



Applying knowledge to improve water quality

Great Lakes

Regional Water Program

A Partnership of USDA CSREES
& Land Grant Colleges and Universities

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*Building Volunteer Capacity to Monitor *E. coli* in Surface Water*

GREAT LAKES
REGION



National Themes:

Drinking Water and Human Health
Watershed Management
Pollution Assessment and Prevention

Project Description

Contamination of water by fecal matter threatens public health and is a concern to those using the water for drinking or recreational activities. Testing water for pathogens can be expensive and may pose potential health hazards. The EPA recommends *Escherichia coli* (*E. coli*) as the organism of choice for the evaluation of recreational fresh waters for fecal contamination, since its presence suggests the possible presence of human pathogens such as harmful bacteria, protozoa and viruses. With limited agency resources and funds available, monitoring by a trained network of volunteers may provide the needed resources to target impaired areas.

Project Goals

The major goals of the project were to:

- build the capacity of Volunteer Monitoring programs to understand and use the most appropriate *E. coli* testing protocols (test kits);
- determine the reliability and usability of home test kits when used by volunteers;
- develop a comprehensive training program for volunteers on *E. coli* bacteria testing in targeted watersheds in a six-state area;
- develop and disseminate educational materials about *E. coli* and associated health risks, monitoring, and sources;
- increase awareness and acceptance of the use of volunteer collected water quality data in various watershed programs, including watershed assessments and TMDL development; and
- share results with other states across the country, primarily via the National Monitoring Facilitation Project efforts.



Volunteers from the Red River Valley in northwestern Minnesota learned how to monitor their favorite stream for *E. coli* bacteria. Photo by Wayne Goeken.

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Water Action Volunteers

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Outcomes

The project evaluated the reliability and preference of six testing methods by comparing volunteer results with certified laboratory analyses. Results indicated that four of the six methods were acceptable for screening for *E. coli* in surface waters. These include 3M™ Petrifilm™, Coliscan® Easygel® incubated, IDEXX Colisure® and IDEXX Colilert®. Two out of three volunteers preferred Petrifilm™ over Easygel®, and Petrifilm™ was found to correlate best with certified laboratory analyses. However, Easygel® and IDEXX® methods are intended for water analysis, whereas Petrifilm™ is designed for enumerating *E. coli* in food. It is concluded that the test kits can be good tools for screening and for justifying additional monitoring.

Strides have also been made in the sharing and dissemination of the data gathered from the analyses. In Wisconsin, the Wisconsin Department of Natural Resources (WDNR) created a home for the project's data within its newly developed Surface Water Integrated Monitoring System (SWIMS), a database of water quality information collected by WDNR staff and partners. The data in this system are used by biologists for making water management decisions. In Minnesota, Citizens Monitoring Bacteria data have been entered into STORET, where they can be used to help assess impaired waters. This spring, two Minnesota streams and one lake are likely to be identified as impaired for bacteria as a result of the monitoring. Volunteer-collected data are recognized as valuable by the Minnesota Pollution Control Agency.

An *E. coli* monitoring workshop was held in February 2008 at the CSREES National Water Conference in Sparks, Nevada. A follow-up survey of workshop participants showed that most had shared what they learned with others. About a third had conducted *E. coli* monitoring, and 20 percent had adapted the program for their own uses and/or partnered with others to support volunteer *E. coli* monitoring.



The Great Lakes Region Citizens Monitoring Bacteria Team received the national CSREES Outstanding Water Quality Program Award at the National Water Quality Conference in Sparks Nevada, February 2008.



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