Agilent paves the way in water testing

Professor Shane Snyder, Executive Director, Nanyang Environment and Water Research Institute and Dr Tarun Anumol, Global Environment Market Manager at Agilent

In a time when more and more emerging and unregulated contaminants are being discovered every day in water, Agilent Technologies has become a pioneer in the field of water testing.

Widely recognised as the industry leader in analytical instrumentation for water testing and environmental testing in general, Agilent Technologies has maintained a presence in the Southeast Asia market for more than four decades, working closely with environmental researchers, water testing agencies as well as governments to look at regulated and unregulated water contaminants.

"Now, with the Memorandum of Understanding we have signed with Professor Shane Snyder, we have the goal to advance our footprint in the market, and we will also be specifically focusing on a few areas like analysing volatile organic chemicals in the water," Dr Tarun Anumol, Global Environment Market Manager at Agilent, explained.

"We're also potentially looking at biological assays and measurements and how they can be related to water safety and water quality monitoring."

EMERGING CONTAMINANTS

"Public awareness of emerging contaminants being identified in the environment is definitely rising, and requirements to measure these compounds such as disinfection by-products like nitrosamines are also being considered," Dr Tarun explained.

"Emerging contaminants are definitely a challenge, and the chemical synthesis is greatly outpacing the ability to develop standards" added Professor Shane Snyder, Executive Director, Nanyang Environment and Water Research Institute.

"And with 15,000 new chemicals being registered in the chemical abstracts (CAS) every day, the ability to create a standard or a health level for each of those as fast as they are developed is impossible."

While testing is a regulated component and some chemicals are regulated and some have to be monitored for compliance testing, there is also a large aspect of testing of unregulated and emerging contaminants that may not be required from the compliance side, leaving a large figurative gap in the field of water testing.

In fact, Professor Snyder, who took a dive into unregulated contaminants not covered by compliance, was one of the pioneers in the field of testing for emerging contaminants, and identified some hormones present in water, helping to drive the industry to look into unregulated contaminants.

"In the near future, and even now, we are working with Professor Snyder to link changes in biological measurements in water through bioassays – to the chemicals that cause them," Dr Tarun said.

"One of the goals in the MOU is to identify new methods or new techniques to test water quality because just measuring regulated contaminants may not ensure water quality or water safety."

CATCHING CONTAMINANTS

When recycling water back to drinking water, a tremendous amount of water treatment technology alongside multiple barriers removes essentially all pathogens and nearly all contaminants, making recycled water cleaner than ambient water from natural sources.

"In water recycled to produce drinking water, we have not detected pathogens or contaminants in the water, and there is no health risk in consuming recycled water," elaborated Professor Snyder.

There are challenges in catching the contaminants and pathogens, though, as each have their own unique characteristics, and rendering the capture of every possible contaminant extremely difficult and requiring multiple barriers.

"We generally combine a series of treatment trains and treatment processes to catch everything," Professor Snyder said.

New standards are always in development, and that number is constantly increasing though the process is slow. At present, the World Health Organisation (WHO) has standards for approximately 200 different contaminants, and each country normally has their own.

"It usually starts with detection, so once somebody begins to detect a chemical in water, we go through the evaluation of the health consequences," Professor Snyder explained. "But we think the future is going to be in using in-vitro bioassays to monitor water quality, which will be overtaking regulations, because we can't build the regulations fast enough." WWA