

Laboratory Support for Microbiological Monitoring Projects in the U.S. Geological Survey

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Biographical Sketches of Authors

Rebecca Bushon is a hydrologist with the U.S. Geological Survey, Water Resources Discipline, in Columbus, Ohio. She received a bachelor's degree in Biology from Ohio State University. Ms. Bushon has training and experience in environmental microbiology with the U.S. Geological Survey for the last 7 years and has been the laboratory coordinator for the Ohio District Microbiology Laboratory for the last 4 years. She has been involved in several microbiology projects ranging from method development to microbiological monitoring and is currently the project chief of a study that is investigating a method for the rapid determination of bacterial concentrations.

Donna Francy is a hydrologist with the U.S. Geological Survey, Water Resources Discipline, Ohio District Office. She received a bachelor's degree in Biology from Indiana University and a Master's degree in Environmental Science from Rice University, Houston, Texas. She has 15 years experience in environmental microbiology and prior to that worked as a clinical microbiologist. At the U.S. Geological Survey, Ms. Francy has served as project chief on several projects that include studies that addressed recreational water quality in rivers and lakes, virus contamination in drinking-water supplies, or methods for monitoring protozoan and viral pathogens in streams.

Abstract

The U.S. Geological Survey (USGS), Ohio District Microbiology Laboratory (ODML) provides support for several projects by analyzing surface and ground-water samples for microorganisms of public health significance. These projects range from routine monitoring to investigating processes and factors that affect pathogens and indicators in the environment. For example, the ODML is partnering with the National Park Service to identify a rapid method for the detection of fecal-indicator bacteria so park managers can provide daily information on the safety of recreational waters. In another study, *Escherichia coli* loads of a major tributary are being estimated to determine whether changes to the sewage collection system result in improved water quality. The ODML is also working with local agencies to investigate the distribution and sources of *Escherichia coli* in sediments. The occurrence and factors related to the presence of enteric viruses and indicators in aquifers serving small public water supplies is being studied in a ground-water monitoring project. In another project, stream-water samples were collected to test modifications to the standard laboratory method used for detection of *Cryptosporidium*.

The ODML supports these projects, as well as other microbiological monitoring projects within the USGS nationally. Fecal-indicator bacteria analyzed by the ODML include: total coliforms, fecal coliforms, *Escherichia coli*, enterococci, and *Clostridium perfringens*. Viral indicators (coliphage) and viral pathogens, such as enterovirus and hepatitis A virus, as well as two protozoan pathogens, *Cryptosporidium* and *Giardia* are also analyzed at the ODML. These microorganisms and methods used to detect them will be discussed in this poster.