

What You Can Catch From the Waves

With waste-tainted water closing beaches and making swimmers sick, the EPA is under mounting pressure to improve testing. By Nancy Keates



IT'S A POSTCARD-PERFECT day in Malibu. Multimillion-dollar mansions dot the green hills and seagulls glide in the cloudless sky. Surfrider beach, made famous by "Baywatch" and the Beach Boys, is packed with golden sunbathers and families lounging under bright umbrellas. In the water are hundreds of frolicking swimmers... and billions of fecal microbes.

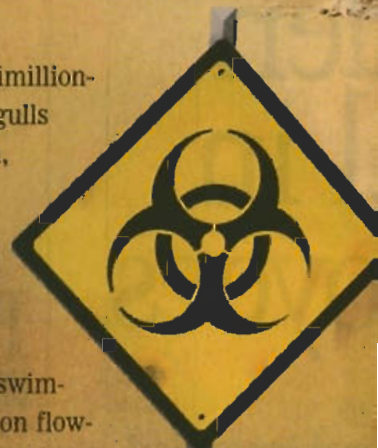
A sign partially hidden by a surfboard warns that swimming amid the bacteria, which comes from pollution flowing through the town's storm drains, may cause illness.

"Some people don't know," says lifeguard Greg Pfeifer, pointing from atop his white stand at the bobbing heads in the water. "A lot of people just don't pay attention."

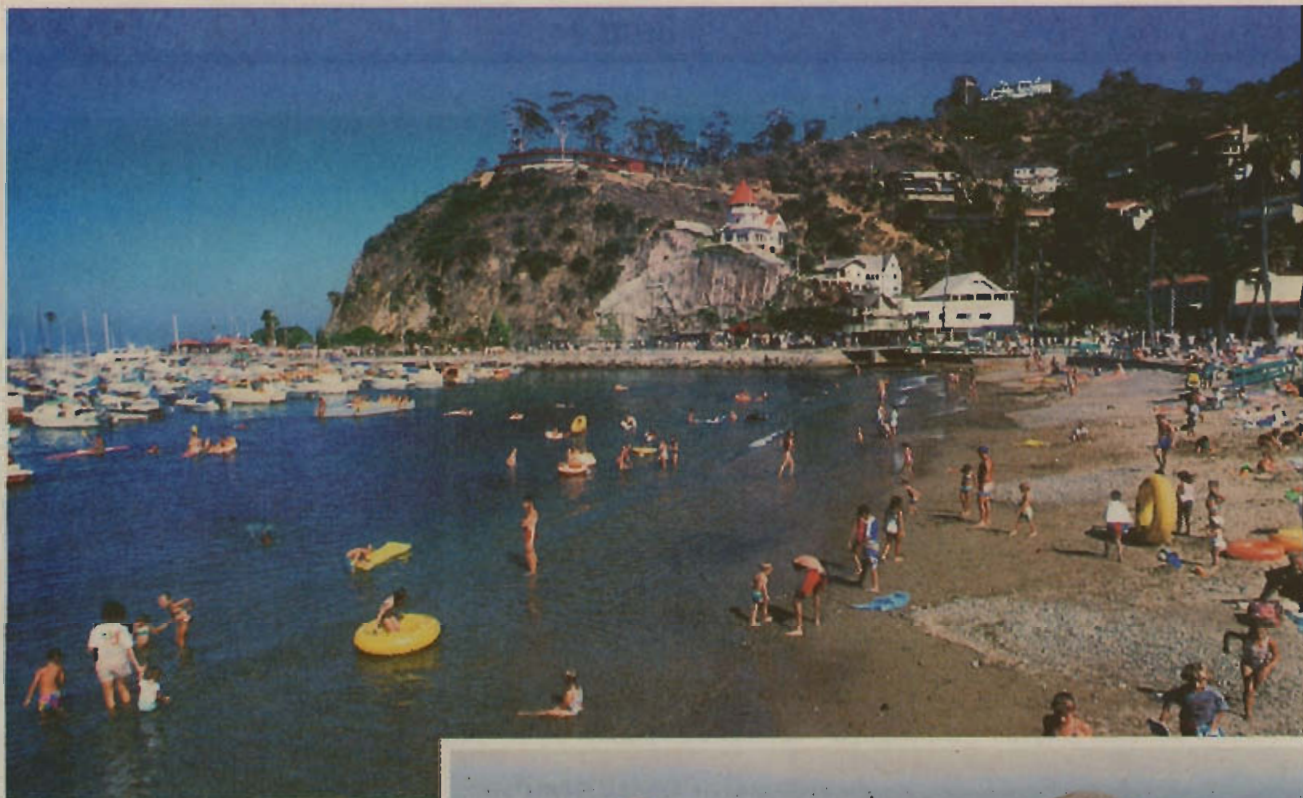
This summer, beachgoers risk such things as shark attacks in Florida, rip tides in Oregon and stinging jellyfish in South Carolina. But for the roughly 180 million Americans who will visit a beach this year, one hazard lurks in practically every state—polluted water, even at some of the country's most celebrated strips of sand. Beaches on the U.S. coast and the Great Lakes were closed, or deemed unsafe for swimming, a record 20,000 days in (Please Turn to Page W10)

PLUS

Ten popular beaches with high bacteria levels—and 10 alternatives. **W10**



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2004—the latest statistics available—up 9% from 2003, according to data released by the Environmental Protection Agency and individual states and analyzed by the National Resources Defense Council, a New York-based environmental group. About 85% of the closings resulted from high levels of bacteria associated with contamination from animal and human fecal waste.

Higgs Beach in Key West, Fla., has surpassed federal standards for safe bacteria levels eight times in the past 18 months. In Galveston, Texas, 25th Street Beach—near the Flagship hotel and a surf shop—has had 13 advisories during that period, while Cole Park Beach in Corpus Christi, Texas, has had 26. In just the past few weeks, advisories have been issued in Provincetown, Mass., and Oak Island in North Carolina. Last week at Sunset Park beach on Lake Michigan in Door County, Wis., a sign warned people not to ingest lake water and to wash their hands before eating.

To the naked eye, the most polluted beaches can look pristine. But when *Enterococcus* and other bacteria reach high enough levels, they can expose swimmers to stomach flu, ear infections, rashes or worse. This March in Hawaii, a swimmer died after taking a dip following a sewage spill near Waikiki beach in Honolulu; his death certificate cited factors including septic shock. The very young, the very old or those with immune deficiencies are particularly at risk when the bacteria runs high, says Jeffrey Griffiths, director of Global Health at Tufts University School of Medicine in Boston. "It could affect all of us," says Prof. Griffiths, who calls for more stringent testing standards. "It's a mess."



At your own risk: Top, Avalon Beach on California's Catalina Island, where officials suspect sewer lines caused high bacteria levels. Just above, Thomas and Kate Sprague at Oregon's Cannon Beach, where a creek is blamed for high microbe readings. Below, warnings in 2004 at Pocho Beach in San Clemente, Calif.

'The More We Look'

The EPA says the beaches aren't necessarily dirtier than they have been: There are more beach closings and advisories now, it says, only because more testing has brought existing pollution to light. The agency says it will release its 2005 figures today: It says the numbers will show more beaches are being tested, resulting in more closures and advisories, but that the percentage of beaches with high bacteria counts remains about the same.

The testing uptick began after Congress amended the Clean Water Act in its 2000 BEACH act—Beaches Environmental Assessment, Cleanup and Health—which has so far given states \$52 million in government funding to test water quality according to EPA guidelines. Now, four times as many U.S. beaches are being tested than in 1997, the agency says. While the EPA doesn't mandate how or how often states must test, it does set out guidelines for what bacteria testers should look for and in what concentration. (The EPA-approved tests screen for Enterococcus, a bacterium associated with feces, in sea water and fresh water, and E.coli in fresh water.)

Environmental groups believe pollution has been getting worse. "The more we look, the more we find," says Nancy Stoner, director of the clean-water project for the NRDC. Earlier this month, the council filed an intent to sue the EPA for what it says is a failure to meet a deadline in October to tighten and expand its testing standards. The EPA has 60 days to respond before this citizen's suit goes forward. The EPA counters that it needs time to develop new tests. "We share their goal of getting new criteria," says Ben Grumbles, the agency's assistant administrator for water. "It could take several years."

Current testing is limited—and when

warnings are issued, they can be hard to find. The current EPA standards test for only a few of the hundreds of strains of bacteria that indicate fecal contamination, and don't address testing for disease-causing agents like viruses and parasites. The testing methods don't produce results for 24 to 48 hours. Though states that receive federal funds must issue warnings when levels exceed the EPA standards—and are encouraged to publicize the warnings, often on state or county Web sites—it's up to local monitors to decide when to post advisories or closures.

Take Crandon Park in Key Biscayne, Fla., a two-mile stretch that guides have singled out for its wide beach and kid-friendly sand bar. The water there has exceeded federal standards for Enterococcus seven times in the past 18 months, but the Miami-Dade County health department has issued no warnings during that period. It also didn't warn people at the Colin's Park section of Miami's South Beach, near renowned hotels such as the Delano and the Raleigh, during the four days when levels exceeded standards. Local authorities say they retest following a poor result and issue advisories only if the second sample comes back high—which can be as much as two days later.

In California, Kelly Meyer was shocked to discover that the beach in front of her home was contaminated—and that so few people knew. "It boggles my mind," says Ms. Meyer, who lives with her children and husband, Universal Studios president Ron Meyer, near Escondido beach in Malibu. "We're all blessed to live this lifestyle in these amazing houses. Yet the very thing that makes it attractive is becoming a giant cesspool."

Over the past 18 months, Los Angeles County's department of health conducted more than 100 water-quality samples at the beach in front of Escondido Creek, and the samples exceeded the EPA thresholds on 95% of the sampled days. (The EPA considers 104 units of Enterococcus per 100 milliliters of salt water unsafe; Escondido samples were as high as 2,000 units.) The department issued no public warnings. Residents like Ms. Meyer became aware of the issue after a Santa Monica-based environmental group, Heal the Bay, publicized the results. "In this day and age no one should be going to the beach and not know whether the water is polluted," says Mark Gold, Heal the Bay's director.

John Schunhoff, chief of operations for Los Angeles County's department of health, says the county isn't required by law to post signs. But he says that Escondido is among the beaches

where warnings will now be posted.

Researchers blame the polluted waters on a population boom along the coasts. According to a report by the National Oceanic and Atmospheric Administration, the number of homeowners along the 673 coastal counties of the U.S. grew 28% from 1980 to 2004. Now, 53% of the country's population lives on 17% of the total land area of the country, not including Alaska. Another 12 million Americans are expected to move to the coasts by 2015.

With increased population comes more parking lots, roads and strip malls which reduce natural buffers like forests and fields. When it rains, waters wash over asphalt and concrete—picking up pollutants including gasoline and oil, herbicides, chemicals and animal waste—before washing into storm drains and out to the sea. In addition, researchers believe aging sewage systems are becoming overtaxed. While there's no nationwide data for sewage leaks, the number has gone up in many areas, says Michael Mallin, a research professor at the Center for Marine Science at the University of North Carolina at Wilmington. "We keep seeing more," says Prof. Mallin, who recently wrote an article about seaborne bacteria—"Wading in Waste"—in this month's Scientific American.

Surfing in It

Lisa Kennedy learned the hard way. The 40-year-old waitress in Honolulu went surfing right in front of the Hilton Hawaiian Village on Waikiki beach in March—four days after 48 million gallons of untreated sewage seeped from a canal that runs into the sea. The first warning signs were posted on the beach five days after the spill. Ms. Kennedy, busy with friends visiting from California, hadn't been reading the papers. With lifeguards working and the surfboard-rental stands operating as usual, she had no inkling she shouldn't hit the waves. "There are signs on the beach when there are jellyfish," she says. "I had no idea there was a spill."

Ms. Kennedy cut herself surfing that day and developed an infection a couple days later, causing her wound to ooze and reek. Blood tests at an urgent-care clinic revealed molecules of E.coli, Proteus and Enterococcus. Ms. Kennedy was taken to an emergency-room trauma center, and spent 13 days on morphine with intravenous antibiotics. "There are so many ways they could have warned people," says Ms. Kennedy's attorney Rick Fried of Honolulu firm Cronin, Fried, Sekiya, Kekina & Fairbanks. "You have to wonder if it's related to tourism."

In fact, water-quality concerns present

a direct challenge to the tourism industry that keeps these beach areas' economies buoyant. In some cases, hotels say they're also in the dark: "We haven't been made aware of this by the city or state government," says a spokesperson for the Delano in Miami's South Beach. In Hawaii, meanwhile, a department of health spokeswoman says officials didn't spread an alarm because they believed the sewage that Ms. Kennedy encountered



Testing the Water

A number of states have Web sites that give current and historical information on water-quality monitoring, as well as other public-health issues. Here is a sampling:

California: beachwatch.waterboards.ca.gov

North Carolina: www.deh.enr.state.nc.us

Florida: www.doh.state.fl.us/environment/index.html

Massachusetts: mass.digitalhealthdepartment.com/public_21

New Jersey: www.njbeaches.org

Oregon: www.healthoregon.org/beach

Texas: www.gjo.state.tx.us

Wisconsin: www.wibeaches.us

had been heading out to deep sea; when currents changed several days later, officials began testing near Waikiki beaches. The beaches returned to pre-spill levels—below the EPA's limits—in April.

This isn't, of course, the first time beachgoers have raised a cry over the quality of water and sand. The issue gained national attention in the 1980s, with reports of medical waste washing up

'I had no idea,' says Lisa Kennedy, who surfed four days after a sewage spill in Waikiki and fell ill.

in New Jersey and news that the City of Los Angeles was dumping barely treated sewage into Santa Monica Bay. States like New Jersey and California, worried about tourism and pushed by environmental activists, started testing water and closing beaches with elevated bacteria levels.

And not all of the nation's beaches are contaminated. The island of Nantucket, Mass., has rarely had spikes above the EPA standards, while Sandy Bay Beach, along Lake Michigan in Wisconsin, remained in "safe" territory all last year. Generally, areas close to streams or storm drains have higher bacteria concentrations, particularly after it rains. Researchers say areas with strong tides clean themselves out more rapidly than enclosed areas with less circulation. Enterococcus bacteria, for one, can die out after a few days in the sun and salt water, but researchers have also found that they are capable of surviving for weeks in mediums such as wet sand.

Some beaches, meanwhile, are getting better. Nine miles south of Boston, busy Wollaston Beach in Quincy, Mass., has long had a reputation as a sewage deposit: Some homes' sewage systems

illegally empty into city's water drainage system, which empties out near the beach, says Doug Gutro, the president of the Quincy City Council. Mr. Gutro says the state and city have spent \$37 million on ongoing beach-improvement projects, which include replacing defective sewer pipes that leaked into the drainage system. The beach, he says, is tested for bacteria daily. Wollaston was closed for swimming 10% to 20% of the time last summer, he says, compared with 30% to 40% five years ago.

Still, some local residents aren't convinced. On a recent Sunday, a one-mile stretch of sand there was littered with tampon applicators, mini whisky bottles and empty cigarette packs. A single sign notified visitors that swimming was forbidden and "may cause illness"; nearby, dozens of banners hanging from light-posts read "Back to the Beaches." Patrick Daly, a 29-year-old local artist, says he takes daily walks on Wollaston with his wife, Lynda, and says conditions have since improved there. (When he was 15, he recalls, his friend waded knee-deep into the water, and later developed red rashes.) Still, he wouldn't let his own son touch the water. "Some idiots still swim there," he says. "I wouldn't."

Clean-beach advocates say there's still a long ways to go. Not only can test results hit the Internet days or even months after tests are conducted, the broader causes of contamination also aren't well understood. According to the NRDC, most municipalities have failed to identify where the pollution is coming from, much less control it. In more than 14,000 closing and advisory days—nearly three-quarters of the 2004 total—local officials didn't know where the pollution was coming from, the highest number since NRDC began tracking beach-water quality 15 years ago.

The EPA and other agencies say they're working on programs to slow the flow of contaminants, improve testing and shorten their reaction times. The agency says it is developing faster and more accurate tests of water quality for the states to use. And some states and

counties are improving their own processes: For example, at Lake Erie beaches in Ohio the U.S. Geological Survey and Cuyahoga County Board of Health have a pilot project that aims to detect pollution before it hits the shore. Their predictive model takes into account wave heights, water temperatures, lake levels, bird counts (droppings are another cause of contamination) and weather data to predict when E.coli levels will be high.

In the end, even if the warnings are amplified, the water will beckon. At around noon on a recent day in Wisconsin's Door County—the "Cape Cod of the Midwest"—a student from nearby University of Wisconsin, Oshkosh, arrived at Sunset Park beach and moved among groups of beachgoers. The student, a participant in a university program to test local beaches, told them the water was unsafe for swimming and suggested they drive five minutes across the drawbridge to another beach, and posted a sign: "CAUTION WATER QUALITY ADVISORY; SWIM AT YOUR OWN RISK; DO NOT INGEST LAKE WATER; SHOWER AFTER SWIMMING; WASH HANDS BEFORE EATING; DO NOT SWIM IF YOU ARE ILL; INCREASED RISK OF ILLNESS MAY BE PRESENT ON RECENT MONITORING FOR E COLI BACTERIA."

Some beachgoers remained on dry sand. But 19-year-old Kasey Hembel proceeded to drag her three friends into the water. "It gets to be second nature. You just walk right past these signs now."

And in Malibu, where Surfrider beach has exceeded EPA safe-water levels in one-third of recent tests, the city is spending \$42 million to clean up groundwater run-off—including purchasing 20 acres of undeveloped land where it will send its storm-drain runoff. "We're determined to do our part," says Ken Kearsley, the mayor of Malibu, who is a surfer.

Meanwhile, Malibu lifeguard Mr. Pfeifer is sanguine: "What doesn't kill you makes you stronger."

—Hannah Karp and Amir Efrati
contributed to this article.

Ten Troubled Beaches

These 10 coastal and Great Lakes beaches are popular with visitors, and have also had recent bacteria counts above the Environmental Protection Agency's threshold. Here is how often they exceeded the EPA's bacteria standards over the past 18 months (as a percent of the overall number of tests during the period), what we saw when we visited—and which nearby beaches have been given a cleaner bill of health.

BEACH/LOCATION	% OF TIMES BACTERIA EXCEEDED STANDARDS	WHO GOES	BEST QUALITY	WORST QUALITY	HOW OFTEN CLEANED	CIGARETTE BUTTS? DOG WASTE?	CLEAN BEACH NEARBY
Avalon Catalina Island, Calif.	31%	Revelers and lots of kids	It has that island feel	The beach is packed	Daily	Dirty napkins	Pebbly Beach
<p>Popular with snorkelers, boogie boarders and wading kids, Avalon is in the island's harbor, where boat motors idle and a storm-drain pipe flows into the water. (In the summer, the drain's water is diverted to a waste-treatment plant.) Assistant City Manager Pete Woolson believes sewer lines leaking into groundwater are responsible for the high levels, but he says the lines were repaired last year. Locals aren't complaining: "We run a day-care program and we don't have kids going to the hospital because they're sick," says Sean Brannock, the city's recreation director.</p>							
Surfrider Malibu, Calif.	33%	Surfers and families	Great waves	Loose surfboards	Daily	✓	Taco Bell cup
<p>Malibu Creek empties into the sea next to this beach, making high bacteria counts a perennial issue. Halfway down the beach, a small sign says swimming in the water might cause illness. On a recent day, Julia Ramult, a financial investment executive from Montrose, Calif., said she's been swimming at Surfrider since she was a child. "I'm dying to go in because it's so hot," she said. "I'll just have to take a shower immediately afterward." Nearby, Zuma hasn't had an advisory or closure since 2001.</p>							
Cook's Brook Eastham, Mass.	40%	Vacation-home renters	Broad beach at low tide	Beach shrinks at high tide	Once a week	Tires	Coast Guard Beach
<p>This beach on Cape Cod Bay is treasured for expanses of wet sand that extend out hundreds of yards at low tide. But for the last several years, Enterococcus counts have been high; last year the beach shut down for a total of about three weeks. The source of the pollution is believed to be peat—partially decayed vegetable matter—under the ocean sediment, says town health agent Jane Crowley. (A front loader that was putting fresh sand on an eroded area may have disturbed the peat several years ago, she says.) The town's director of beaches estimates beachgoer numbers have halved since the closures began.</p>							
Wollaston* Quincy, Mass.	23%	Tourists and locals	Boston skyline	Seaweed and trash	Weekly	Tampon applicator	Nickerson Beach
<p>Heavily trafficked Boston-area beach has cut down on its closures in the last five years, but some beachgoers say there aren't enough warnings. Lisa and Rey Spollen of Boston let their two young boys walk barefoot in the water and play with shells. "Considering that technically it is swimming season, there wasn't enough to tell you it wasn't safe," says Mrs. Spollen, a 43-year-old homemaker. Nearby Coast Guard beach, on the Cape Cod national seashore, has had clean tests for three years running.</p>							