

NITROGEN FERTILIZER MANAGEMENT PLAN



The Minnesota Department of Agriculture (MDA) is the lead agency for nitrogen fertilizer use and management. The Nitrogen Fertilizer Management Plan (NFMP) outlines how the MDA addresses elevated nitrate levels in groundwater. This fact sheet explains the state's approach to preventing and responding to nitrate contamination of groundwater from nitrogen fertilizer use.

Nitrate-nitrogen (nitrate) is one of the most common contaminants in Minnesota's groundwater. The majority of Minnesota households have access to safe drinking water supplies. However, in some areas public and private wells may have high nitrate levels. Too much nitrate in drinking water can pose serious health concerns for humans. Health risks are most severe for infants.

Although nitrate occurs naturally, it can also come from man-made sources such as human waste, animal manure and commercial fertilizer. Nitrate that is not used by plants (crops, lawns, trees) is easily moved by water through the soil into groundwater in vulnerable areas. The ability for water and nitrate to move into groundwater depends on soil type and geology. Nitrate levels in groundwater vary across Minnesota and can often change within a localized area.

Areas where nitrate can easily move through soil and into groundwater are referred to as vulnerable or sensitive areas. Regions of Minnesota most vulnerable to nitrate contamination are central and southeastern Minnesota. Central Minnesota is vulnerable because of widespread sandy soil. Regions of southeast Minnesota are vulnerable because of shallow fractured bedrock and sinkholes (referred to as karst geology), which water can move through quickly.

NFMP DEVELOPMENT

In 2010, the MDA began the process of revising the 1990 NFMP. The MDA assembled an Advisory Committee with 18 members and hosted 18 Advisory Committee meetings between 2011 and 2012. The MDA held a public comment period before releasing the final version of the NFMP in 2015.

THE NITROGEN FERTILIZER MANAGEMENT PLAN:

- Emphasizes involving local farmers and communities in problem-solving for local groundwater concerns when nitrate from fertilizer is a key contributor.
- Lays out an approach for testing current nitrate levels in private wells. Public wells are monitored by the Minnesota Department of Health.
- Includes activities to protect public and private drinking water wells.
- Promotes nitrogen fertilizer best management practices (BMPs) to minimize groundwater impacts.
- Promotes vegetative cover and other practices beyond the use of BMPs.

THE NFMP OUTLINES THREE MAJOR ACTIVITIES

1. Prevention

Preventing nitrate from entering groundwater is key - once a problem occurs it is much more expensive and challenging to address. The MDA promotes nitrogen fertilizer BMPs and provides input to local water plans to prevent groundwater problems from occurring. In highly vulnerable areas, the MDA will work with the local agricultural community to explore the use of cover crops, forage crops and other land management alternatives on sensitive fields. Also, the MDA has established a Nitrogen Fertilizer Education and Promotion Team that will help coordinate prevention activities. Members of this team include representatives from University of Minnesota Extension, fertilizer retailers, agronomists and other state agencies.

2. Monitoring and Prioritization

The first step in addressing nitrate in groundwater is to determine the areas of greatest concern. Areas of concern will be identified using water monitoring data from private and public wells.

- The MDA is testing private drinking water wells on a township scale or using existing monitoring data to identify areas with nitrate concerns. The MDA plans to offer nitrate testing to more than 70,000 private well owners in over 300 townships by 2019. The MDA will inspect wells with high nitrate levels to sort out well construction issues or other contributing sources of nitrate such as septic tanks. This work will be done in partnership with homeowners and local governments across the state. For more information visit: www.mda.state.mn.us/townshiptesting
- The MDA is partnering with the Minnesota Department of Health to identify public wells with nitrate concerns.

3. Mitigation

The NFMP outlines a process to respond to and address areas with elevated nitrate in groundwater. This work is done in partnership with crop consultants, farmers, local advisory teams and other community members.

GROUNDWATER PROTECTION RULE

The MDA has developed a rule which restricts fall application of fertilizer and application to frozen ground in vulnerable areas. The rule also has a process for responding to public wells with elevated levels of nitrate.

FOR ADDITIONAL INFORMATION VISIT

Nitrogen fertilizer BMP
www.mda.state.mn.us/nitrogenbmps

Proposed Groundwater Protection Rule
www.mda.state.mn.us/nfr

CONTACT

Larry Gunderson
larry.gunderson@state.mn.us
651-201-6168

www.mda.state.mn.us/nfmp

The goal is to involve local farmers and agronomists in problem-solving to address elevated levels of nitrate in groundwater.