

BEACH MONITORING FOR E. COLI



E. COLI

- E. coli commonly found in lakes
- Low probability of making swimmers sick.
- Test for it because it is an indicator of other more harmful micro-organisms

Escherichia coli (*E. coli*) is a bacterium commonly found in natural bodies of water.

The strain of *E. coli* being tested for at coastal beaches in itself poses a low probability of making swimmers ill. Instead, the bacteria serve as an indicator of the possible presence of other health risks in the water, such as bacteria, viruses and other organisms.

All warm-blooded animals have *E. coli* in their feces, which means that if high levels of *E. coli* are found in beach water there is a high chance of fecal matter being in the water. Lives in the intestines of birds, other animals and people. You can easily see how lakes could be impacted from the presence of birds and animals, heavy rain events or problematic septic systems.

SWALLOWING FECES

- Bacteria: Gastroenteritis (includes diarrhea and abdominal pain), salmonellosis (food poisoning), cholera.
- Viruses: Fever, common colds, gastroenteritis, diarrhea, respiratory infections, hepatitis.
- Protozoa: Gastroenteritis, cryptosporidiosis and giardiasis (including diarrhea and abdominal cramps), dysentery.
- Worms: Digestive disturbances, vomiting, restlessness, coughing, chest pain, fever, diarrhea.

Here are some microorganisms that you OR YOUR DOG can swallow while swimming and how they can make US sick.

E. COLI STANDARDS

- **No advisories** if < 235 MPN/100 mL
- **Advisory Issued** if > 235 but < 1000 MPN/100 mL
- **Beach Closed** if > 1,000 MPN/100 mL



Standards developed for the Great Lakes based and used for inland lakes in Wisconsin. Based on studies by EPA in beginning in the 1970s, 1980s and 2000s. MPN is Most Probably Number

MONITORING IN WISCONSIN

ROUTINE

- Coastal beaches along the great lakes
- Inland beaches at state parks
- Inland beaches by some local health departments
- Memorial Day to Labor Day

RESPONSE

- manure spill, sewage outflow

Coastal monitoring required by the federal Beach Act and amended Clean Water Act and funded by EPA. The great lakes are considered coastal areas along with all the other coastal states in the US.

The DNR funds the monitoring of state park beaches and has limited funds to help local public health departments with their sampling programs. The local programs are typically funded locally.

Monitoring period all summer from Memorial to Labor Day, at least weekly for a low priority vs 2 and 5 times.

The priority for beach monitoring was determined after consulting with the public and doing surveys on beaches. The number of people using each beach along with environmental factors were considered. High priority beaches are monitored five times a week, while medium priority beaches are monitored at least two times a week and low priority beaches are monitored once a week or only occasionally. This ranking allows DNR to target limited funds to the most popular and at-risk bathing areas.

RESPONSE MONITORING IN WAUSHARA COUNTY

- If aware of a public health hazard, then required to post/restrict access
- If gastrointestinal illness outbreak – test water and clinical samples along with DHS Bureau of Communicable Diseases

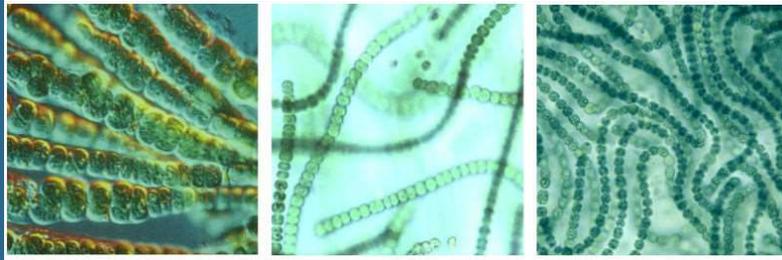
We are not required to do routine monitoring of our beaches in Waushara County and we don't. We are required to post a beach and restrict access if we become aware of a high level of *E. coli*. For example, if a lake association or someone else samples a beach and provides the results, we would post the beach.

The results from *E. coli* tests can take 18 to 24 hours. It is important to note that an advisory for a given day is based on the results of samples taken the previous day. *E. coli* levels can also vary from hour to hour and from meter to meter in the lake environment. Consequently, the posted advisory sign may not reflect the actual conditions present in the water.

We are required to do water and clinical testing if there is a gastrointestinal illness outbreak associated with a beach.

QUESTIONS?

BLUE-GREEN ALGAE



Another health concern at the beach.
Microscopic views

BLUE-GREEN ALGAE

- True algae are vital to lakes
- Blue-green algae are cyanobacteria
- Not typically eaten but are a natural part of ecosystem
- Ideal conditions for an algal bloom

True algae are like other plants that do “good things” like convert sunlight into energy which is food for zooplankton, which are food for small fish, larger fish, birds and up the food chain.

Blue-green algae are not a true algae. They are bacteria called cyanobacteria. They also convert sunlight to energy, but not many organisms eat them.

Blue-green algae and are a natural part of any lake and so are the algal blooms.

The perfect conditions for a bloom are warm weather, low wind, sunlight and nutrients, particularly phosphorus. Just like E. coli, the chance of high levels of E. coli and a growth of blue-green algal boom increases with a heavy rainfall, that would wash agricultural and residential fertilizers into a lake.

BLUE-GREEN ALGAE

Handout and Questions