

Drinking Water Distribution Systems & Alternative Water Resources Webinar – Q&A (not answered live)

Wang Rong

Jerry- I am interested to use hollow fibre for bacteria recovery. Any interest? [Yes, I am interested in it. We can discuss it offline.](#)

Jeremy Strickland- Re Bio Programmable Membranes: If cleaning is necessary do chemicals damage the bio layer? [No. we use biomolecules to adjust the structure of the polyamide layer. The chemical property of our BPM is similar to conventional TFC RO membrane.](#)

Dr Liew-What will be the full-scale commercialisation problems to overcome and the competitiveness compared with existing solutions? [It is a very good question. We have demonstrated our technology in 8-inch module size \(commercial level\). For mass production, quality control is the key.](#)

Cheng Dan

VWMS-Isabel Neduchal-Did you use any other technology apart from flow cytometry to detect biofilm? [We have collected biofilm samples at the end of the experiment and sent for sequencing.](#)

Jamie-Thanks for a wonderful talk. Have you characterised how the temperature fluctuates with the diurnal cycle within the test pipes which are above ground and how this compares to buried counterparts? Is this likely to impact on the microbial quality? [We have the temperature data from the water. Yes, it is likely to impact on the microbial quality. thanks for your suggestion. going to check the temperature effect on both the underground and above-ground bulk water.](#)

Stuart Knott-Did you find any pathogens in the first flush? [We have not yet searched for potential pathogen-like sequences \(PLS\). But finding such sequences does not imply in any way the viable/infection pathogen\(s\) actively present in the system. We have not attempted to isolate them as well. Their relative abundance is also quite low in the current above-ground system \(not strictly closed\) and we are not taking that outflow for drinking purpose. Thus, more research is required to address that question fully.](#)

Mr BISSO- What are the micro-organisms implicates in biofilm in different water distribution network? [Thanks for your attention. we have done some swabbing from the pipes through the window of the PVC pipes and sequenced them. Due to time constrains, it is not covered in this talk. Happy to chat after the seminar.](#)

Stuart Knott

What are the most significant innovations you see or anticipate that will impact on Anglian customer water quality?

We are currently running a project looking at the mass deployment low-cost water quality sensors. Precision is not required but accuracy is. We are particularly interested in sensors which give us an indication of when and where an event is happening and/or significant change in water quality which the customers would notice. Alongside these sensors, in key locations, we will install low-cost fluorescence monitors for bacterial loading during events.

Another Innovative approach we are researching is whether high water using third parties could install the sensors for example coffee shops or factories etc. Having coverage across a network and being able to inform customers of water quality changes before they discover them is our goal.

Stan Chan- hi, this is a more general question. Is there a certain duration that is recommended for flushing so that we can expect reduced or no biofilm detachment afterwards?

- Cheng Dan- for our flowrate and our pipe conditions, 60 seconds are sufficient. For different hydraulic conditions, the timing may be different
- Stuart Knott- Although flushing does help, we are rethinking this approach. Water losses are high when flushing and the impact isn't long lived. We are currently conducting high intensity sampling across flushes to understand more.

Re Anglian Water: Stuart, have you heard about in-line Alvim biofilm sensors? We are in Anglian Water area. We are introducing Alvim biofilm sensors in the UK. www.biofilm-sensors.uk-Thanks Jeremy- I will make sure that Stuart is aware of the alvim sensors and facilitate an introduction if required.

Kat Fish

Anon-What is the connection between the colour of water and the type of bacterial community? - No clear Answer, further study Is needed.

Anon- I missed how you are quantifying EPS, please can you explain briefly. Great talk by the way. - Hi - we are currently using confocal laser scanning microscopy with stains for cells / proteins / carbohydrates. This has been the most suitable approach to also allow us to look at the physical structure of the biofilm / EPS. Also, the extraction and bio assay approach isn't suitable with such low biomass biofilms