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Sensors and strategies for safe and secure potable water

Ian Pepper

University of Arizona, USA

Abstract

Potable water quality for consumers can deteriorate for a number of reasons including inadequate treatment or intrusion events. Intrusion events can be accidental as in the case of a break in a distribution system pipe or deliberate as in the case of active bioterrorism. In addition, in water scarce regions of the country, communities are now considering augmentation of potable water sources with reclaimed water. In all of these examples, consumers must be protected from consumption of water which could be contaminated with chemical or microbial pollutants. For potable water transported to the consumer via a distribution system, potential contaminants must be monitored for via real-time or near- real-time sensors. For reclaimed water, additional advanced treatment must be undertaken to remove potential contaminants prior to augmentation of potable water sources, and again the treated water must be monitored through the use of sensors. The use of sensors to monitor water necessitates proof of efficacy with respect to: sensitivity of detection; low rates of false positive and negative alarms; and the ability to perform in a variety of waters that already contain microorganisms and inorganic particulates. In this presentation, the use of sensors within the University of Arizona Real-Time Sensor Lab are described, as well as strategies to ensure safe and secure drinking water for consumers.

Biography

Dr. Ian Pepper obtained his Ph.D. at the Ohio State University. He is currently a professor of environmental microbiology at The University of Arizona where he also serves as co-director of the UA Water and Energy Sustainable Technology (WEST) Center. He has published over 170 peer review publications and 8 textbooks. Dr. Pepper is a Fellow of the American Association for the Advancement of Science (AAAS); the American Society for Microbiology; the Soil Science Society of America; and the American Society of Agronomy.

ipepper@ag.arizona.edu