

US EPA ARCHIVE DOCUMENT



CAN WE SWIM AT THE BEACH?

E. coli and Fecal Coliform Levels

The Issue: Many beaches in the Great Lakes are posted as unsafe or closed for swimming each summer because of bacterial pollution.

- Bacterial contamination commonly occurs when major rainstorms flood combined sewage systems, carrying both raw sewage and stormwater.
- Flooded systems discharge sewage, rich in bacteria such as *E. coli* and fecal coliforms, into the Lakes.
- Bacterial contamination may also occur from improper storage of animal manure or the use of manure to fertilize agricultural fields. Heavy rainfall can then cause bacteria laden waters to run off into the Lakes.
- Bacteria can lead to diarrhea, cramps, nausea, headaches, and other symptoms in swimmers exposed to these contaminated waters.

The Indicator - SOGL 2003

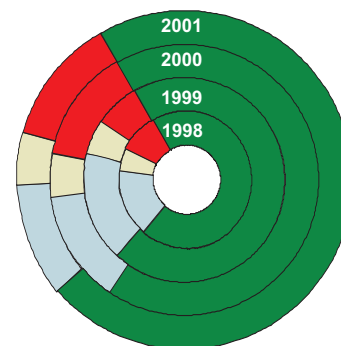
This indicator examines the relationship between *E. coli* and fecal coliform levels and beach closures. The presence of *E. coli* and fecal coliforms in recreational waters indicates that the water may be contaminated with human or animal waste. If *E. coli* or fecal coliforms are detected above established limits, then swimming at beaches is posted as unsafe or closed. U.S. and Canadian health authorities monitor for these microbes to protect swimmers from exposure, to refine predictions of episodic poor water quality, to pinpoint sources, and to decrease the number of beach closures and postings over time.

The Assessment

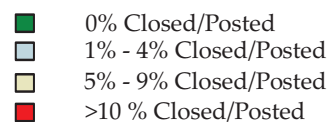
Monitoring for microbial contamination at beaches has increased substantially in recent years. Beach

water quality reporting has risen from 298 U.S. beaches to 313 U.S. beaches and from 218 Canadian beaches to 304 Canadian beaches from 1998 to 2001. Beaches that posted swimming restrictions or warnings for more than 10 percent of the season fluctuated from 9 percent to 14 percent of Great Lakes beaches in the United States and from 9 percent to 22 percent of Great Lakes beaches in Canada (Figure 1).

United States Great Lakes Beaches



Percent Time with Beach Advisories and Closures



Canadian Great Lakes Beaches

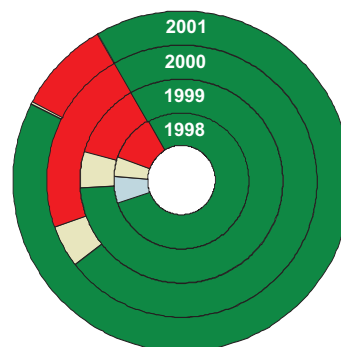


Figure 1. Proportion of United States and Canadian Great Lakes beach advisories from 1998 to 2001.

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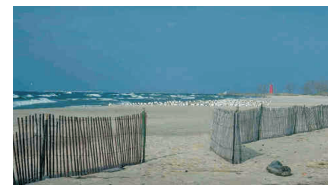
As the frequency of monitoring and reporting increases, more advisories and closures are observed. Furthermore, the method of issuing these advisories is occasionally imperfect. Processing bacterial contamination test results can take one to two days. Researchers are working on more efficient bacterial contamination detection tests that will allow authorities to close beaches for swimming or post them as unsafe as soon as the indicator bacteria appear.

The Outlook

Further work is necessary to develop better detection methods, consistent monitoring programs, and better swimmer warnings. These issues are being addressed in the U.S. through the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000. Through this act, a freshwater *E. coli* indicator is being adopted in all coastal and Great Lakes states. In Canada, the 1998 Beach Management protocol has standardized guidelines for beach monitoring.

On a local level, many municipalities are developing long-term control plans to better address wet weather days and stormwater runoff. Stormwater runoff was cited in 2001 as the major wet weather cause of higher bacterial levels monitored at beaches.

Federal, state and provincial, and tribal leaders are collectively working to better protect Great Lakes



beaches. The U.S. Great Lakes Strategy envisions that 90 percent of Great Lakes beaches will be open for 95 percent of the season by 2010.

For More Information...

Visit the web site, www.binational.net, to access the *State of the Great Lakes 2003* and other references reporting on the state of the Great Lakes.

