

Latest learnings

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Assessing risk and determining responses to Covid-19 were major themes of the most recent Water Action Platform webinar which took place on 9 July. Here are six key learnings from the interactive event which was hosted by Isle chairman Piers Clark.

1. Expect seasonal resurgence of Covid-19

Recent research shows that we can expect resurgence of Covid-19 due to seasonal fluctuations. In an interview on the Water Action Platform webinar on 9 July, hydrologist Fernando Miralles-Wilhelm, Chair and Professor at University of Maryland said research into the environmental conditions needed for virus outbreaks to "explode" showed the sweetspot for temperature was between 5-11°C and for relative humidity, between 40-70%. He also explained that this information is not yet included in predictive models. Miralles-Wilhelm said, "We do expect resurgence of the virus. It's a seasonal virus like influenza. As we have very good ways to predict weather and climate we can expect to see a resurgence in November/early December in the northern hemisphere.

"If we are prepared and take the social distancing measures needed, we can minimise the impact. We have plenty of warning, there is no excuse for not being ready."

2. Wastewater detection can give early warning on Covid

The potential for wastewater to act as an early-warning-system for outbreaks of Covid-19 in communities is being demonstrated by Canadian technology company LuminUltra. Repeatedly testing everyone in a given population for Covid-19 may not be feasible, but identifying and quantifying the presence of SARS-CoV-2 in their collective wastewater can serve as an early warning system, alerting health authorities. Patrick Whalen, chief executive, LuminUltra said, "The science is still evolving but what we know is that people not only infect others directly, but also through air and surfaces. There is potential for wastewater to act as early warning system, to determine the presence of asymptomatic carriers without having to run tests directly on people."

Responding to a government callout for technologies for diagnostic testing, LuminUltra contacted Public Health Canada and offered to help shore-up the supply chain for reagents.

The company has now produced 5 million quantitative polymerase chain reaction (qPCR) tests for Canada and is helping other countries.

3. Sewage based epidemiology costs quantified

Participants in the Water Action Platform have been keen to better understand the cost of implementing a sewage-based epidemiological system. A new research paper from a collaboration between engineering consultancy Arup, KWR research institute in the Netherlands and Exeter University in the UK outlines the tasks and costs associated with designing an early-warning system and cites two main cost elements. The first is the initiation phase during which systems are set up, for which the costs are estimated at £200,000. Deployment costs then have to be factored in and for populations of 3-5 million that could run up to £1 million, depending on localised variables.

Spanish technology company GoAigua has developed a similar pricing model which shows that costs vary depending on size and complexity of the utility and the number of samples, the cost of which ranges from US\$30-50 dollars per unit.

4. Far-UVC light inactivates coronaviruses safely

Recent research carried out in the US has shown that far-UVC light – wavelengths in the 207-222nm range - efficiently inactivates airborne human coronaviruses. It is well known that conventional germicidal UVC lamps, emitting 254nm wavelengths, can be used to disinfect unoccupied spaces such as empty hospital wards and train carriages, but direct exposure poses a health hazard to humans and cannot be used in occupied spaces. The new study from Columbia University Irving Medical Center found that more than 99.9% of seasonal coronaviruses present in airborne droplets were killed when exposed to a particular wavelength of ultraviolet light that is safe to use around humans. Far-UVC light cannot penetrate the tear film on the surface of the eye or the outermost layer of skin so it cannot damage living cells in the human body.

Isle chairman Piers Clark said, "At these low dose rates, far-UVC exposure might well provide a method for reducing the virus in public locations. On its own this doesn't solve the pandemic, but it's definitely part of the solution."

5. Very low risk of virus spreading through sewage

An ongoing review of the available academic literature by analysts from Isle continues to conclude that the risk of contracting Covid-19 through exposure to sewage is very low. A recent paper on transmission in recreational waters in the journal Science of the Total Environment says that while wastewater is a potential dissemination route for SARS-CoV-2 to recreational waters, there is limited data on the presence and viability of the virus in water bodies. Isle chairman Piers Clark says, "More research is needed, but we hold to our previously stated conclusions that the risk of the virus spreading through sewage is very low."

6. Workplace diversity accelerated at innovation sprint

A collaborative sprint on Improving Workplace Diversity in the Water Industry will take place as part of the Northumbrian Water Innovation Festival. The event, which facilitates sprints and challenges to help solve real-world water issues, will be delivered digitally and internationally for the first time and takes place from 14-17 September. Isle is leading the diversity sprint which will take place 24-hours-a-day, over all four-days of the festival.

Isle chairman Piers Clark said, "We're going to look at how we can improve workplace diversity in the water sector and I'm delighted that a much wider group can get involved than ever before, from anywhere around the world. We aim to highlight key issues, gather data and share best practice on a topic which very relevant, especially in light of the Black Lives Matter movement."