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## **PUBLIC BATHING BEACHES**

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### **Why monitor beaches?**

Beaches are monitored to determine pollution levels in the water at beach sites and to prevent illness in bathers. Examples of infections which can be acquired from swimming in polluted water are: Conjunctivitis (eye), ear infections, nose infections, throat infections, or more serious infections such as Diphtheria, Typhoid Fever, Dysentery, Infectious Hepatitis and gastrointestinal illnesses. Beaches are also monitored for safety hazards which could cause bather injury.

### **What constitutes a public beach?**

The official definition of a public beach is a beach owned or operated by a municipality which has a supervised aquatics program or is staffed by a lifeguard.

### **What are those yellow signs for at the beach?**

A new educational program was implemented in 2004 along Lake Huron with the use of permanent yellow warning signs. The sign reads:

*“Water Quality Information: Cloudy water caused by high wave action and rainfall increases bacterial levels in the bathing water; caution: Do not swim for 24 hours after heavy rain falls.”*

The yellow cautionary sign indicated a relationship between heavy rainfall and high winds with increased counts of *E.Coli*. While samples are submitted on a weekly basis, conditions can change from minute to minute depending on factors, such as wind and wildlife. These signs give the swimmer the opportunity to assess the present conditions and make an informed decision on his or her use of the beach.

### **What are beach pollution surveys?**

A pollution survey of a bathing beach is an on-site investigation into factors and conditions that may influence the quality of bathing beach water.

# **— Health & Environment Facts —**

The purpose of conducting a survey is to provide the information needed to determine pollution sources and their potential impact on the suitability of beach water for public bathing purposes. Pollution surveys take into consideration many factors:

1. the potential results of heavy rainfall;
2. the location of nearby private sewage disposal facilities or municipal sewage treatment facilities;
3. storm sewer outlets which may be in the area;
4. the location of other culvert discharges or stream discharges;
5. waterfowl congregation;
6. water depth at the beach;
7. water/current movement;
8. danger of accidental spillage of pollutants;
9. the presence of open dumps;
10. animal enclosures and feed lots upstream from the beach;
11. soil erosion in the area;
12. marina and docking facilities in the vicinity of the beach;
13. marine traffic;
14. safety hazards throughout the beach area; and
15. the potential for overcrowding at the beach.

A pollution survey is generally conducted at the start of each bathing season. A map of each beach area is prepared showing the location of possible sources of contamination or safety hazards as well as the location of all sampling sites within the beach area.

## **How are sampling sites selected?**

The locations of sampling sites at beaches are fixed permanently for the season and should be representative of the complete bathing beach area. A minimum of 5 sampling sites per beach are normally established. For large beaches that are more than 1 kilometre in length more sampling sites are required. They would normally be spaced 200 metres apart.

## **How often are the beaches sampled?**

Based on past sampling data and the beach sampling protocol produced by the Ministry of Health, the local Health Unit determines how often the beaches should be sampled. If results of sampling indicate a beach may be subject to a pollution problem the sampling frequency may be increased.

# — *Health & Environment Facts* —

## **How are the beach samples taken?**

Water samples are obtained using sterile beach sampling bottles provided by the Ministry of Health & Long Term Care Provincial Laboratory. The samples are usually taken slightly offshore but within the swimming area. Every attempt is made to take the sample approximately 15 to 30 cm below the surface in about 1 to 1.5 metres of water. Where possible, a reaching pole is used to move the sampling bottle away from the sampler's body and the turbidity that is created as the sampler walks across the bottom. The sample bottle is sealed as soon as the sample is taken. It remains sealed until received by the Provincial Laboratory for analysis. The samples must be transported to the laboratory within 24 hours of sampling. Every effort is made to keep the sample at or near 4°C during transportation but a tolerance up to 10 °C is permissible.

## **Why field data recorded when samples are taken?**

Field data is recorded when samples are taken because an assessment of historical data on factors influencing a particular beach may allow Health Units to predict water quality deterioration. The following information is recorded at the time of sampling: weather conditions, any rain during the previous 2 days, the wind direction (onshore, offshore, cross-shore), the degree of wave action (calm, light, medium, heavy), the number of bathers, the number of waterfowl or animals (i.e. dogs) in the immediate beach area and the clarity of the water.

## **What are the water samples analyzed for?**

The Provincial Laboratory analyzes each sample for the number of E. coli bacteria present per 100 ml of water. E. coli is used as the indicator bacteria because it is the most specific bacterial indicator of faecal pollution. The results of the laboratory analysis indicate the bacterial quality of the beach water at the specific time the beach was sampled. To get an accurate assessment of water quality for a beach, a number of samples under varying conditions must be taken. Chemical quality of water at beaches is not routinely monitored by Health Units. However, if there is reason to believe chemical contamination may exist at a beach, the local Health Unit and the Ministry of the Environment will conduct a thorough investigation into the problem.

# — *Health & Environment Facts* —

## **When are beaches posted?**

Posting of a beach occurs when there is evidence that bathing beach water is potentially dangerous to the health of the bathers.

Beaches are not closed by Health Units, but instead, signs are posted advising the public that the water may be unsafe for bathing. Before a beach is posted, results from several samples on several sampling days are required. A type of average of the sample results called a 'geometric mean' is calculated. The geometric mean is used rather than a normal arithmetic average because it reduces the biasing effect of a single high reading in the results. When the geometric mean of the sampling results exceeds 100 E. coli bacteria per 100 ml of water the beach is posted. Posting signs are displayed in prominent positions at the beach to warn bathers of the danger. The signs will normally remain posted at the beach until such a time as surveillance of water quality demonstrates that the risk to bathers is once again within acceptable limits.

For more information regarding the monitoring of public bathing beaches please contact the Grey Bruce Health Unit at (519) 376-9420 or 1-800-263-3456.