



# EPA's BEACH Watch Program: 2002 Swimming Season

## Introduction

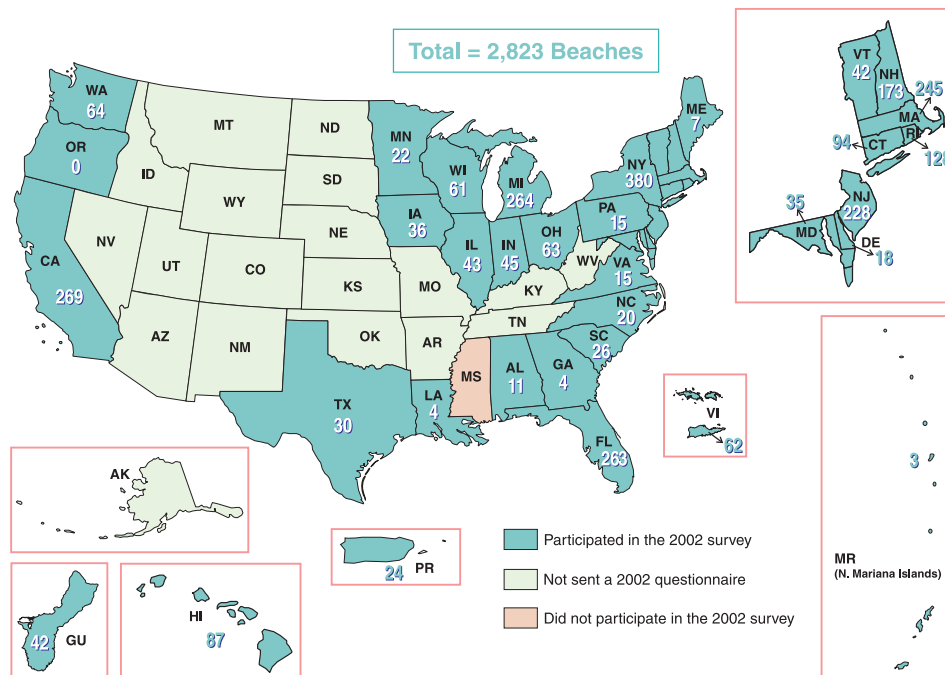
The U.S. Environmental Protection Agency is committed to the goal of reducing illnesses covered by waterborne, disease-causing microorganisms (pathogens) at recreational beaches. Through its BEACH Watch Program, the Agency strives to promote greater consistency in beach health programs and provide better information to the public. An important tool for gathering this information is the annual questionnaire EPA sends out to states, tribes, local governments, and other agencies that maintain swimming beaches. Participation is voluntary.

The purpose of the questionnaire, called the National Health Protection Survey of Beaches, is threefold:

1. To create an accurate national inventory of swimming beaches and the agencies that maintain them.
2. To survey the water quality standards, monitoring methods, costs, and procedures agencies use to issue beach advisories and closings.
3. To document critical aspects of each beach advisory and closing issued throughout the swimming season including (1) the time length of the action, (2) the reason the action was taken, (3) and the source(s) of pollution that necessitated the action.

This fact sheet reports on information collected about the 2002 swimming season.

**Figure 1. Number of beaches in the 2002 beach survey.**

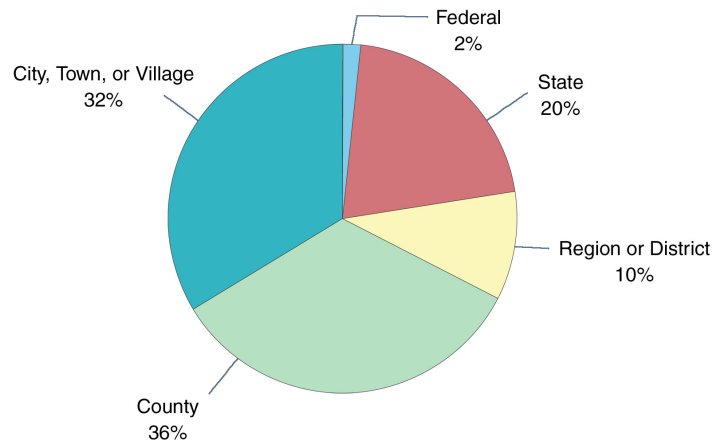


## Survey Participation

We contacted a total of 261 state and local agencies located mainly along ocean coasts and the Great Lakes to participate in EPA's 2002 beach survey. A total of 240 agencies (an 92 percent return) from 31 states, Guam, Puerto Rico, Northern Mariana Islands, and the U.S. Virgin Islands submitted information about their beaches (Figure 1).

The number of beaches in the survey has grown from 1,021 in 1997 to 2,823 in 2002. Most survey respondents represent local governments. (Figure 2).

**Figure 2. Types of respondents participating in the 2002 beach survey.**



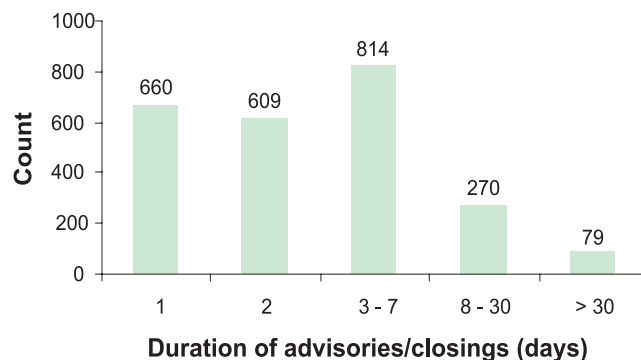
## Beaches

Agencies participating in the 2002 beach survey provided EPA with information on 2,823 beaches. Of these beaches, 2,031 were coastal, and 792 were on inland waterways.

## Advisory and Closings

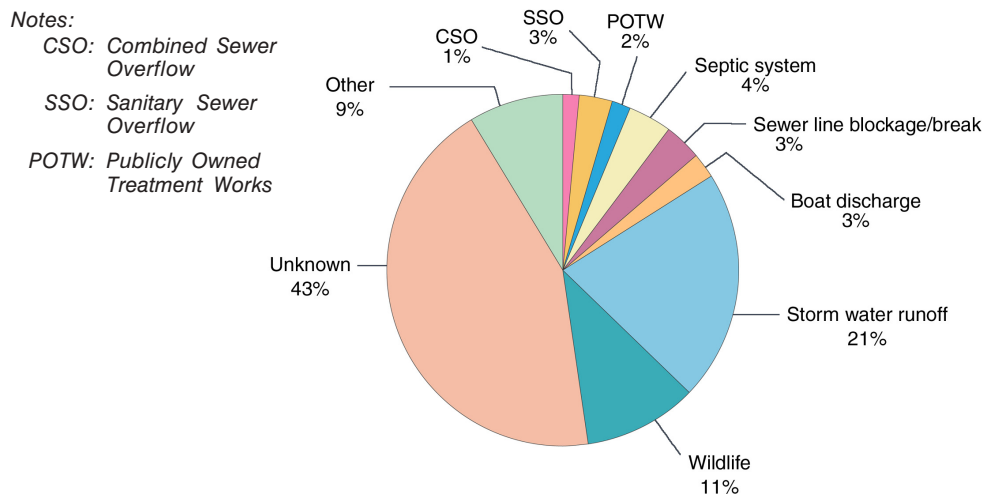
A beach advisory or closing typically occurs when monitoring results show that levels of pathogen indicators exceed a water quality standard. Twenty-five percent of the beaches (709 of 2,823 beaches) had at least one advisory or area closed during the 2002 swimming season. The main reason given for an advisory or closing was elevated bacteria levels (cited in 75 percent of the beach actions). Most of the advisories or closings were three to seven days in duration (Figure 3).

**Figure 3. Beach advisories or closings by duration.**



We asked survey respondents to identify the source(s) of the pollution that caused the advisory or closing. In many cases, the source was unknown, but the second largest was storm water runoff (Figure 4). A respondent could select more than one pollution source for each advisory or closing.

**Figure 4. Sources of pollution that resulted in advisories and closings**



### Trends

Since it began in 1997, we have expanded the EPA beach survey to include over 2,800 beaches. As a result, the survey covers more beach miles and collects more information concerning advisories and closings (Table 1).

**Table 1. Trends in agency participation, number of beaches, and advisories and closings for 1997–2002.**

	1997	1998	1999	2000	2001	2002
Number of agencies participating in the survey	159	217	235	236	237	227
Number of beaches reported	1,021	1,403	1,891	2,354	2,445	2,823
Number of beaches affected by one or more advisories or closings	230	353	459	633	672	709
Percentage of beaches affected by one or more advisories or closings	23	25	24	27	27	25

### Water Quality Standards

Agencies in charge of protecting the health of swimmers typically monitor for water quality standards at their beaches. These standards vary among programs depending on whether it is a freshwater or coastal beach, among other factors. Most standards are based on the risk of human exposure to pathogens.

Because detection is difficult and expensive, pathogens themselves are not usually measured directly. Instead, one or more “indicator organisms” are measured and used to predict the presence of pathogens. In 1986, EPA published a report that recommended water quality criteria for two indicator organisms, *Escherichia coli* and enterococci. The report concluded that these two indicator organisms are better suited for predicting the presence of pathogens that cause gastrointestinal illness than are total and fecal coliform bacteria, the two indicator organisms used in the past to determine the safety of recreational waters. Some agencies have adopted *E. coli* and enterococci as indicators; others have not. Many agencies use multiple indicators to determine the safety of their waters. The total number of programs that reported the use of *E. coli*, enterococci, total coliform, and/or fecal coliform concentrations as part of their standards for marine waters and freshwaters are presented in Table 2.

**Table 2. Number of agencies, types of indicator organisms, and type of standard used to determine swimming safety.**

Indicator Organisms	MARINE WATER # of Programs Using		Indicator Organisms	FRESHWATER # of Programs Using	
	Instantaneous Standard	Sample Average Standard		Instantaneous Standard	Sample Average Standard
<i>E. coli</i>	4	5	<i>E. coli</i>	59	61
Enterococci	82	90	Enterococci	16	19
Total coliforms	18	11	Total coliforms	17	23
Fecal coliforms	55	43	Fecal coliforms	49	59

Notes: An agency can use multiple indicators. “Instantaneous standard” refers to a standard in which the density of the indicator for any single sample must not be exceeded. “Sample average standard” refers to a standard that must not be exceeded based on an average density calculated from samples taken over an established period of time (typically a 30-day period).

## Monitoring

EPA’s *Ambient Water Quality Criteria for Bacteria—1986* recommends monitoring five times per month for *E. coli* and enterococci. The survey results indicated that 93 percent of the beaches had some type of water quality monitoring program, but the monitoring frequencies varied. Sixty-five percent of the beaches were monitored at least once a week.

## For More Information

EPA provides detailed results of the 2002 survey at the Agency’s BEACH Watch web site, <http://www.epa.gov/waterscience/beaches>. The web site provides detailed information on the hundreds of individual coastal, Great Lakes, and freshwater beaches that participated in the survey. You can also find other information on local beach programs and health issues, as well as contacts and links, at this site.