



## CAN WE SWIM AT THE BEACH?

Usually Great Lakes beaches are safe for swimming - unless health-related swimming advisories have been issued for bacterial contamination or other problems.

### *The Issues*

- Each year, many beaches in the Great Lakes are posted as unsafe or closed for swimming as a result of bacterial contamination. These postings may occur for the following reasons:
  - ▶ Combined sewage systems may overflow after a heavy rainfall, causing the direct or indirect discharge of raw sewage and stormwater into the Great Lakes.
  - ▶ Improper storage and use of manure to fertilize agricultural fields, which can wash off into waterways.
  - ▶ Onshore wind, which stirs up bottom sediments containing bacteria.
  - ▶ Wildlife waste on beaches (e.g., sea gulls, geese). Preliminary research has indicated that wildlife on beaches may be more of a contributing factor towards bacterial contamination of water and beaches than previously thought.
- Other pressures on our recreational waters include increased pollution of coastal areas due to population growth and, subsequently, changing land use.
- Bacterial contamination can cause diarrhea, cramps, nausea, headaches and other symptoms.
- The frequency of beach closings, advisories or postings may be difficult to compare due to different water quality standards and monitoring methods used in different locations.

### *The Indicator*

The safety of Great Lakes beaches for recreational purposes is indicated by the number of health-related advisories, beach closures or postings issued to a particular beach. These advisories occur when *E. coli* and other harmful bacteria are detected at levels above established limits, as measured by local health authorities. The monitoring of bacteria in the waters of the Great Lakes region determines the presence of bacteria, but can also aid in identifying sources of bacterial contamination. The trends provided by the number of beach advisories, postings and closures will aid in beach management and the prediction of episodes of poor water quality.

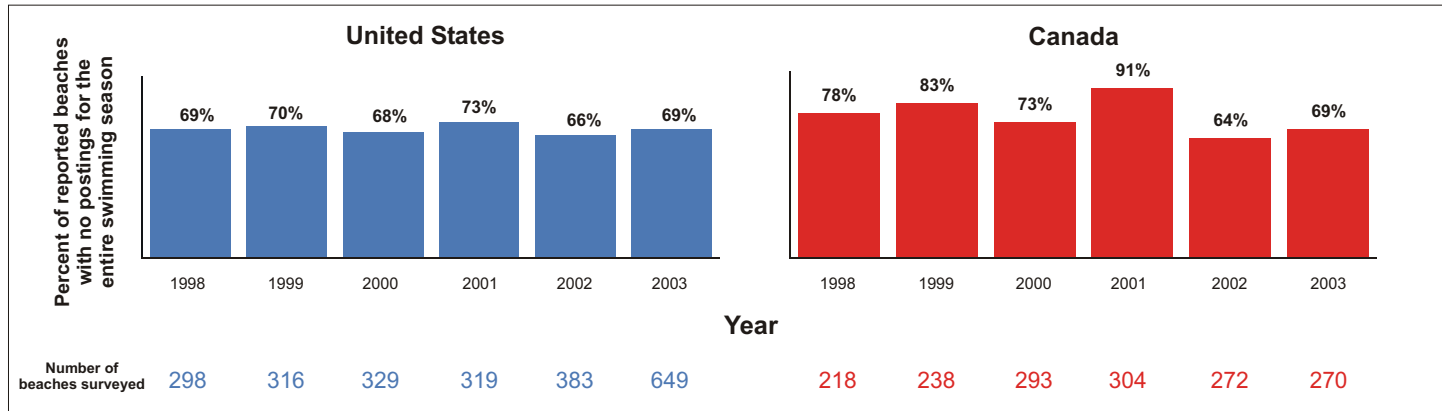


Photo Credit: U.S. Environmental Protection Agency,  
Great Lakes National Program Office

### *The Assessment*

Beaches are generally safe for swimmers. In 2003, 69 percent of the 919 beaches monitored in the United States and Canada in the Great Lakes region were open throughout the swimming season (Figure 1). Nevertheless, the public should heed current public health advisories regarding beach postings. There are seasonal and local trends in recreational water quality. Beach sample results tend to show similar bacteria levels after events with similar meteorological conditions (primarily wind direction and volume and duration of rainfall).

## CAN WE SWIM AT THE BEACH?



**Figure 1.** Percentage of the swimming season when reported Great Lakes beaches had no postings due to elevated bacteria levels. While six years of data are presented, trends over time are difficult to accurately interpret due to changing measurement techniques, increased monitoring, surveying of different beaches, varying levels of pollution and varying weather conditions. Source: *State of the Great Lakes 2005* report.

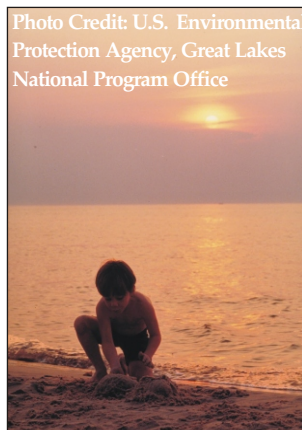
### Current Actions

The Ontario 1998 Beach Management Protocol outlines standardized guidelines for beach monitoring. In addition, many municipalities in Ontario are developing long-term control plans to address wet weather days and stormwater runoff. Environment Canada and the Ontario Ministry of Health and Long-Term Care are working together to develop a web-based beach monitoring and reporting system that will link beach data to meteorological data. This beach management system is one step toward the goal of establishing a model with predictive capabilities for the posting of Great Lakes beaches.

*The U.S. Beaches Environmental Assessment and Coastal Health (BEACH) Act* of 2000 provides resources to develop and implement consistent monitoring and notification programs. The U.S. Environmental Protection Agency and the Center for Disease Control are conducting the National Epidemiological and Environmental Assessment of Recreational Waters Study in the Great Lakes in order to evaluate new indicators of recreational waters and to determine their relationship to health effects. In addition, the U.S. Great Lakes Strategy, created to advance the restoration and protection of the Great Lakes basin ecosystem, aims for 90 percent of the monitored and high-priority beaches in the U.S. Great Lakes to be open for 95 percent of the swimming season by 2010.

### Actions Needed

Currently, one to two days are required to obtain test sample results for harmful bacteria, resulting in delayed beach postings. New testing methods that will provide faster results are needed. To improve accurate and timely postings, predictive models are needed to forecast whether *E. coli* levels will exceed established limits in recreational waters. Various climatic and biological factors such as cloud cover, wind direction and speed, and the presence or absence of wildlife, can be helpful in predicting beach closures in advance of receiving test sample results.



The development of techniques to effectively isolate and quantify viruses and other bacteria in recreational waters will increase the safety of our Great Lakes beaches.

### To Learn More

For further information related to Great Lakes beaches, please refer to the *State of the Great Lakes 2005* report and other Great Lakes references which can be found at [www.binational.net](http://www.binational.net).

