

Wastewater Based Epidemiology

A STRATEGIC SOLUTION FOR POPULATION PROTECTION

29th March, Virtual Conference

9.30 - 10.00	Join the Hopin platform Meet other attendees
Conference Opening & Welcome	
10.00 – 10.05	Chair: Rowland Minall, General Manager, Aqua Enviro
10.05 – 10.25	<p>Development of the UKHSA Environmental Monitoring for Public Health Programme: Wastewater monitoring for SARS-CoV-2 and beyond Dr. Jasmine Grimsley, Head of Science and Research, Environmental Monitoring for Health Protection, UK Health Security Agency, UK</p> <ul style="list-style-type: none"> • Overview of use case development • Development of prevalence/variance monitoring • Beyond COVID research overview
10.25 – 10.45	<p>Wastewater monitoring for health protection in prison settings Professor David Graham, Ecosystems Engineering, University of Newcastle, UK</p> <ul style="list-style-type: none"> • Wastewater monitoring provides a useful mirror of community health and has been used around world to track SARS-CoV-2 and variants during the COVID-19 pandemic. • However, some sub-communities, such as users in prison facilities, are more vulnerable to transmissible infections due to close living quarters and more frequent underlying health problems. • In 2021, a pilot study was performed assessing wastewater monitoring for health protection in 12 UK prisons, including quantifying SARS-CoV-2 levels in wastewater from different types of facilities in association with COVID-19 cases.
10.45 – 11.05	<p>Practical challenges in sampling for wastewater-based epidemiology Kevin Sheeran, Process Scientist, Aqua Enviro</p> <ul style="list-style-type: none"> • The benefits of WBE and Aqua Enviro’s experience over the last 2 years in sampling at various facilities. • What have been the challenges in sampling for WBE. • What are the possible solutions to these challenges?
11.05 – 11.25	<p>John Snow revisited – Transmission pathways for <i>Vibrio cholerae</i> between pit latrines and groundwater resources investigated with portable molecular microbiology methods Professor David Werner, Environmental Systems Modelling, University of Newcastle, UK</p> <ul style="list-style-type: none"> • Groundwater pollution from pit latrines in an informal settlement was investigated. • <i>Vibrio cholerae</i> genes ompW cooccurred with human sewage marker gene HF183.

	<ul style="list-style-type: none"> At the peak of the rainy season, 0.14 to 2.2 litres of shallow well water contained 1000 ompW genes, equivalent to a <i>Vibrio cholerae</i> exposure dose at which diarrheal illness requiring clinical care may occur in healthy adults.
11.25 – 11.45	Break
11.45 – 12.05	<p>Advances in automated systems for WBE sampling, measurement and viral isolation</p> <p>Michael Dooley, Managing Director, Strathkelvin Instruments</p> <ul style="list-style-type: none"> Automating WBE provides opportunities to streamline data management, speed and cost of testing. Going forward automation can significantly reduce the impact of outbreaks on the population. The talk will highlight advances made by several suppliers in the field of WBE automation -highlighting case studies of current capability and R&D roadmaps
12.05– 12.25	<p>Emerging technologies to support WBE capacity expansion</p> <p>Helena Steeves, Applications Engineer, Luminultra, Canada</p> <ul style="list-style-type: none"> Passive sampling as an accessible approach to SARS-CoV-2 detection in wastewater Technological advancements to support forward deployed testing through Government Initiatives Tracking antimicrobial resistance markers through wastewater
12.25 – 12.45	<p>How Omicron has changed the WBE Predictive Window - The need for on-site testing</p> <p>James Harbridge, Business Development Manager, Hach</p> <ul style="list-style-type: none"> Overview of Hach’s WBE projects since the start of the Pandemic with company collaborations The benefits of the Cepheid One Step SARS-CoV-2 Wastewater Test The power of WBE in case count prediction : Broomfield Colorado case study Omicron vs Delta – is Omicron more difficult to detect in Wastewater?
12.45 – 13.00	Round Table Discussion & Networking
13.00 – 13.30	Lunch Break
13.30 – 13.50	<p>Estimated disease prediction of Covid 19 infections based on fecal shedding rates of SARS-CoV-2 in wastewater</p> <p>Dr. Ian Pepper, Director, WEST Center Regents Professor, Environmental Science, University of Arizona, USA</p> <ul style="list-style-type: none"> Virus wastewater concentrations used to predict COVID-19 infections Virus wastewater concentrations in a WWTP service area dependent on community fecal shedding rates Community shedding rates are all different and dependent on specific community demographics
13.50 – 14.10	<p>Smarter health sewage infrastructure: from pandemics to population health</p> <p>Dr. Ted Smith, Associate Professor, Environmental Medicine, University of Louisville School of Medicine, USA</p> <ul style="list-style-type: none"> What have we learned that works using wastewater for pandemic monitoring? How this activity should be funded? What do we know about population health opportunities?

14.10 – 14.30	<p>Monitoring for SARS-CoV-2 in Wales and the rapid detection of mutations associated with variants of concern and variants Under Investigation</p> <p>Gareth Cross, Head of Variant Surveillance at Llywodraeth Cymru / Welsh Government</p> <ul style="list-style-type: none"> • Overview of wastewater monitoring programme in Wales • Summary of SNP assays for identification of specific mutations used by the programme • How mutation assays helped track the emergence of Omicron in Wales
14.30 – 14.50	<p>Monitoring of SARS-CoV-2 in wastewater: What normalisation for improved understanding of epidemic trends?</p> <p>Charlotte Sakarovitch, Data Scientist, Le LyRE - Pôle Data, Suez</p> <ul style="list-style-type: none"> • Why and how SARS-CoV-2 gene quantification in wastewater should be normalised? • How do different normalisation index compare (Daily flow rate and population, F-specific RNA bacteriophage, ammoniacal nitrogen and composite index)? • What is the relation with the incidence rate?
14.50 - 15.10	Break
15.10 – 15.45	<p>Panel Discussion: What are the current challenges and opportunities; what is the future potential of WBE?</p> <p>Dr. Ted Smith, Dr. Ian Pepper, Dr. Jasmine Grimsley and Prof. David Graham</p>
15.45 – 16.15	Round-table discussions and networking
16.15	Close