

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

Bacterial contamination of surface waters is a common public health concern. Laboratory analyses can be expensive, yet such monitoring is important to ensure safe recreational opportunities and to produce effective watershed management plans.

This initiative builds the capacity of volunteer monitoring programs to understand and use the most appropriate *E. coli* testing protocols and watershed-based sampling strategies. As part of this effort, a variety of test methods used by volunteers have been compared to certified laboratory analyses and recommendations have been made as to which kits perform well when used by citizens. As a result of this project, citizen volunteers have a better understanding of sources and modes of transport of *E. coli* bacteria in the environment. They have increased knowledge and awareness about what the presence of *E. coli* bacteria in the environment means to their

own health and to community health. Finally, they have gained skills that enable them to address local water quality concerns related to *E. coli* bacteria, by being able to conduct the monitoring to assess the water quality in a safe and scientifically valid manner. In short, this project combines the research and Extension missions of land-grant universities to support well-informed community involvement in water quality issues.



Project Goals

The project seeks to:

- build the capacity of Volunteer Monitoring programs to understand and use the most appropriate *E. coli* testing protocols (test kits) and watershed based sampling strategies with their volunteers;
- develop a comprehensive training program for volunteers on *E. coli* bacteria testing in targeted watersheds in a six state area;

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- develop and disseminate educational materials about *E. coli* monitoring and analysis;
- 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 of our work with other states across the country, primarily via the National Monitoring Facilitation Project efforts.

Outcomes

This project tested the reliability and preference of six testing methods by comparing volunteer results with certified laboratory analyses and has recommended four of the methods to be acceptable for screening for *E. coli* concentrations. These include 3M™ Petrifilm™, Coliscan® Easygel®, IDEXX Colisure® and IDEXX Colilert®. More specific recommendations on these testing methods and their preference by the volunteers using them will be made following the

evaluation and synthesis of three seasons of data. Major program objectives accomplished to date include the production of a training manual used in 35 training sessions involving 151 volunteers. The manual covers general information about bacteria, sampling for *E. coli*, various testing methods available, and

interpretation of collected data, and is available on the project web site at:

<http://www.usawaterquality.org/volunteer/Ecoli/Manual.htm>. Project members have shared results with and have received positive feedback from state agencies and regional USEPA staff. Project members have also set up an online database for entering data that is available to any state running this or a similar project.

An overarching objective of this study is that the volunteer training materials and recommendations will be transferable to other regions. While further test kit analyses are ongoing, reliability results from this three-year investigation will provide crucial information for state agencies considering using volunteer monitoring data in watershed planning and perhaps TMDL development.



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