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## **This beach tale is a real mystery**

### **Scientists still searching for the source of befouling bacteria along lakeshore**

By **STEVE SCHULTZE** and **MARIE ROHDE**  
[sschultze@journalsentinel.com](mailto:sschultze@journalsentinel.com)

The suspect list in the case of who's fouling Milwaukee's beaches reads like a bizarre mystery novel.

The lineup includes gulls, dogs, cats, cows, deer, algae - and us. Or more accurately, bacteria from fecal material deposited or harbored by the various animal and plant suspects that is somehow washed into Lake Michigan.

How it got to the lake is another tough piece of the whodunit. Researchers are paying increasing attention to large numbers of gulls that congregate at the beaches as well as storm water runoff and the stew of pollutants it carries as prime bacteria sources.

The number of city beach warnings issued this year is close to last year's pace only at South Shore Park beach, which has been a perennial trouble spot. High bacteria warnings have been posted for that beach on 39 days so far this season, compared with 41 at this point last year.

Health advisories for Bradford and McKinley beaches are down considerably. One big difference: This year has been much drier. Record rainfall in May 2004 resulted in massive sewer overflows and storm water runoff, both of which greatly boost beach bacteria loads.

Suburban beaches also show some high bacteria levels this season, though the picture is murkier because tests are done less frequently than for city beaches. Shorewood's Atwater Park beach, for example, has had advisories for seven days this season, including five days in which it was closed.

Decaying algae rimmed the Atwater shoreline this week, an area also popular with gulls.

### **No dumping this season**

The Milwaukee Metropolitan Sewerage District has done no sewage dumping this year.

"This year it's been dry and the beaches are still closing," MMSD spokesman Bill Graffin said. "There's a lot more affecting beach pollution than sewer overflows."

But researchers are loath to pin blame or declare innocence for a particular source, can't say for sure why the bacteria advisories continue and caution that the science of dirty beaches has a long way to go.

"There's just huge gaps in knowledge on some of these things," said Sandra McLellan, a scientist with the University of Wisconsin-Milwaukee's Great Lakes Water Institute.

That may be less than reassuring, especially when confronted with alarming warning signs about water quality that have been popping up regularly at the three city and other Milwaukee County beaches.

But this much we do know, according to water scientists and other experts:

- Our beach warnings are based largely on cheap, unsophisticated tests for the presence of *E. coli* bacteria, commonly found in feces. The test was developed as a way to detect whether human waste - and the disease-causing germs it carries - had made its way to the lake.
- However, that test can't tell whether the bacteria detected came from human or animal feces. And while the information is still useful, it's not known whether gull or other animal waste harbors pathogens that make people sick.
- Raw sewage dumping or leaky sewers pose the biggest confirmed beach health hazard and the underlying rationale for even bothering with beach water testing.

## **Sewage at the beaches**

While debate over which bacteria sources deserve most blame continues, the threat of human sewage pollution remains the biggest worry because of its known potential for sickening people.

"During sewer overflows, you can be pretty assured some of that water is going to get to the beach," McLellan said.

One of the several studies the institute has done in recent years on beach pollution showed that sewage dumped in the Milwaukee, Menomonee and Kinnickinnic rivers - typically after severe storms - often follows a path that carries it past Milwaukee beaches, she said.

For example, the study showed that north winds push lake currents on a path that runs past a sewer outfall - a point where raw sewage is dumped in the lake - at Russell Ave. in the Bay View neighborhood and continues to the South Shore beach area, she said.

"Birds and storm water are things we are less worried about," she said.

## **'Gull-darn birds'**

Still, studies such as McLellan's 2002 review that suggested gull feces were a major bacteria source at South Shore beach and similar new research on Chicago beaches have grabbed headlines.

It even prompted the Chicago Sun-Times to editorialize earlier this month, "Blame those gull-darn birds, not Milwaukee, for beach closings." That was a reference to last year's big MMSD sewage dumping, which prompted anti-Milwaukee jabs from Chicago Mayor Richard Daley and other Chicago-area politicians.

While studies indeed suggest lots of the bacteria being found at parts of some beaches likely came from gulls, the jury's still out on whether gulls carry bugs that can sicken people, said Holly Wirick, beach program coordinator for the U.S. Environmental Protection Agency's regional office.

The culprits, according to Wirick, for high bacteria levels: domestic or wild animal waste that washes into rivers and eventually gets to the beaches; children swimming with messy diapers; or algal blooms that harbor bacteria. One researcher found that people on average carry about one-tenth of a gram of fecal material on their bodies.

Genetic research is continuing to try to determine beach bacteria sources.

### **Algae provide harbor**

In Milwaukee and elsewhere on Lake Michigan, bumper crops of cladophora have plagued beachgoers for several years. The algae provide harbor for E. coli to thrive, McLellan said. Researchers believe the algal bloom is linked to the prevalence of zebra mussels. Their voracious appetites have resulted in clearer water, allowing more light to penetrate deeper and encourage cladophora growth, she said.

Local efforts to fix the problem have focused on better beach grooming, cleaning up algae that wash ashore and a new \$30,000 project at South Shore to divert and clean parking lot runoff.

The South Shore project was completed about two weeks ago, but it's too soon to see good results, said Gregory High, a Milwaukee County parks official.

Parks officials have requested \$1.3 million in their proposed 2006 budget to reroute seven storm sewer pipes away from Bradford Beach, High said. Other alternatives remain under review.

While the plethora of advisories might give the public the impression that beaches are dirtier now, that's probably not true, said Nicole Richmond, a water quality specialist with the state Department of Natural Resources.

"We are just monitoring more. We know more, we have more scientific data," she said.

Efforts to develop a faster and more discerning water test also are under way by the EPA.

Researcher Rebecca Calderon said she hoped a new test to measure enterococci - a different type of bacteria that can cause stomach ailments - rather than E. coli would be available by the 2007 swimming season.

The aim also is to have results in two hours instead of the 24 hours it now takes to get E. coli test results, she said.

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