

# IOWA'S WATER

## Ambient Monitoring Program

## Frequently Asked Questions About Beach Monitoring

### Why monitor beaches?

Swimming in lakes or any other natural bodies of water involves risks. By far, the greatest risk is drowning caused in part by cloudy water, fast currents, submerged objects, or the lack of lifeguards. Water at Iowa's state-owned swimming beaches is monitored to assess the public health risk from waterborne diseases that may result from immersion in the water.

### What is the Iowa DNR monitoring?

Water samples from the beaches are analyzed for microorganisms, known as bacteria. These indicator bacteria are one-celled organisms visible only under a microscope. High levels of these bacteria indicate that the water has come into contact with fecal material. Indicator bacteria are commonly used by state environmental agencies and by the U.S. EPA to determine the suitability of beaches for swimming-type uses.

### Can these bacteria make me sick?

The indicator bacteria for which the Iowa DNR monitors do not themselves make you sick. These bacteria are easy to collect and analyze and are relatively safe to handle. They are very common in the environment, including lakes and rivers. High levels of these bacteria indicate that the water has come into contact with fecal material and that pathogens (disease-causing microorganisms) may be present.

### Why doesn't the DNR monitor pathogens?

Disease-causing organisms, known as pathogens, exist as bacteria, viruses or parasites. Monitoring for these pathogens is expensive and difficult. Large volumes of water are





**Figure 2.** Fecal bacteria are found in the intestines of warm-blooded animals, such as cattle or geese.



needed to monitor for pathogens because they are present in such small numbers. Many different types of pathogens exist and testing for a single pathogen may not accurately assess the health risk present due to other pathogens. Because indicator bacteria occur in greater numbers than pathogens and are easier to isolate in a laboratory, monitoring for them is more cost-effective.

### **What are the sources of these bacteria and pathogens?**

Fecal bacteria, and sometimes pathogens, are present in the intestines of warm-blooded animals – including humans. They are carried into the water with fecal material. Fecal contamination occurs due to improperly constructed and operated septic systems and sewage treatment plants, manure spills, storm water runoff from lands with wildlife and pet droppings, or direct contamination from waterfowl, livestock, or small children in the water.

### **How are the samples collected at the beaches?**

Samples are collected weekly at 35 state-owned beaches from April 15 through October 31. This period corresponds to the recreational season when the Iowa Water Quality Standards, designed to protect swimming-type uses, is in effect. Water samples are taken at three locations along the beach and at three water depths (ankle-, knee- and chest-deep) for a total of nine sampling locations. The water from these locations is mixed to form one sample, which is placed in a sterilized bottle and taken to the University of Iowa Hygienic Laboratory for analysis.

### **What levels of indicator bacteria are considered safe?**

The United States Environmental Protection Agency (EPA) has guidelines for the amount of bacteria acceptable in water bodies designated for primary body contact recreation, including swimming and water skiing. In Iowa, these waters are called “Class A waters.” Iowa currently uses fecal coliform bacteria to determine if Class A uses are being attained. The bacteria level in the water is acceptable if the “geometric mean” is not greater than

## Fecal Coliform at State Beaches

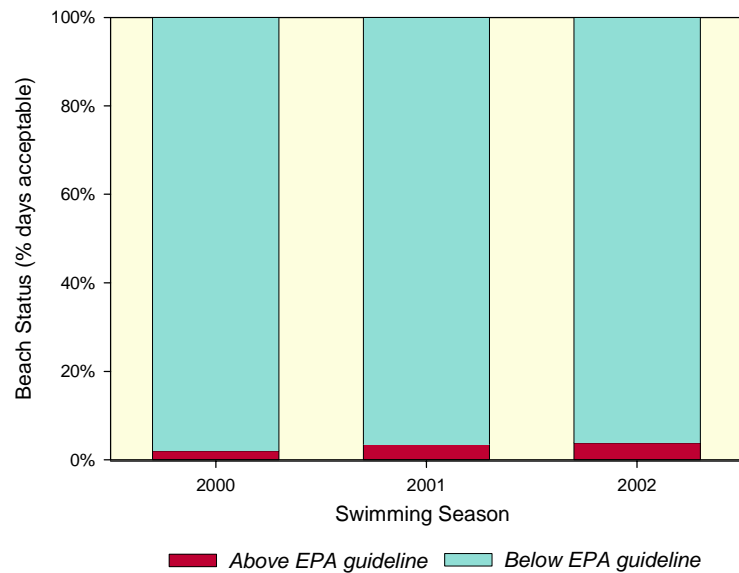
200 colonies per 100 milliliters of water for fecal coliform. According to U.S. EPA guidelines, the “geometric mean” is calculated using at least five consecutive samples collected during a 30-day period. In 2002, beaches were not closed, but advisory signs were posted to inform beach users if the “geometric mean” for fecal coliform bacteria was above the state’s water-quality standard. Iowa is currently in the process of revising its Class A definitions and moving toward an *E. coli* standard based on the most recent EPA recommendations.

### What factors cause high levels of bacteria?

In Iowa, rain appears to be one of the most important factors in generating high levels of bacteria. Surface runoff after a heavy rainfall may transport high levels of fecal bacteria from the previously mentioned sources to the water at the beach. The rain also increases the sediment in the water causing it to be murky. Since bacteria are destroyed by sunlight, murky water aids in their survival.

### What are the potential illnesses associated with swimming?

Thousands of people swim at Iowa’s beaches every year and most of them do not get sick. However, children, the elderly and people with weakened immune systems have an increased risk of becoming ill when coming into contact with contaminated water. A variety of diarrheal diseases and infections such as skin, ear and respiratory infections are associated with swimming in contaminated water. Diarrhea is one of the most common illnesses associated with swimming. Diarrhea is spread when disease-causing microorganisms from human or animal feces get into the water. You can get diarrhea by accidentally swallowing small amounts of water that contains these microorganisms. To date, the DNR has received no verified reports of illnesses caused by swimming or water skiing in Iowa’s waters. These illnesses could be under-reported, though, because the symptoms are so common and people can be infected by these pathogenic microbes through other means, such as from contaminated meat, not washing their hands after using the bathroom or changing diapers.



**Figure 3.** Iowa State Park beaches met or were below EPA guidelines about 97 percent of the time for fecal coliform bacteria.



## How can I avoid getting sick?

Avoid swimming after a heavy rainfall when indicator bacteria levels are generally higher and the water is murky. Do not swallow water. Children swimming at the beach can leak fecal bacteria and associated pathogens from their diapers, so change your child's diapers often and visit bathrooms frequently. If you have diarrhea, please stay out of the water because you may

contaminate the water. This is often how disease is spread. If you do develop an illness after being in contact with natural waters, be sure to let your doctor know when you call for advice or seek medical attention.

## Can I eat fish from waters with high levels of fecal bacteria?

Yes. High levels of indicator bacteria or pathogens have no influence on the quality of fish for human consumption. While alive, the fish is protected from water-borne contaminants by the skin, scales and mucus covering its body. Proper fish cleaning, rinsing, refrigeration and cooking should always be used.

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Water Monitoring Program Web Site – [www.igsb.uiowa.edu/water](http://www.igsb.uiowa.edu/water)



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