Brian Brazil , Waste Management
<i>Impact of Moisture on GCL Performance</i> Paul Shamoian , PE, Civil & Environmental Consultants, Inc.	<i>Development of Methods to Measure Heat Released from Hydration and Carbonation of Ash in Landfills</i> Asmita Narode , North Carolina State University	<i>Multisorb: A low-cost Approach to Remove Metals and Organics from Leachate</i> Mithila Chakraborty , MS, University of Texas at Arlington

5:00pm to 6:30pm

Reception & Poster Viewing

Thursday, February 17, 2022

6:00am - 11:45am

Registration

7:00am - 8:15am

Continental Breakfast

8:30am - 9:45am

Session Eight

Track A: Coal Ash Moderator: Rick Buffalini, Civil & Environmental Consultants, Inc. Room: Desert Visa A-C Slido Event Survey #: GWMS8A	Track B: Covers Moderator: Matt Crockett, PE, Waste Connections Room: Desert Visa D-E Slido Event Survey #: GWMS8B	Track C: PFAS Management Moderator: Bernie Rieder, Rochem Americas, Inc. Room: Grand Salon A-D Slido Event Survey #: GWMS8C
<i>Updates on Coal Ash regulations and permitting of the Coal-Fired Power Plants: United States Environmental Protection Agency (EPA) National and Regional Perspectives</i> Richard Huggins , PhD, U.S. Environmental Protection Agency	<i>Insights on Colorado's First Closure Turf Application</i> Doug DeCesare , HDR	<i>PFAS Leachate Treatment – Breaking Down the Bond Barrier</i> Bryan Staley , PhD, PE, Environmental Research & Education Foundation
<i>Effects of Calcium-based Additive Composition on Fly Ash Degree of Reaction in Hypersaline NaCl and CaCl₂ Brines</i> Marie Collin , PhD, University of California at Los Angeles	<i>Practical Aspects of Exposed Geomembrane Cap (EGC) Design and Construction</i> James Walker , PE, Tetra Tech	<i>Per- and Polyfluoroalkyl Substance (PFAS) Transport in Composite Liners</i> Yu Tan , University of Virginia
<i>Comparison of Field Geochemical Conditions from Two Coal Ash Disposal Sites and the Implications on Leaching</i> Xinyue Wang , Vanderbilt University	<i>Quantification of Reduction in GHG Emissions and Avoided GHG Emissions in using Engineered Turf Final Cover System for MSW Landfills</i> Rutu Joshi , PE, Watershed Geosynthetics	<i>Encapsulation of PFAS from Landfill Leachate</i> Paul Ruehl , LafargeHolcim

9:45am - 10:00am

Coffee Break

10:00am - 11:15am

Session Nine

Track A: Sustainability and LCA Moderator: Jeremy Morris, PhD, PE, Geosyntec Consultants Room: Desert Visa A-C Slido Event Survey #: GWMS9A	Track B: Modeling Subsurface Reactions Moderator: Randy Bodnar Room: Desert Visa D-E Slido Event Survey #: GWMS9B	Track C: Roundtable Room: Grand Salon A-D Slido Event Survey #: GWMS9C
<i>How Does Your Landfill Compare? Determining Your Landfill's Carbon Footprint</i> Mark Adams , Waste Connections	<i>Field Data and Modeling Heat Generation for MSW Landfill Containing Coal Combustion Residuals</i> Milind Khire , PhD, PE, BCEE, University of North Carolina at Charlotte	<i>Humanitarian Packaging Waste Management Roundtable</i> Mohan Dangi , PhD, PE, BCEE, Greg Rulifson , PhD, PE, and Elise Bell , Bureau for Humanitarian Assistance, United States Agency for International Development
<i>A Novel and Sustainable Circular Economy Waste Management Strategy</i> Brooke Marten , MS, University of Colorado at Boulder	<i>Numerical Investigation of Subsurface Aerobic Reactions that Facilitate Heat Generation and Accumulation in MSW Landfills</i> Alborz Fathinezhad , Louisiana State University	
<i>Life-Cycle Assessment of a Regulatory Compliant U.S. Municipal Solid Waste Landfill</i> James Levis , PhD, North Carolina State University	<i>Finite Element Modeling of Landfills to Estimate Heat Generation, Transport and Accumulation: A Case Study</i> Morton Barlaz , PhD, PE, North Carolina State University	

2022 Poster Session Presentations

Design of an Innovative Final Cover System for the Closure of a Municipal Solid Waste Landfill in Ghana, West Africa
Samir Ahmed, Geosyntec Consultants

Sustainability Index to Assess Solid Waste Management Systems in Developing Countries
Hussain Ali, University of Texas at Arlington

Techno-economic Analysis and Life Cycle Assessment of Contaminant Removal from Landfill Gas for Electricity Generation
Rarosue Amaraibi, University of South Florida

Anaerobic Decomposition of Cotton Fabric under Simulated Landfill Conditions
Morton Barlaz, PhD, PE, North Carolina State University

Prioritizing Organic Waste to Energy-Renewable: Development and Application of the POWER Framework
Arpita Bhatt, PhD, University of Texas at Arlington

Developing Solar Power on Closed Disposal Facilities
Rick Buffalini, PE, Civil & Environmental Consultants, Inc.

Environmentally Conscious & Sustainable Leachate Treatment
Mike Butler, Dynatec Systems

Using Data and Mapping to Capture Attention and Tell Your Story: Keep California Beautiful Environmental App Tracks Litter and Waste Issues
Cecile Carson, EdD, Keep California Beautiful/Carson Consulting

Generation, Characterization, and Environmental Implications of Solid Waste and its Management in the Everest region
Mohan Dangi, PhD, PE, California State University, Fresno

Life Cycle Assessment of Municipal Solid Waste Management in Banepa, Nepal
Mohan Dangi, PhD, PE, California State University, Fresno

The Role of Private Sectors in Municipal Solid Waste Management: A Case of Kirtipur, Nepal
Mohan Dangi, PhD, PE, California State University, Fresno

Trends in RDF: How Changing MSW Composition Affects the RDF Conversion Process
Matthew Davidson, Vecoplan, LLC

Evaluation and Construction of a Full-Scale Membrane BioReactor Leachate Pretreatment Plant
George Duvendack, Waste Connections

Assessment of Odour Gas Dispersion Near an Operating Landfill Treated by Different Intermediate Covers with Soil Alone, LLDPE, or EVOH Geomembrane
Yuan Feng, University of Nebraska at Lincoln

Impacts of Precipitation Data Sets on HELP Leachate Collection Estimates
Kyle Hampton, EIT, Civil & Environmental Consultants, Inc.
Using Life Cycle Thinking to Assess the Sustainability

Footprint of Beneficial Use of Savannah Dredged Sediments
Hejintao Huang, Georgia Tech

In situ Stabilization of Landfills – Field-Based Research in the Netherlands
Paul Imhoff, PhD, PE, University of Delaware

PFAS in New England: A Comparison of Data from Solid Waste Facilities to Other Known Sites
Amy Knight, PE, Civil & Environmental Consultants, Inc.

Bioaugmentation with Bacillus SP. Boosts Rates of Ammonia Elimination and Lowers Effluent Total Nitrogen in Landfill Leachate
Himanshu Lamba, BiOWiSH Technologies

Digital Transformation of Waste Management: Drones, Smart Forms, and GIS
Cesar Leon, Tetra Tech

Assessment of Using Free Nitrous Acids as Retreatment for Enhancing Anaerobic Digestion of Food Waste
Guangbin Li, PhD, University of Maryland

Implementation of SCADA to Monitor Your Leachate System Health
Jeffrey Murray, HDR

Faster, Better, & More-The Power of Data and Technology with Solid Waste Projects
Randy Nolden, Tetra Tech

Leachate Treatment Plant Operator Analytical Tools
Ronald Overholt, Ramboll

Solid Waste Optimization Life-cycle Framework in Python (SwolfPy)
Mojtaba Sardarmehni, North Carolina State University

A Case Study on Advanced Leachate Treatment: Startup of Operations and Integration of Upgrades
Kirstie Shurie, Tetra Tech

Is Hydrogen the Future of the Waste Industry?
Stephanie Stolz, GHD

Landfills as the Immediate Solution to Removing PFAS from the Environment
Rochem Americas, Inc.

Performance Evaluation of Four Landfill Liner Systems Using Numerical Modeling and Life Cycle Assessment
James Tinjum, PE, PhD, University of Wisconsin at Madison

Potential for Biological Nitrification Inhibition to Repress Methane Oxidation
Seongmin Yang, Kansas State University

Wind Uplift of Geosynthetics Covers: Wind Tunnel Study and Wind Resistance Analysis
Ming Zhu, PhD, PE, Watershed Geosynthetics

Keynote Speaker and Special Events

Keynote

February 15, 2022

8:30am

Indian Wells Ballroom



James M. Little

Executive Vice President, Engineering and Disposal
Waste Connections

How ESG, Emerging Pollutants and New Regulations are Changing the Face of Landfill Design and Operation

The majority of generated waste in North America still goes to landfills, making them a critical piece of the waste management infrastructure. And a variety of environmental, social and regulatory drivers are changing the way landfills are designed, developed and operated.

Plus, heightened attention to Environmental, Social and Governance (ESG), emerging pollutants such as PFAS, staffing and supply challenges, as well as more stringent regulations have caused company leaders to challenge the status quo. While these issues present challenges, there are also opportunities. Renewable energy and sequestration of carbon and other pollutants are shaping the role of landfills in Society for decades to come. Hear Jim's perspective on these timely topics and more.

Monday Welcome Reception

Grand Salon Ballroom

5:00pm – 7:00pm

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Tuesday Reception

Indian Wells Ballroom

5:15pm – 6:45pm

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Wednesday Reception

Indian Wells Ballroom

5:15pm – 6:45pm

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Golf



Indian Wells Golf Resort – Players Course

Thursday, February 17, 2022 | 12:30pm



The Player's Course designed by prominent architect John Fought, the course will present a brilliant contrast to our Celebrity course. Featuring dynamic bunkering, generous fairway corridors, and undulating topography the Player's course will be aesthetically fascinating and will challenge all types of players. The Player's course has an interesting classic strategy developed in harmony with a host of wonderful aesthetics. The mature trees, the California barrancas and stunning mountain views all combine to compose one of the finest new courses in the western United States.



Format of Play

Team Scramble: Each player shall play his/her drive from the teeing ground on every hole. The TEAM shall select the best DRIVE and from that position play will continue with each player playing his/her ball from this selected position. After the "second" shots have been completed, play shall continue in the same manner as the "third" and "fourth" strokes are played from the most advantageous position. Remember putting shall follow the same formula until the ball has been holed. Bogey is your friend!

TEES: Men-White; Women-Red

Special Events:

#12 CLOSEST TO PIN (Ball must be on GREEN to qualify)

#7 LONG DRIVE (Ball must come to rest on FW to qualify)

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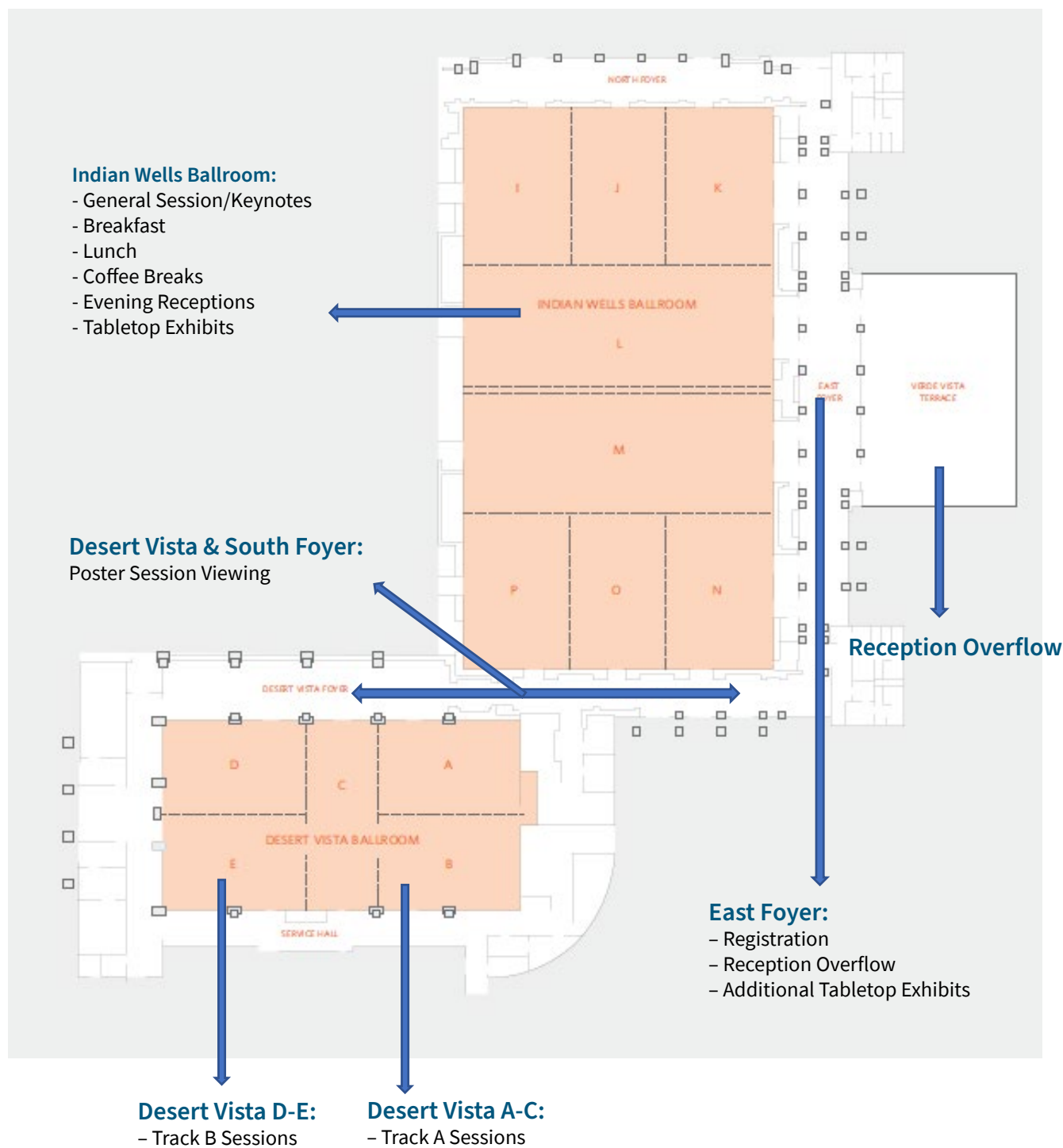
- **Chris Bareither**, PhD, PE, *Colorado State University*
- **Morton Barlaz**, PhD, PE, *North Carolina State University*
- **Craig Benson**, PhD, PE, NAE, *University of Wisconsin-Madison*
- **Nicole Berge**, PhD, *University of South Carolina*
- **Bryan Staley**, PhD, PE, *Environmental Research & Education Foundation*

Business Committee

- **Joe Benco**, PE, *Republic Services*
- **Steve Menoff**, PE, *Civil & Environmental Consultants*
- **Greg Cekander**, *Waste Management*
- **Kurt Shaner**, PE, *Waste Connections*



Floor Plan–Conference Center



Floor Plan–Main Building



Grand Salon Ballroom:
– Monday Welcome Reception

Grand Salon A-D :
– Track C Sessions

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- Landfill Gas (LFG) Engineering, Construction, and Operations & Maintenance Services
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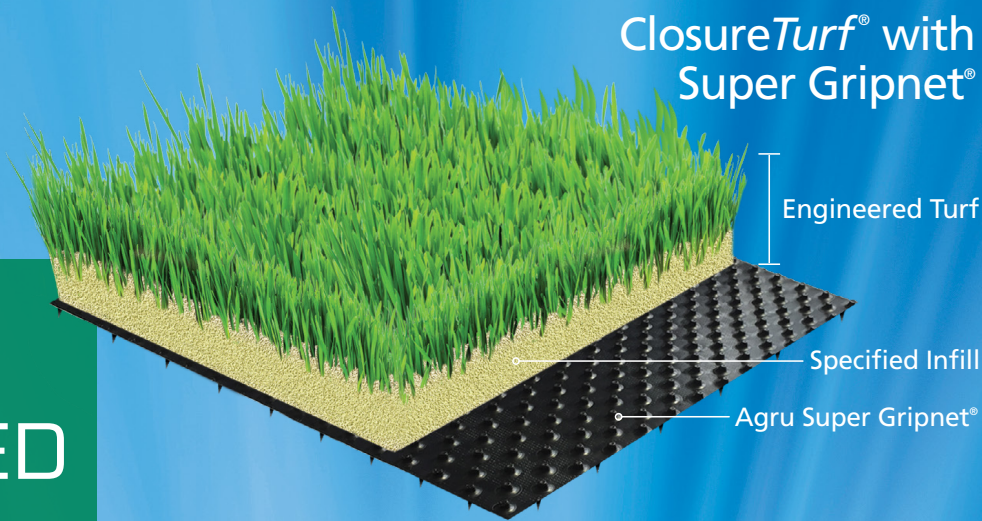
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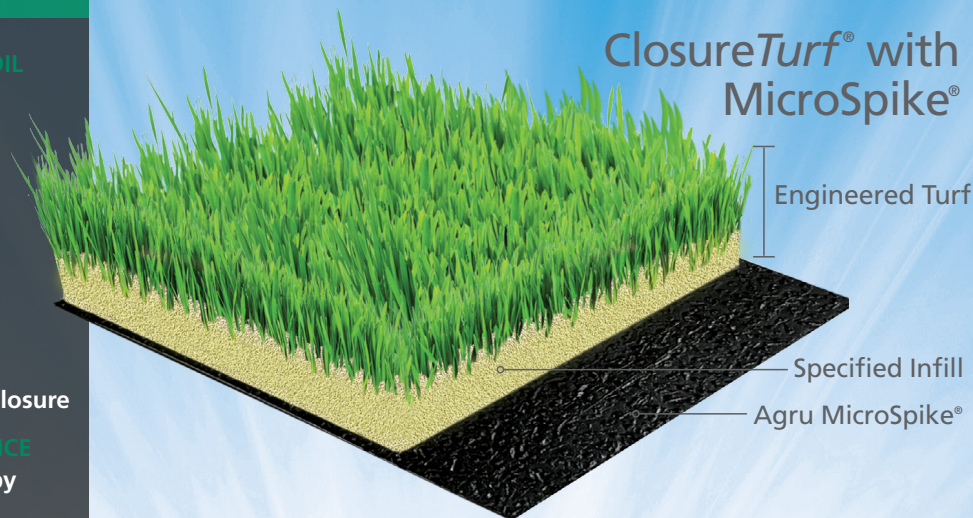
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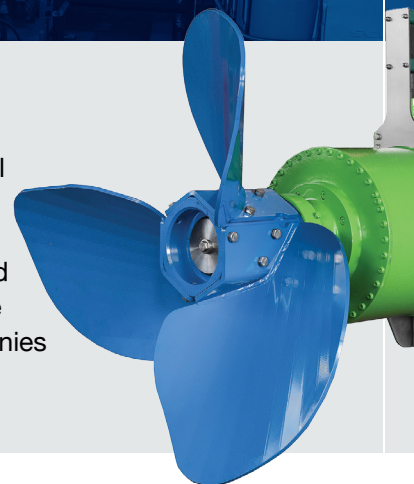
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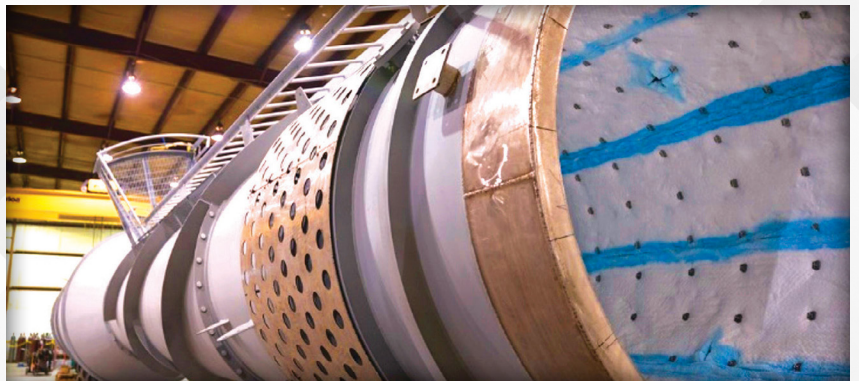
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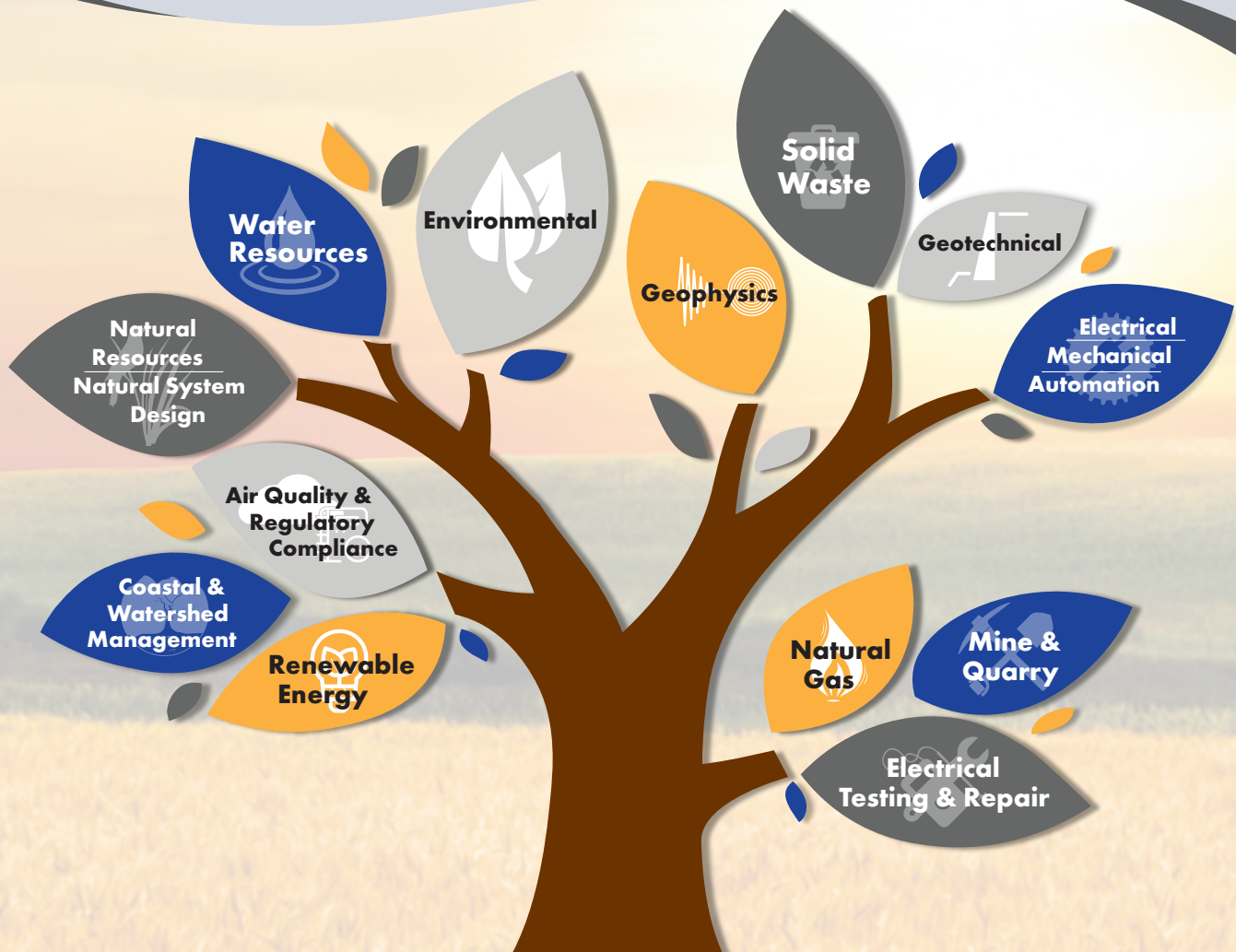
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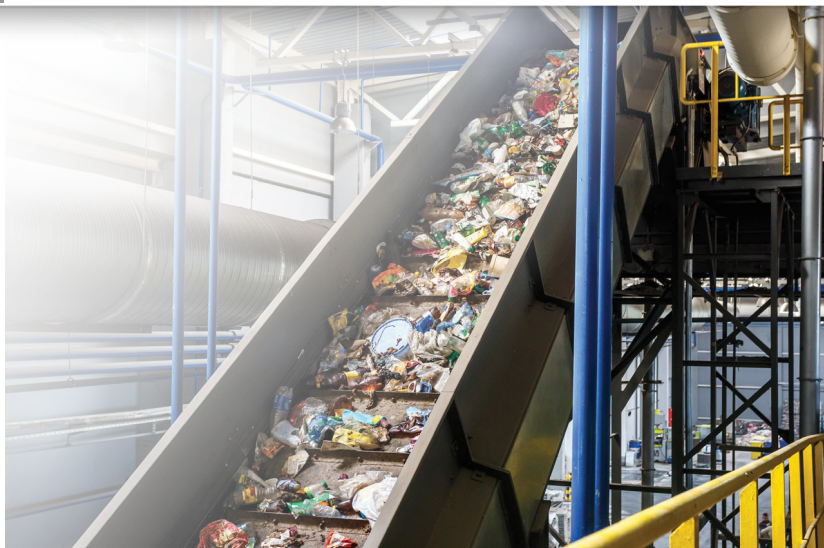
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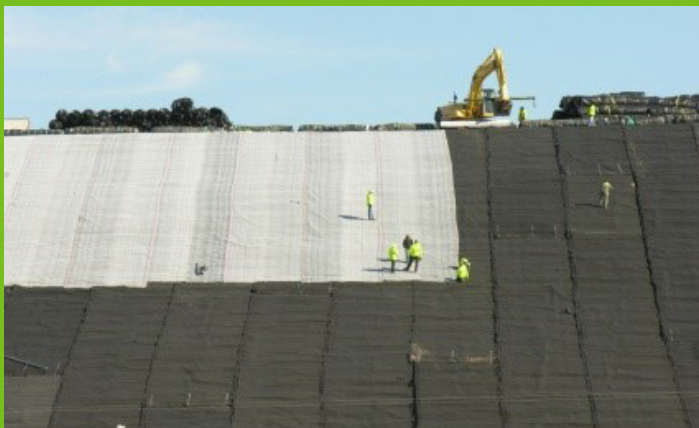
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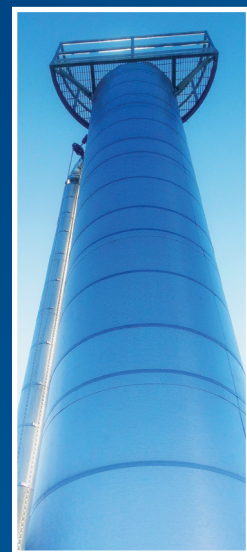


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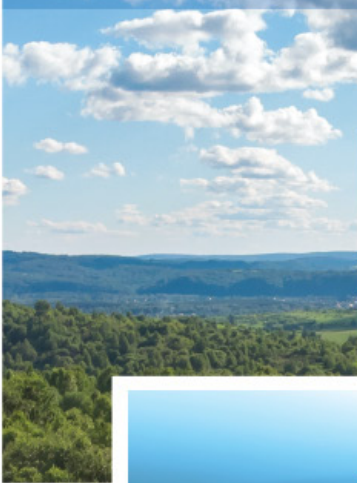


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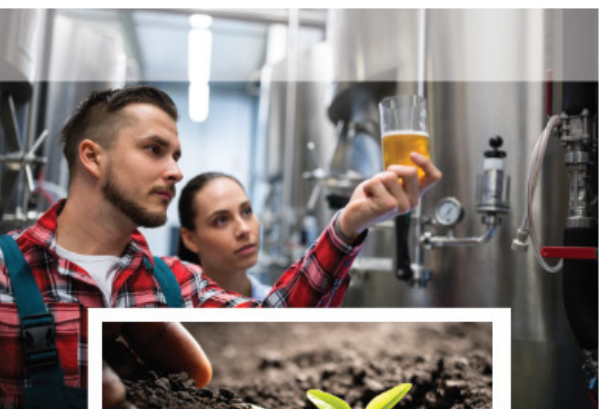
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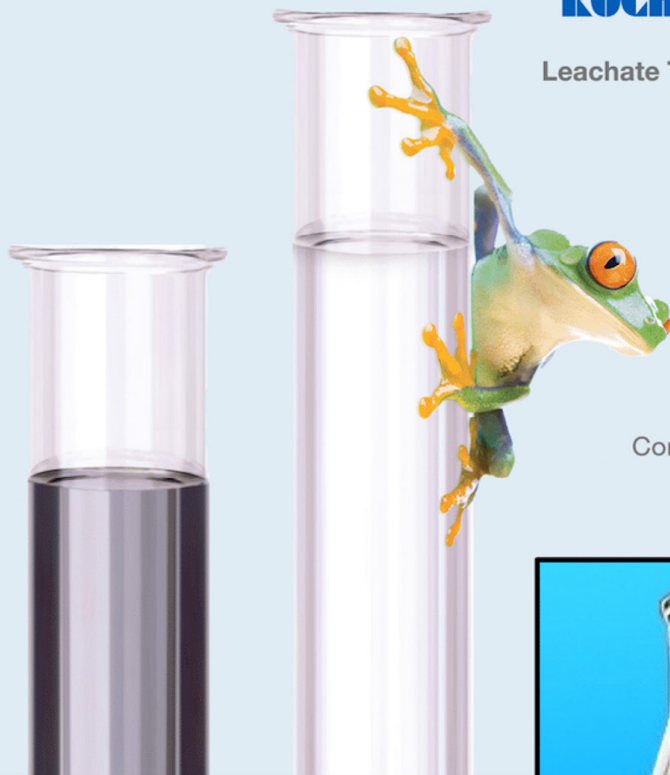
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