Public Health and Water Conference
&
Wastewater Disease Surveillance Summit

Technical Program
(updated January 31, 2022)

March 21-24
Duke Energy Convention Center
Cincinnati, Ohio

This conference is organized by the Water Environment Federation in cooperation with the US Centers for Disease Control and Prevention and the Ohio Water Environment Association.
Wastewater Disease Surveillance Summit
(Additional registration required)
Monday, March 21, 2022
8:30 a.m. - 5:00 p.m.

8:30 a.m.  Implementation of the National Wastewater Surveillance System

8:50 a.m.  Compendium of U.S. Wastewater Surveillance to Support COVID-19 Public Health Response
Smiti Nepal; Kathryn Kazior; Sally Gutierrez, United States Environmental Protection Agency

9:10 a.m.  Utilities Community of Practice

9:20 a.m.  Laboratories Community of Practice

9:30 a.m.  Executive Summary of Testing Methods

9:50 a.m.  Q&A for Status of Wastewater Surveillance in the US

10:00 a.m.  Coffee Break

10:30 a.m.  Intro to Clinical Forecasting

10:35 a.m.  Enumerating Asymptomatic COVID-19 Cases and Estimating SARS-Cov-2 Fecal Shedding Rates Via Wastewater-Based Epidemiology
Bradley Schmitz, Loudoun Water; Gabriel Innes, Rutgers University; Sarah Prasek, University of Arizona; Walter Betancourt; Ian Pepper, UA Environmental Research Lab

Katerina Papp, Southern Nevada Water Authority; Daniel Gerrity

11:15 a.m.  Correlation between SARS-CoV-2 Concentration in Wastewater and COVID-19 Case Incidence in California National Wastewater Surveillance System (NWSS) Sewersheds
Alexander Yu; Angela Rabe, Duc Vugia, Seema Jain, Sindhu Ravuri, Tomas Leon, Joan Rose, California Department of Public Health

11:35 a.m.  Estimating the Number of Infections Using Wastewater Surveillance Data
Ali Zarei-Baygi, CDM Smith; John Sheets; Greta Zornes, CDM Smith

11:55 a.m.  Break for Lunch

Afternoon schedule for Wastewater Disease Surveillance Summit continues on next page.
Wastewater Disease Surveillance Summit, continued
(Additional registration required)
Monday, March 21, 2022
8:30 a.m. - 5:00 p.m.

1:30 p.m. Intro to Variant Tracking in Wastewater

1:35 p.m. Los Alamos National Lab

1:55 p.m. Wastewater Surveillance of SARS-CoV-2 and Quantitative Analysis of the Alpha Variant in Ohio
Chloe Hart, Maitreyi Nagarkar, Scott Keely, Nichole Brinkman, USEPA

2:15 p.m. Monitoring Trends of SARS CoV-2 and the Emergence of its Variants in a College Community via Wastewater Based Epidemiology
Nishita D'Souza, Samantha Carbonell, Ryan Julien, Andri Rachmadi, Rebecca Ives, Matthew Flood, Jade Mitchell, Michigan State University

2:35 p.m. NWSS Approach to Variant Tracking

3:00 p.m. Coffee Break

3:30 p.m. What's next for NWSS?

3:45 p.m. Wastewater-based epidemiology (WBE) as a Public Health Tool for Characterizing Opioid and Other Drug Use: Pilot-Studies from Three Communities in the United States
Clifton Dassuncao; Rebecca Devries, Eastern Research Group, Inc.; Cindy Hu, Aparna Keshaviah, Mathematica; Todd Miller, University of Wisconsin-Milwaukee

4:05 p.m. Where Next? Wastewater-Based Epidemiology as a Tool for Antimicrobial Resistant Pathogen Surveillance
Jordan Schmidt; Helena Steeves, LuminUltra

4:25 p.m. Wastewater Surveillance for Tracking Markers of Population Health

4:45 p.m. Panel Discussion

5:00 p.m. Summit Adjourns
Pre-Conference Workshop  
(Additional fees apply)

Workshop A: Using Design Thinking to Improve Public Health Data Communication  
Monday, March 21, 2022  
1:30 p.m. – 5:00 p.m.

Coordinator: Jenn Campbell, University of Virginia

The goal of this workshop is to introduce participants to design thinking and to apply design thinking to a problem that is relevant to participants so that they are able to practice what they learn. Design thinking an approach that is often used to develop new products and services, solve complex problems, or address uncertainty. The skills and principles learned during this workshop will help participants to better engage with users and communities, understand what their users want and need, brainstorm and prototype meaningful solutions, and select and validate solutions.

Learning Objectives:

- Learn and be able to apply at least one method to engage with users in order to identify their wants and needs.
- Learn and be able to apply at least one method for brainstorming or prototyping possible solutions.
- Learn and be able to apply at least one method for selecting or validating potential solutions.
- Develop a plan for how to incorporate three key takeaways from this workshop in your daily work.

A full detailed agenda for this workshop will be available soon.
Opening General Session
Tuesday, March 22, 2022
8:30 a.m. – 10:00 a.m.

More information about the Opening General Session is coming soon.

Session 01: Water Professionals Guide to Infectious Disease Outbreaks Panel
Tuesday, March 22, 2022
10:45 a.m. - 11:45 a.m.

This session will focus on the emerging science and management information on the COVID-19 pandemic and potential hazards in the water industry with particular attention to guidance and direction from CDC.

Speakers include: Christopher Owen, University of Illinois Chicago; Kari Brisolara, LSUHSC School of Public Health; and Amy Kirby, Centers for Disease Control and Prevention

A full agenda for this session is coming soon.

Session 02: Lessons on Lead from the Frontlines in Flint: a Community-led Perspective
Tuesday, March 22, 2022
10:45 a.m. - 11:45 a.m.

The work of students and community leaders running the Flint Community Water Lab is a model for how utilities and water quality professionals can improve trust and engagement with communities most impacted by lead in water. These lessons implicate multiple workstreams at a typical utility: workforce development, public engagement as distinct from communications, accountability and system governance, and water quality monitoring. This session will feature a case study on this work and also discuss the future of the Lead and Copper Rule and it's implications for water equity and water professionals.

A full agenda for this session is coming soon.
Session 03: Standards for Wastewater Surveillance  
Tuesday, March 22, 2022  
1:30 p.m. - 3:00 p.m.

Wastewater surveillance (WWS) is a promising approach to monitor biological and chemical contaminants on a community level by detecting specific targets in the wastewater stream. With the recent SARS-CoV-2 pandemic, WWS has emerged as an effective tool for the early detection of SARS-CoV-2 outbreaks to help inform the public health response. As a result, significant investments are being made to improve WWS capabilities across the nation in support of wastewater based epidemiology (WBE). Nevertheless, much work remains to transition the current capabilities into an enduring capability for reproducible, comparable wastewater surveillance poised to address new targets beyond SARS-CoV-2 as they emerge. This session will focus on the outcome of a recent NIST-hosted workshop on standards for WWS and efforts at NIST and EPA to develop methods and reference materials for wastewater surveillance.

Speakers include: Scott Jackson, Nancy Lin, NIST; and Orin Shanks, US EPA

A full agenda for this session is coming soon.

Session 04: Exploring the Role of Various Models in Wastewater-Based Surveillance to Evaluate Epidemiological Control Strategies  
Tuesday, March 22, 2022  
1:30 p.m. - 3:00 p.m.

1:30 p.m.  The Role of Hydraulic Models in Wastewater Based Epidemiology: Opportunities and Limitations  
Joe Shuttleworth, Vikki Williams, Olivia Bailey, Arup

1:45 p.m.  Building-Level Wastewater Surveillance Modeling for SARS-CoV-2  
Ryan Julien, Jade Mitchell, Michigan State University Biosystems Engineering

2:00 p.m.  Spatial and Temporal Measurements of SARS-CoV-2 in a Sewershed  
Blythe Layton, Scott Mansell, Clean Water Services; Devrim Kaya; Christine Kelly; Tyler Radniecki, Oregon State University; Andrea George, Hannah Ferguson, Case Western Reserve University

2:15 p.m.  Exploring the Effects of Natural Stressors on Indicators and Pathogens in Surface Waters with Persistence Modeling  
Kara Dean, Jade Mitchell, Michigan State University

2:30 p.m.  Fireside Chat on the State of Modeling Tools as a Predictive and Forecasting Tools During Outbreaks and Pandemics
Session 05: Laboratory Methods
Tuesday, March 22, 2022
3:45 p.m. - 4:45 p.m.

3:45 p.m.  Removing Barriers to Laboratory Analysis for Wastewater Monitoring for SARS-CoV-2
Joaquin Bradley Silva, Rose Kantor, University of California, Berkeley; Kara Nelson, Dept. Of Civil And Env. Eng.; Sasha Harris-Lovett, University of California, Berkeley

4:05 p.m.  SARS-CoV-2 variant tracking from wastewater
Rose Kantor, Sanaiya Islam, University of California, Berkeley; Joaquin Bradley Silva; Sasha Harris-Lovett, University of California, Berkeley; Kara Nelson, Dept. Of Civil And Env. Eng.

4:25 p.m.  Variability of RNase P, PMMoV and CrAssphage Concentration in Wastewater across Distinct Urban Sewershed Scales, Kentucky, USA
Rochelle Holm; Maitreyi Nagarkar, United States Environmental Protection Agency; Ray Yeager, University of Louisville; Daymond Talley, Louisville & Jefferson County MSD; Adam Chaney, Sanitation District No. 1 of Northern Kentucky; Jayesh Rai, Anish Mukherjee, Shsesh Rai, Aruni Bhatnagar, Ted Smith, University of Louisville

Alternate Comparison of Two Rapid Virus Concentration Methods for Implementing SARS-CoV-2 Wastewater-based Epidemiology
Md Ariful Islam Juel, Nicholas Stark, University of North Carolina at Charlotte; Kevin Lambirth; Jessica Schlueter; Cynthia Gibas; Mariya Munir, University of North Carolina at Charlotte

Session 06: Climate will Change the Game: Threats to Public Health & the Water Sector’s Role in Solutions
Tuesday, March 22, 2022
3:45 p.m. - 4:45 p.m.

The frequency and intensity of droughts and floods is increasing, while rapid urbanization is stressing water and wastewater infrastructure. Identifying and preparing for risks associated with climate change impacts is important in order to ensure continuity of operations and welfare of the community. This session includes presentations that discuss impacts to public health and water quality from disruptive events such as extreme heat/cold, hurricanes, tornadoes, wildfires, and floods. These events in combination with long term stressors such as aging infrastructure could lead to worsening public health conditions associated with disease outbreaks and other socio-economic impacts. Case studies will be included in this session to share lessons learned from regions that have experienced climate change impacts in recent years, and how organizations have implemented modern tools to anticipate risk scenarios and plan for response and recovery.

A full agenda for this session is coming soon.
Session 07: Equitable Access to Basic Sanitation - SE/Black Belt Focus
Wednesday, March 23, 2022
8:30 a.m. - 10:00 a.m.

8:30 a.m. Effectively Conducting Soil-Transmitted Helminth Infection Surveillance in the United States
Amy Chatham, Claudette Poole, University of Alabama, Birmingham

9:00 a.m. Onsite Sewage in Lowndes County in Alabama's Black Belt - UNLEASH Hack
Anniestacia Miskel, Arcadis

9:30 a.m. Roundtable Discussion

Session 08: Legal, Ethics, Privacy and Environmental Justice Issues Related to Wastewater Surveillance for Public Health Protection
Wednesday, March 23, 2022
8:30 a.m. - 10:00 a.m.

The practice of wastewater surveillance is a new and quickly emerging area of science. Wastewater surveillance involves collection of untreated sewage, analyzing it for the SARS-CoV-2 RNA or other contaminant, then using the trend information to drive public health actions. Legal, ethical and privacy issues are central to this new type of surveillance and must be addressed directly in line with guidance and experience from other surveillance programs. This half-session will provide perspectives and legal analysis of these issues from US Environmental Protection Agency (EPA) legal staff and the Office of Water, an experienced community leader and practitioner, and a social science researcher.

A full agenda for this session is coming soon.
Session 09: Localized Case Studies  
Wednesday, March 23, 2022  
10:45 a.m. - 11:45 a.m.

10:45 a.m.  
**Wastewater Disease Surveillance in Distinct Urban Sewershed Scales, Louisville, KY**  
Rochelle Holm; Anish Mukherjee, Jayesh Rai, Ray Yeager, University of Louisville; Daymond Talley, Louisville & Jefferson County MSD; Shesh Rai, Aruni Bhatnagar, Ted Smith, University of Louisville

11:05 a.m.  
**COVID-19 Containment on a College Campus Via Wastewater-Based Epidemiology, Targeted Clinical Testing and an Intervention**  
Bradley Schmitz, Loudoun Water; Walter Betancourt; Ian Pepper, UA Environmental Research Lab; Sarah Prasek, University of Arizona; Gabriel Innes, Rutgers University; Samendra Sherchan, Tulane University

11:25 a.m.  
**Early Detection And Quicker Response: Highlights and Lessons Learned from COVID-19 Wastewater Surveillance of Congregate Settings in New Mexico**  
Rebecca Devries, Jessica Gray, Eastern Research Group Inc; Justin Garoutte, New Mexico Environment Department; David Freedman, Clemson University; Anda Quintero, LuminUltra Technologies

Alternate  
**Wastewater Surveillance to Support Public Health Response: COVID-19 Case Studies**  
John Sheets, Greta Zornes, Ali Zarei-Baygi, CDM Smith

Session 10: Water Reuse  
Wednesday, March 23, 2022  
10:45 a.m. - 11:45 a.m.

10:45 a.m.  
**Partners in Protecting Public Health: How the Water Sector and Health Professionals Can Effectively Communicate the Safety of Water Reuse**  
Bart Weiss, Hillsborough County; Heather Strathearn, WateReuse Association

11:15 a.m.  
**Molecular Methods for Measuring Pathogen Viability/Infectivity**  
Krista Wigginton, University of Michigan
Session 11: Seeing Challenges and Progress with Data  
Wednesday, March 23, 2022  
1:30 p.m. - 3:00 p.m.

1:30 p.m.  W-SPHERE (Wastewater - SARS Public Health Environmental Response) as Global Data Center for SARS-CoV-2 Detection in Wastewater and Environmental Samples  
Andri Rachmadi, Michigan State University; Colleen Naughton, University of California; Joan Rose, Michigan State University; Gertjan Medema, KWR; Panagis Katsivelis, Venthic Technology

2:00 p.m.  Wastewater Surveillance You Can Trust: Data Definitions, Structure, and Transparency  
John Norton, Great Lakes Water Authority; Russell Faust, Oakland County Health Division; Stacey McFarlane, Macomb County Health Department; Scott Withington, Randy David, Detroit Health Department; Andrea Busch; Xavier Fonoll Almansa, GLWA

2:30 p.m.  Supporting a Nationwide Covid-19 Wastewater Monitoring Program  
Scott Olesen, Claire Duvallet, Biobot Analytics

Alternate  Applying Established Frameworks for Surveillance Ethics to Wastewater Monitoring Campaigns  
Cresten Mansfeldt, University of Colorado Boulder

Session 12: Status Update on PFAS Challenges and Opportunities: Looking Beyond Documented Occurrence  
Wednesday, March 23, 2022  
1:30 p.m. – 4:45 p.m.

In recent years our industry has rapidly gained awareness about the occurrence of Per- and polyfluoroalkyl substances (PFAS) in the environment. This session will focus on recent work conducted to advance the understanding of human health and ecological impacts of these substances, and efforts to develop technology solutions for the identification, quantification, management, and mitigation PFAS contamination.

A full agenda for this session is coming soon.
3:45 p.m.  Ready and Willing: New York State Wastewater Treatment Plants Show High Capacity to Pull and Ship Samples as Part of a Public Health Wastewater Surveillance Network
Dustin Hill, Syracuse University; Hannah Cousins, Case Western University; Bryan Dandaraw, State University of New York College of Environmental Science and Forestry; Catherine Faruolo, Alex Godinez, Sythong Run, Simon Smith, Syracuse University Department of Public Health

4:00 p.m.  Missouri’s COVID-19 Sewershed Surveillance Project
Elizabeth Semkiw; Anthony Belechian, Hwei-Ying Johnson, Melissa Reynolds, Jeff Wenzel, Jessica Klutts, Missouri Department of Natural Resources; Sally Zemmer, Missouri Department of Natural Resources

4:15 p.m.  Midstream Transformation of Colorado’s Wastewater Data Pipeline
Brian Erly, Colorado Department of Public Health and Environment; Devon Williford, CDPHE; Allison Wheeler

4:30 p.m.  Tracking and Surveillance SARS-CoV-2 Variant-Associated Mutations from Wastewater Whole Genome Sequencing in Colorado
Laura Bankers, Shannon Matzinger, Brian Erly, Molly Hetherington-Rauth, Diana Ir, Allison Wheeler, Colorado Department of Public Health and Environment; Carol Wilusz, Colorado State University

Alternate  COVID-19 Outbreak Monitoring through SARS-CoV-2 Wastewater Surveillance: A Case-Study for Medium Outbreaks in Small Urban Environments
Evangelia Ntzani, Xristina Diamanti, Lambros Nousis, Petros Bozidis, Konstantina Gartzonika, Aris Bartzokas, University of Ioannina School of Medicine
Session 14: Breaking Down Silos: A Push for Water/Wastewater Equity
Thursday, March 24, 2022
8:30 a.m. – 11:15 a.m.

This session proposes to address the multi-institutional issues surrounding adequate sanitation (wastewater management) access for rural, underserved populations in the U.S....and how coordination and cooperation among numerous institutions (regulatory, management entities, policy makers, funders, citizens, elected officials, academics, and medical professions) are needed to solve these sanitation issues. A diverse group working on documenting epidemiological relationships to inadequate sanitation and finding wastewater solutions for rural, underserved communities in the 17-county Alabama Blackbelt will present their work/perspectives in 15-20 minute segments followed by a panel discussion of key issues and how to eliminate institutional silos to solve rural sanitation issues. Presenters represent the medical profession, engineering, academics, regulatory agencies, citizens, and elected officials.

Speakers include: Joe Brown, University of North Carolina; Claudette Poole, University of Alabama; Sherry Bradley, Alabama Department of Public Health; Portia Shepherd; Ben Eaton, City of Uniontown; and Kevin White, Univ of South Alabama

A full agenda for this session is coming soon.

Session 15: Theory of Wastewater Surveillance
Thursday, March 24, 2022
8:30 a.m. - 10:00 a.m.

8:30 a.m.  Coupling Freedom from Disease Principles and Early Warning from Wastewater Surveillance to Improve Health Security
David Larsen; Mary Collins, SUNY ESF; Qian Du, Quadrant Biosciences; Tabassum Insaf, New York State Department of Health; University at Albany Department; Pruthvi Kilaru, Brittany Kmush, Syracuse University; Frank Middleton, SUNY Upstate

9:00 a.m.  Interpreting Covid-19 Wastewater Monitoring Data from Buildings to Support Disease Mitigation
Scott Olesen; Noriko Endo, Claire Duvallet, Biobot Analytics, Inc.

9:30 a.m.  From Waste to Wisdom: The Utility of Wastewater Surveillance for Community-Level Health Information
Shirley Clark, Sabina Dahal, Penn State Harrisburg; Heather Preisendanz, Michael Shreve, Kathryn Hayden, Matthew Jones, Andrew Read, Penn State University

Alternate  Wastewater Surveillance for Infectious Disease: A Systematic Review
Pruthvi Kilaru, Syracuse University; Dustin Hill; Kathryn Anderson, SUNY Upstate; Mary Collins, Hyatt Green, SUNY ESF; Brittany Kmush, Syracuse University; David Larsen
Session 16: Wastewater, Health and Environmental Justice across the US
Thursday, March 24, 2022
10:15 a.m. - 11:15 a.m.

10:15 a.m. Healthy Central Valley Together: An Environmental Justice Approach for Wastewater Disease Surveillance and Health Equity in California
Krystin Kadonsky; Heather Bischel, University of California, Davis; Clara Medina, University of California, Merced; Colleen Naughton, University of California

10:45 a.m. Characterizing the Chemical and Microbial “Fingerprint” of Unsheltered Homelessness in an Urban Watershed
Daniel Gerrity; Katerina Papp, Southern Nevada Water Authority; Eric Dickenson

Alternate Social Vulnerability and Community Wastewater SARS-CoV-2 Viral Load in Eastern Virginia
Michelle Yancey, Haniyyah Majeed, Marcia Degen, Rekha Singh, Virginia Department of Health