

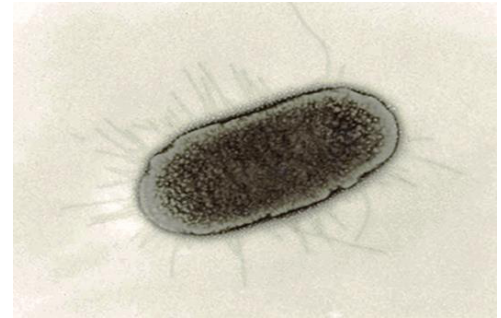


MICHIGAN'S E. COLI WATER QUALITY STANDARD

Guidance

What is E. coli?

Escherichia coli is a type of bacteria (single cell organism) that is used as a water quality indicator. When E. coli is found in surface waters, it means that there has been fecal contamination. While E. coli itself may be harmful to human health, other disease causing organisms might also be present. Once these pathogens are in a stream or lake, they can infect humans through ingestion or skin contact, resulting in diseases such as gastroenteritis (diarrhea), giardia, hepatitis, or cholera.



How is E. coli measured?

E. coli in water exists in colonies that can be suspended in the water, or settle out with gravity. E. coli water samples should be collected in a manner that does not disturb the bottom sediment, and avoids capturing surface films or scums. Sterile containers and gloved hands are used to minimize contamination. Samples are collected from three locations (generally called "left", "center" and "right") at each site of interest, such as a road crossing of a river or a bathing beach. Samples should be taken to a laboratory within 6 hours, to prevent regrowth or death of the bacteria. Once at the lab, the personnel will quantify, or count, the colonies using one of several methods and report the results in colonies per volume of water. Then, a geometric mean of these three samples is calculated to compare with the water quality standard. For a 30-day geometric mean calculation, five weekly sampling events are needed within a 30 day period.

What is the Water Quality Standard for E. coli?

The Water Quality Standard for E. coli was developed to protect human health during work and play, and is the maximum amount of E. coli that is allowable in surface waters of the state. These standards, known as the total and partial body contact (or recreation) standards apply to all waters of the state, including streams, rivers, lakes and beaches. The geometric mean of three samples at the site (collected on the same date) are needed to compare to the standard. The water quality standard is more conservative during the summer to protect swimmers during total body contact, but water is protected all year round by the partial body contact standard, as follows:

Total Body Contact (May 1- October 31):

Daily Maximum: 300 E. coli per 100 milliliters (ml)
30-Day Geometric Mean: 130 E. coli per 100 ml

Partial Body Contact (all year):

Daily Maximum: 1,000 E. coli per 100 ml

For additional information, contact Molly Rippke, Senior Aquatic Biologist at rippkem@michigan.gov or 517-342-4419.