



■ FOR SUBSCRIBERS ENVIRONMENT

Michigan's lakes, waterways are getting saltier. One spot tastes like brine

Carol Thompson The Detroit News

Published 11:30 p.m. ET March 27, 2022

The water running through Ann Arbor's Miller Creek is sometimes so salty that it tastes like brine.

That's according to data the Huron River Watershed Council collected in March 2015, when ecologists scooped samples from the creek to look for chloride, a tell-tale signal that road salt is making its way into the water. One sample had as much as 1,300 milligrams of chloride per liter, about 42 times the level people can taste, which starts at 30 milligrams per liter.

"Ecosystem degradation is the biggest impact of high chloride concentration," said Andrea Paine, a Huron River Watershed Council watershed planning associate. "There's threats to environmental health and river health in general, including impacts to aquatic macroinvertebrates, fish and other aquatic species including plant life."

Salt can even change the look of wetlands, stream banks or lake shores.

"Oftentimes, that can lead to the increased presence of plants such as cattails and weed grass that do tend to thrive in salty environments," Paine said. "As we see these higher chloride concentrations, there is this modification of the ecosystem toward species that thrive in these saltier conditions."

Miller Creek isn't alone. The Great Lakes and waterways that feed them are getting saltier, in large part because of winter road salt use. That could hurt the bugs, plants and animals that depend on fresh water.

Scientists have measured the Great Lakes' increasing saltiness for decades, consistently pointing to road salt as a major contributor, according to a long-term analysis of chloride loading published in the *Journal of Great Lakes Research* in 2009.

A December study co-written by Michigan State University Research Assistant Professor Anthony Kendall found road salt pollution flows into Lake Michigan — and almost certainly all the Great Lakes — even in the summer.

A pair of Kendall's research partners drove around Lake Michigan in July 2018 collecting samples of water from almost all of the streams and rivers that flow into the lake. They wanted a "big snapshot in time" of what the waterways carried, he said.

They were looking for nitrogen and phosphorus, nutrients that run off of farms and contribute to algae growth. But the team also analyzed their water samples for chloride.

They found a lot — even in July, when county road commissions' piles of road salt are tucked away in storage sheds. Lake Michigan's tributaries contained a mean of about 26 milligrams of chloride per liter, almost twice Lake Michigan's chloride content of 15 milligrams per liter.

Why salt is a problem for water

While chloride occurs naturally in the environment, Kendall said the levels they saw indicate road salt was a major contributor.

Unlike phosphorus and nitrogen, chloride doesn't break down or get filtered out of water on its way through the soil. What gets dumped on a road ends up in soil, then groundwater, then a stream, then the Great Lakes. That's what makes it a tricky pollutant.

"It doesn't really react with anything," Kendall said. "It's also pretty hard to get out of water, so the best solution is just to not put it in in the first place."

Not that there are other options for an agency like the Road Commission for Oakland County, spokesman Craig Bryson said. Some road crews, including the Missouri Department of Transportation, blend agricultural byproducts with salt and use the mixture on roads, but those products are either too costly or ineffective to serve as a viable replacement, he said.

The Oakland commission has taken steps to reduce salt use. Its officials are more careful about not using more salt than necessary, started brining salt before it hits the pavement and bought new trucks that can change the

amount of salt they release depending on the driver's speed.

"In the old days, the salt would continue to pour out of the back of the truck when it was stopped at an intersection, wasting tons of salt," Bryson said. "Literally."

In the mid-1990s, the trucks would dump roughly 85,000 tons of salt on Oakland County roadways in a typical year. Using the new strategies, they now dump around 65,000 tons, Bryson said.

Ideas for cutting salt use

Likewise, the Detroit Department of Public Works tries to avoid wasting salt by pre-treating its salt to limit runoff and monitoring weather and road conditions to determine how much to use, said department Deputy Director Dayo Akinyemi. The department also "manages how fast our vehicles are going" to limit how much salt bounces and scatters off the roadway, Akinyemi said.

Road salt pollution is an issue throughout the Midwest, said Eric Diesing, Clinton River Watershed Council watershed ecologist.

"It's heavily tied to land use," Diesing said. "Obviously, in a more urbanized environment, you're going to have larger amounts of road salt being applied."

The Clinton River snakes through heavily developed parts of Oakland and Macomb counties before it reaches Lake St. Clair. That means it's pretty salty.

Using road salt has the clear benefit of keeping roads safe for drivers in wintry conditions, Diesing said. He doesn't expect people or road crews to quit using it, but suggested they take steps to prevent using more than they need to.

Kendall, Paine and Diesing all offered ideas for reducing salt use, including shoveling more frequently, using higher quality salt, salting before storms and using plant-based alternatives, if available.

"Reducing the amount of salt that's put on driveways and sidewalks is an important step," Diesing said. "We have over 1.5 million people living within our (Clinton River watershed) boundary. That's a lot of homes."

How lakes, oceans compare

Although scientists throughout the region have tracked an uptick in chloride levels, the Great Lakes are far from becoming saltwater, MSU's Kendall said.

Lake Michigan has about 15 milligrams of chloride per liter, Kendall's study found. He estimated Lake Erie contains twice as much. Sea water has roughly 35,000 milligrams per liter, or at least 1,000 times more than Lake Erie.

"The major concern comes in when you have intensively salted roads in major urban developments. ...Especially if they're not on wastewater treatment but rather they rely on septic systems and water softeners, you can get places where lakes and wetlands especially get very salty," Kendall said. "Like 1,000 milligrams per liter. That's where harms start to occur."

Wetlands are particularly inclined to capture chloride, the MSU expert said, which could threaten the critters that live there, especially the ones at the base of the food web.

"It can threaten or change ecosystems by altering the bottom rung of the ladder," Kendall said. "I think that's the main concern here, starting to change those conditions from something these ecosystems have adapted to for hundreds or thousands of years."

ckthompson@detroitnews.com