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Hollow-fiber ultrafiltration for microbial water quality testing

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2315 GG Brown Building (North Campus)
University of Michigan

Abstract. Microbial methods for water sampling are often designed to recover specific types of microbes from specific types of water. However, when investigations are focused on multiple types of microbes it can be time consuming and expensive to employ multiple sampling methods, especially when large-volume samples are desired for sensitive microbial detection. Hollow-fiber ultrafiltration (UF) is a relatively cost-effective technique that has been developed at the Centers for Disease Control and Prevention and other institutions over the past ~10 years to co-concentrate viruses, bacteria, and parasites in diverse types of water. At CDC, UF-based techniques are employed for rapid response to emergencies, for implementation in low-resource settings, and for environmental quality investigations in which characterizing microbial communities (including potential pathogens) is desired. This seminar will describe technical aspects of hollow-fiber UF, development of UF techniques at CDC and elsewhere, and applications of the technique for various types of water quality investigations. Case studies will include CDC’s use of UF for identifying sources of hepatitis E virus (HEV) associated with a hepatitis outbreak in Uganda, surveillance for Vibrio cholerae in Haitian water resources, and investigating Naegleria fowleri in Louisiana drinking water systems.