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Debbie Carlson filled up a bottle of water on one of her properties near Red Wing, Minn., on Thursday, December 6, 2012, to bring back to her Hastings home for drinking and cooking. Carlson has high nitrate levels in her well water so every other day she drives for 20 minutes to collect her drinking water.

Renee Jones Schneider, Star Tribune

A top 10 'dead zone'

The size of the Gulf of Mexico's "dead zone" varies year to year. Scientists are predicting that the 2013 zone could span up to 8,500 square miles, putting it among the 10 largest zones ever recorded. To learn more, go online to the National Oceanic and Atmospheric Administration at <http://www.startribune.com/a2351>.

Minnesota's role in nitrate pollution

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Doug Albin's concern about nitrogen fertilizer runoff from his fields, and his curiosity about solutions, led to recent additions to his 1,200-acre Yellow Medicine County farm: two experimental nitrate reduction systems.

Bordering one parcel of land is a "biofilter" — a trench 10 feet wide by 60 feet long partly filled with wood chips and microbes that clean water of nitrogen compounds. In another area, an improved type of vegetative buffer system allows plants to consume these compounds in water routed to it from drainage tile. The treatment capacity of both systems: about 40 acres of land.

It's too soon to gauge definitively how effective these systems are and how they might be scaled up. But a [new state report](#) providing a painfully honest look at the magnitude of Minnesota's nitrate pollution in surface waters and where the pollution comes from — more than 70 percent is linked to cropland — makes it clear that broad solutions are swiftly needed and that farmers across the Midwest need to follow Albin's lead in shouldering responsibility for finding them.

At stake: the safety of the state's drinking water and the health of fish and other aquatic life in its rivers and streams. And far downstream, the future of the Gulf of Mexico, where the oxygen-deprived "[dead zone](#)" is linked to nitrogen compounds carried to it from the agricultural heartland via the Mississippi River.

Nitrogen is commonly added to fields through anhydrous ammonia or manure applications. Sewage systems, urban runoff and natural sources also contribute to levels found in the environment. High levels in waterways can be toxic to aquatic life. Unsafe drinking water levels may be linked to a higher risk of "blue baby syndrome."

One of the new report's most disturbing findings: that 27 percent of Minnesota waterways are too contaminated to be used as drinking water. Minnesota is also one of the largest contributors of nitrogen to the Gulf, according to the report.

Lawmakers at the state and federal levels need to scrutinize the landmark Minnesota report and get engaged. Changes to combat nitrate pollution from farmland will be difficult and expensive, with no one solution eradicating the problem. Escalating public dollars will be needed to spur further innovation and implementation.

Farm policy should also be geared toward reducing pollution stemming from current practices instead of rewarding production-heavy practices that exacerbate it. While that's a tall order given the agriculture industry's lobbying clout and Congress's inability to pass the current farm bill, the new study is more compelling evidence that this high-level discussion has to occur. "This report should make it clear that we needed a cultural shift in our agricultural practices, what we grow and how we are growing it," said Minnesota's Freshwater Society, a respected conservation advocacy group, in a statement.

The report, released by the [Minnesota Pollution Control Agency](#) in late June, may well be the most comprehensive nitrate pollution review ever done in Minnesota. It's also gutsy work by a state agency because it carefully but accurately tags the powerful agricultural industry, which is exempt from the federal Clean Water Act, with much of the responsibility for a big problem. Good science trumped political blowback fears, which reflects well on the MPCA's leadership and Gov. Mark Dayton's administration.

The report does have one weakness. It is missing more-detailed information about the actual and potential downstream costs of nitrogen pollution — such as public health costs and municipalities' added water treatment expenses to reduce nitrate pollution. Some small Minnesota communities already do this, and several of Iowa's largest cities have recently grappled with it as well.

The report also doesn't lay out policy solutions, because its mission was to define the problem. Minnesota lawmakers need to launch that arduous process to find solutions. A legislative hearing would be a good first step.

That would give agriculture a chance to highlight voluntary changes it has already made to reduce nitrogen fertilizer use and to air concerns about the costs of pollution controls. Legislators, meantime, need to draw on the Capitol staff's research expertise to gather data about downstream costs. The upcoming debate shouldn't just be about the cost of taking action. It also must accurately weigh the cost of inaction.

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