

Conservation Corner for April 19, 2016

How's Your Water Quality?

By Jodi Venema DeHate

Missaukee & Wexford Conservation District

Water Quality – it's been on everyone's mind since the Flint water crisis news came out. One of the things that the Michigan Agriculture Environmental Assurance Program (MAEAP) works with farmers and landowners on is how to protect our drinking water. Technicians work with people on prevention techniques, and offers free screening of water wells for the nitrate and nitrite forms of nitrogen.

Jodi DeHate, the MAEAP technician covering Wexford County, will be conducting free nitrate/nitrite screenings at the Wexford Conservation District tree sale on April 22 from 9 a.m. until 5 p.m. The tree sale will be held at the Beef and Swine Livestock Barn on the Wexford County Fairgrounds. Jodi will also be doing this at the Missaukee Conservation District's tree sale on April 29 at the Missaukee County Road Commission from 9 a.m. until 5 p.m.

What are Nitrates and Nitrites?

Nitrates and nitrites comes from nitrogen. Nitrogen is one of the main building blocks of plants and without nitrogen, crops and other plants will grow poorly or not at all. Nitrates and nitrites are easily soluble, and excess amounts of them can move quickly down through the soil into the groundwater, especially if the soil is sandy. Background levels of these forms of nitrogen can be found in most drinking water supplies. However, when levels exceed 10 parts per million, they can pose a health risk.

Where do they come from?

Nitrogen occurs naturally in the soil in organic forms from decaying plant and animal materials. It is also applied as a fertilizer in crop production, on lawns, and in garden areas. When found in groundwater, the source could be anything from sewage disposal systems, livestock facilities, fertilized cropland, parks, golf courses, lawns, or gardens.

Why be concerned?

Nitrates and nitrites in concentrations above 10 parts per million can affect babies, nursing mothers, pregnant women, and the elderly by tying up oxygen in the blood. This results in the oxygen that we breathe being unavailable for our bodies to use. Most people's bodies can work around this problem by converting that tied up oxygen back into usable oxygen again. However, infants under 6 months of age and some elderly individuals cannot. When it effects infants, this condition is commonly referred to as "Blue Baby Syndrome."

How to detect Nitrates and Nitrites

These chemicals are colorless, odorless, and tasteless so the only way to find out if there are in your water is to test it. The MAEAP program provides a free screening for private water wells in the form of a quick strip test. This service is for private drinking water wells only, as public water supplies are tested regularly. Please do not bring samples from public water supplies or non-drinking water sources. If the results from this quick strip test indicate high nitrogen levels

in your water, you will be provided with information on how to get a more accurate and detailed water test done through the local health department.

How to take a sample

If you are interested in a water test, please take a fresh water sample from your well. It is important that the water has *not* been run through a water softener. To make sure that the sample is fresh, let the water run until the pump kicks on. Samples should be taken in a clean glass jar and brought to Jodi during those times listed above. When you arrive, you will be asked to fill out a form so that the state of Michigan can send you official results. The form will ask you questions such as the depth, diameter, and age of the well, type of soil in the area, and what agricultural operations are located near the well.

Test results and what to do

If your water supply test results come back with high nitrates, there a couple of things you can do that won't mean automatically drilling a new well. A homeowner can install a reverse osmosis system in the home to remove most of the nitrates. Working with a professional to help you tweak the new system will be important. Another option is to install an ion exchange system. This system is similar to a water softener except that the special resins are present in the system to collect the nitrates. Drilling a new well is the last option and probably the most expensive option to remove nitrates from your water. Older wells tend to be shallower than new wells, and by going to a deeper well that taps into another aquifer, a homeowner will likely not have a nitrate issue.

Prevention is the best option

Luckily there are technologies and techniques that can prevent the movement of nitrogen into the groundwater. For farmers, having a nutrient management plan is key. These plans help to match nitrogen applications with crop needs, and thus benefit the farmer money by reducing fertilizer costs and reducing the risk of contaminating the groundwater. The plans include manure as well as fertilizer applications. Additionally, there are specialized fertilizers available that can slowly make the nitrogen available to plants, which reduces the chance that it will move down to the groundwater. Other items to consider are the number of animals concentrated in a pasture or feedlot, the location and design of fertilizer storage and mixing areas, and the location of septic drain fields.

Jodi Venema DeHate is the Michigan Agriculture Environmental Assurance Program (MAEAP) technician serving Missaukee, Wexford, Kalkaska, and Crawford counties. She assists farmers and landowners with the stewardship of their natural resources. Jodi can be reached by calling 231-839-7193, or by email at jodi.dehate@macd.org

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Below are copies of the photos that should be printed with this article, along with the appropriate captions. These photos were sent as separate .jpeg files – they are included here so that you can see the photos together with their captions.



Americorps member Alex Hayes demonstrates how to take a water sample from a household sink.



These nitrate test strips will be used to screen private water well samples brought to both the Wexford and Missaukee Conservation District's tree sales.



People whose water samples test high in nitrates will be referred to the local health department for further assistance. From left to right: Susan Trinklein, Mike Winkelmann, and Abby Maury are shown with the water sampling kit from District Health Department #10 in Lake City.