



Water Issues And Concerns Fact Sheet Series

Swimming in Clean Waters

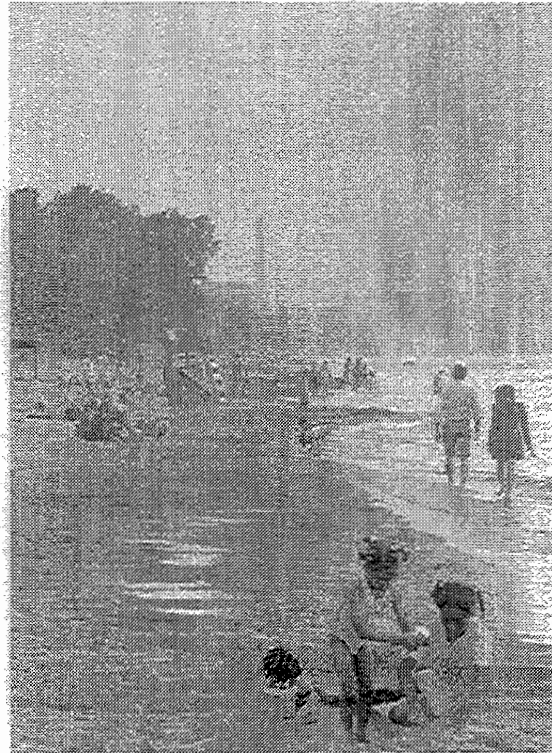
by Leslie Dorworth

It's a hot July day. You decide to take your family to the beach only to find it closed to swimming. Besides being frustrated, you ask why?

Based on an EPA report (Jacobson, 1997 at <http://www.epa.gov/glnpo/beach/>), 582 beaches along the U.S. coast of the Great Lakes were closed between 1981-1994. The primary reported cause for closing a beach is high fecal coliform counts (*E. coli*). The high counts are usually from the overflow of combined storm-water and sewage systems with insufficient capacity to retain heavy rains for processing through sewage treatment plants.

Who does the sampling?

The bathing beaches around the Great Lakes are monitored typically by either federal, state or county agencies to determine their environmental suitability for public use. Normally, the local health departments sample the waters. Illinois, Indiana, Wisconsin and Michigan have different standards for *E. coli*, the parameter that determine beach closings. Each state health department, except Wisconsin, delegates the task of monitoring public beaches to the county health departments. Each state has different sample collection methods and frequencies.



Another difference among the states is the number of *E. coli* cells per 100 ml required for beach closure. For example, Indiana will close the beach if the *E. coli* cells are greater than 235 cells per 100 ml of water or greater than 125 cells over a 30 day geometric mean using at least 5 samples, whereas Illinois will close the beach if the number of fecal coliform cells exceed 200 per 100 ml for a five day geometric mean taken over 30 days or are less than 100 fecal coliform cells per 100 ml in any two samples which is enough to require investigation and corrective action. Less than 500 fecal coliform per 100 ml in two consecutive samples will close the beach in Illinois.

Who makes the decisions?

Beaches are closed when, the beneficial use by the public is considered to be impaired. Impairment is based not only on microbiological contamination but also on turbidity, combined sewer overflow (CSO), excess debris, excessive algae, aesthetic degradation, or any occurrence, accident or spill likely to be harmful to human health. Under such an occurrence, local authorities (i.e. your local park service or agency that supervises the beach area) make the decision as to whether to close or restrict beach use.

What are the risks?

Agencies monitor *E. coli*, specifically, because swimmers exposed to elevated levels of bacteria risk ear, skin and intestinal infections. High coliform concentrations also may lower dissolved oxygen levels in the surrounding water, thus impairing the aquatic habitat. Although no study documents the effect that beach closings have on the regional economy, repeated beach closings may discourage visitors and negatively affect local tourism.

What are the sources of *E. coli* ?

The problems with beach contamination have been linked to CSOs, failed septic systems, point source discharges, non-point source pollution and marinas. Groups of interested individuals from various agencies (regulatory, environmental, industrial and academic) are coming together to resolve the problem of microbial contamination along our beaches. A concerted effort by all interested stakeholders, including

the public will be necessary, to solve the problem.

Sea Grant's Role

Sea Grant is a partner in the effort to find solutions to beach contamination. Sea Grant addresses this concern through funding university-based research and providing education and information.

Water Quality Issues and Concerns is an ongoing series addressing relevant water quality issues. For water quality information, contact Leslie Dorworth, Sea Grant aquatic ecology specialist, at 219 989-2726; dorworth@calumet.purdue.edu

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