Translating Science to the Community through Volunteer Monitoring

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COOPERATIVE EXTENSION plays a unique role in extending University research and knowledge to local communities. Extension can play a valuable role in water quality education and environmental stewardship through volunteer monitoring programming.

As a USDA-CSREES National Facilitation Project for volunteer water monitoring, we strive to:

- foster collaboration, cooperation and communication among existing and developing volunteer monitoring programs
- provide resources to help new programs develop within the Extension system and beyond

Visit our website for additional volunteer monitoring project information and research findings, or to find an Extension-connected volunteer monitoring effort in your local area:

www.usawaterquality.org/volunteer

Scientific Research

Bacterial contamination of surface waters is a common public health concern, and monitoring is important to ensure safe recreational opportunities. However, laboratory analyses can be expensive, and not all natural swimming areas are monitored.

The public is not well versed in the sources, modes of transport, or means of disinfection of bacteria and pathogens in surface waters, which can result in panic in communities where there is a supposed risk of such contamination.

In a three-year research project with volunteer monitoring programs in Ohio, Indiana, Iowa, Michigan, Minnesota, and Wisconsin, six volunteer-friendly test methods were evaluated at 24- and 48-hour incubation times. Methods tested included: Coliscan Easygel® – incubated, Coliscan Easygel® – not incubated, 3M Petrifilm,™ Coliscan MF method, IDEXX Colisure® with Quanti-Tray®/2000 and IDEXX Colilert® with Quanti-Tray®/2000.

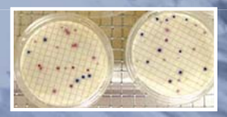
Method	n	R^2	P-Value
IDEXX Colisure 24	500	0.685	0.000
IDEXX Colilert 24	268	0.679	0.000
IDEXX Colisure 48	364	0.631	0.000
Petrifilm 24	993	0.551	0.000
Easygel I 24	990	0.539	0.000
Petrifilm 48	963	0.526	0.000
Easygel I 48	975	0.525	0.000
Easygel NI 48	489	0.369	0.000
Easygel NI 24	280	0.084	0.000
Coliscan MF 24	79	0.046	0.057
Coliscan MF 48	153	0.019	0.086

Regression analyses (table at left) revealed similar relationships between lab results and Coliscan Easygel® incubated and 3M Petrifilm.™ Volunteer methods with strongest relationships with lab results were the Colisure® and Colilert® methods.

In year-end surveys, two out of three citizen monitors (37 of 56) preferred 3M Petrifilm™ over Coliscan Easygel.®

Highlighted Program within our Network:

Citizens Monitoring Bacteria

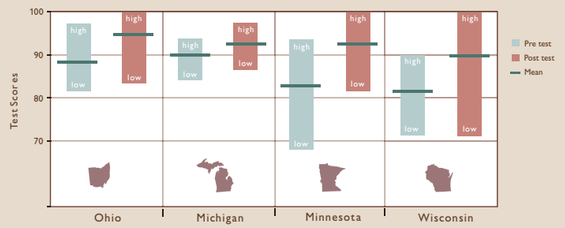


Citizen Education

Citizens participating in the project were also educated about *E. coli* bacteria. Common myths about *E. coli* were addressed, and citizens were provided an overview of how such bacteria move through the environment and what that means to community and individuals' health. A pre- and post-training knowledge survey was used to assess success in this education process in four of the six states.

Ninety-two percent of respondents (35 of 38) improved their individual scores after training. The others' scores remained the same. Average scores improved as much as 10% overall in a given state (see graph below).

Pre- and Post-Training Knowledge Survey Results



Across all states, a few questions on the survey were missed more than others. They were:

- *E. coli* is an indicator organism used to detect other microorganisms, including bacteria, viruses, protozoa and worms (the correct answer is TRUE)
- Urban/agricultural stormwater runoff can be a source of *E. coli* (the correct answer is TRUE)

Outcomes from the project include:

- an educational *E. coli* bacteria monitoring program with streamlined training available in multiple states
- ability and opportunity for citizens with concerns about bacterial contamination in surface waters to work to identify, understand, and address the issue locally

Designed by Annika Sargent, UW-Extension Environmental Resources Center