

PUBLIC HEALTH and WASTEWATER

Are Our Beaches Safe?

Beach closings have been the target of a great deal of public concern around the Great Lakes the past few summers. In addition to the potential public health risks, beach closings resulting from high pathogen counts obviously can have a negative effect on tourism, an important industry in northwest Michigan.

The USEPA recommends that freshwater recreational water quality be measured by the abundance of *Escherichia coli* (*E. coli*) or by a group of bacteria called *Enterococci*. *E. coli* is a common intestinal organism, so the presence of *E. coli* in water indicates that fecal pollution has occurred. While the specific kinds of *E. coli* measured in recreational water do not generally cause disease, high counts indicate that conditions are favorable for the growth of other harmful pathogens that may cause illness in humans. If more than 130 *E. coli* are present in 100mL of water in 5 samples over 30 days, or if more than 300 *E. coli* per 100mL of water are present in a single sample, the water is considered unsafe for swimming.

In our watershed, sanitary overflows are a rare occurrence, so beach contamination is usually caused by other sources, such as stormwater. Stormwater carries animal waste (from dogs, ducks, geese, etc.) and other substances into tributaries and then into the bay. In outlying areas, runoff carries contaminants from farms, improperly sited or maintained septic systems, and natural sources into streams, rivers, and lakes.

Peak *E. coli* concentrations often occur during high flow periods when floodwater is washing away possible contaminants along the streambank such as waste from ducks and geese. Streams such as Kid's Creek, Boardman River, Suttons Bay Creek and Northport Creek have exhibited high *E. coli* counts at times during storm events. There are a number of public beaches on the bay near

Stream or Beach	<i>E. coli</i> (colonies/100mL)	Date
Kid's Creek	1,986	8/26/03
Boardman River	517	5/14/03
Suttons Bay Creek	727	8/26/03
Northport Creek	770	8/18/03
TC State Park Beach	518	6/9/03
Milliken Park Beach	2,419	6/9/03

the outlets of these streams and high counts of *E. coli* pose a risk to beachgoers in these areas. Each year the amount of swimming beaches in the state closing due to high *E. coli* levels increases.

Monitoring water quality at public beaches is one way of safeguarding public health. For the past three years, The Watershed Center has worked with the

Benzie/Leelanau District Health Department and the Grand Traverse County Health Department to test key beaches throughout the three counties. The Center coordinates the testing and reports the results to both the local health departments and the State of Michigan. It is the responsibility of each health department to close a beach or post an advisory. This past summer, 13 area beaches were tested weekly and there were no beach closings due to high bacteria counts. In addition to beach testing, The Watershed Center also tests area streams for *E. coli*. Results from all of our *E. coli* testing can be found on our interactive water quality database: www.gtbay.org/wqquery.asp.

Is the Fish Safe To Eat?

People can be exposed to pollutants when they drink untreated water or eat fish, shellfish or wildlife that has been contaminated by pollutants in surface water. To reduce the risk to people from these sources, EPA scientists constantly determine the highest or allowable levels at which specific chemicals are not likely to adversely affect human health; these levels are known as human health criteria. States use this, along with other information, to set allowable levels of pollutant concentrations and incorporate them into water quality standards and human health advisories.

Unfortunately, there are number of advisories in place for fish consumption in Michigan, including a special advisory for all inland lakes due to elevated mercury levels. Mercury is toxic to the nervous system and can cause a variety of health problems. There are also advisories for fish from the open waters of Lake Michigan due to PCBs, dioxins, mercury, DDT and chlordane.

Fish accumulate contaminants in the water and these contaminants are magnified when the fish are then eaten by larger predator fish. Fish consumption has been shown to be a major pathway of human exposure to persistent toxic substances, such as PCBs and mercury because of this **biomagnification** process.

The amounts of chemicals found in Michigan fish are not known to cause immediate sickness, but chemicals can collect in the body over time. It may take months or years of regularly eating contaminated fish to build up amounts that are a health concern. To protect yourself, get familiar with Michigan's advisories. The complete list can be found at the Michigan Department of Community Health's website (www.michigan.gov/mdch). There are many things you can do to reduce your risk but still enjoy the bounty of Michigan's waters, such as eating smaller fish and using different cooking techniques.

What about wastewater?

Wastewater consists of water used in your home or for industrial businesses. In your home, this water contains waste materials added from your kitchen, bathroom and laundry room. If you live in a town or village, you are likely on a municipal sewer system – otherwise, you are one of the 75% of area residents

who treats their wastewater using a septic tank. Population growth and the need for greater wastewater treatment capacity is an important issue that needs addressing in our area. Many small villages and towns are being forced to consider either building treatment systems to replace aging septic tanks, upgrading existing systems, as is the case in Suttons Bay, or consider other alternatives such as holding tanks. As suitable open land becomes scarcer, the disposal of septage is also becoming problematic. Grand Traverse County is currently in the planning process for a septage treatment facility to address this problem.

The wastewater treatment plant in Traverse City, which also services outlying areas, is currently undergoing a \$31 million dollar upgrade to tertiary level treatment. When complete, it will be the largest facility in North America featuring an innovative technology called an immersed membrane bioreactor. This treatment process will produce effluent of a quality that far exceeds standards required by the facility's discharge permit.

Websites for More Information:

- Area Beach Testing Results from DEQ: www.deq.state.mi.us/beach
- Great Lakes Beachcast: www.great-lakes.net/beachcast
- EPA Beaches: www.epa.gov/OST/beaches