

Kalamazoo County Health & Community Services Department
Environmental Health Bureau • Surface Water Monitoring Program

3299 Gull Road
Nazareth, Michigan 49074-0042

Phone: 269/373-5172
Fax: 269/373-5333

Coliform Bacteria in Surface Water -- Fact Sheet

The Kalamazoo County Health & Community Services Department Laboratory analyzes all surface water samples for *Escherichia coli* (*E. coli*) bacteria, an organism indicating the presence of human and/or animal waste.

What are coliform bacteria?

Coliform is a family of bacteria commonly found in soils, plants, and animals. There are several groups that form this family, one of which consists of a fecal coliform group found in the intestinal tracts of warm-blooded animals, including humans. The presence of fecal coliform bacteria indicates contamination of the surface water by human and/or animal waste.

The presence of some fecal material in our surface waters (lakes, ponds, streams, creeks, and rivers) is to be expected as part of the environment in which we live. As long as the level of bacteria (fecal) is low, water activities (swimming, wading, etc.) can be relatively safe.

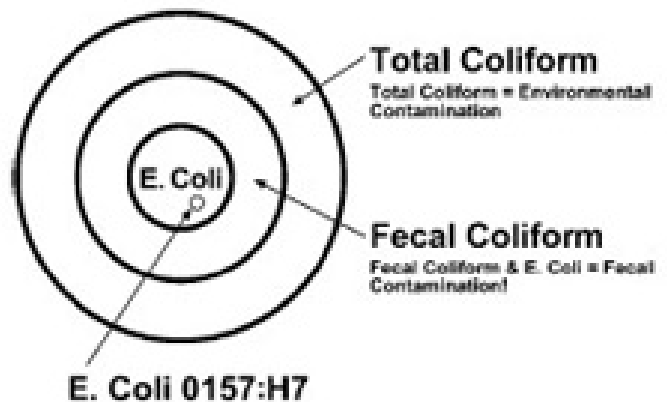
What is *Escherichia coli*?

The most common species of coliform bacteria, *E. coli* is a normal component of the large intestines in humans and other warm-blooded animals. It is found in human sewage in very high numbers and indicates the presence of other disease-causing pathogens.

What makes *E. coli* bacteria so dangerous when most strains are quite harmless? In the intestines of humans and other vertebrates, pathogenic organisms (disease-causing organisms) may accompany *E. coli* bacteria.

These pathogens, which microbiologists consider very difficult to detect, if not impossible, come from human fecal material, agricultural waste, wildlife, and domestic animals. Therefore, because it is so difficult to detect disease-causing microorganisms themselves, the safety of the water is determined indirectly by looking for intestinal bacteria that indicate other pathogens may be present. Microorganisms found in surface water that can be harmful to humans include: fecal streptococci, pseudomonas, streptococcus, staphylococcus, legionella, giardia, and cryptosporidia.

TOTAL COLIFORM, FECAL COLIFORM AND E. COLI



What are sources of *E. coli* bacteria?

- ▶ **Sanitary sewer overflows** – When it rains, sanitary systems can become overburdened and release excess storm water and untreated sewage into nearby waterways. That raw sewage contains *E. coli* bacteria.
- ▶ **Septic systems** – When septic systems fall into disrepair or are full, the sewage can leak into nearby waterways. Because of this, the absorption field, which is the area the discharge is dispersed into the ground, should be located away from waterways and wells.
- ▶ **Illicit waste connections** – Some individual homes or subdivisions may have pipes that flow directly from septic tanks to a river or lake. This household waste is untreated when it enters the waterway. This illegal practice should be corrected.
- ▶ **Wildlife** – Ducks, geese, deer, raccoons and other fauna that tend to live on or near water can contaminate rivers and lakes with *E. coli*.
- ▶ **Urban and agricultural run-off** – Farm animals and pets have the potential to generate large amounts of manure. This manure, if handled or stored improperly, can end up in waterways. *E. coli* numbers in streams and lakes rise during high flows as the result of heavy rains.
- ▶ **Stormwater run-off** – Stormwater in the form of rain and snowmelt can carry pollutants directly to our streams and lakes. Every attempt should be made to treat stormwater on-site before it (stormwater) reaches our surface waters.

We should look upon *Escherichia coli* (*E. coli*) bacteria as a friendly messenger that helps to warn us of dangerous pathogens in our surface waters.