

## WHY ARE EXCESSIVE NUTRIENTS A THREAT TO DRINKING WATER SUPPLIES?

When excessive amounts of nitrogen are applied to crops, nitrogen can be leached into our groundwater and cause high levels of nitrates. Leaching rates of nitrates is directly related to the geology and how fast water at the land surface infiltrates into the groundwater. This is particularly true in the sandy soil, karst topography and high groundwater areas of the state.

The primary health concern from nitrates is for infants under the age of six months. If infants consume high concentrations of nitrates in their drinking water or water used to make formula, the hemoglobin in their blood may be oxidized and may not be able to carry sufficient oxygen. The result can be “blue baby syndrome” or methemoglobinemia and if prompt medical attention is not received, death can result.



The City is working cooperatively with area landowners and agricultural professionals to help keep groundwater and drinking water supplies safe.

## WHAT CAN YOU DO TO PROTECT DRINKING WATER SUPPLIES?

- Develop and follow a yearly plan based on conducting soil tests to determine the nutrient needs of the crop.
- Apply the nutrients at recommended University of Minnesota agronomic rates.



- Note the source of the nutrients; commercial fertilizers, manure or other bio-solids, legumes or irrigation water as well as residual nutrients in the soil.
- Keep good records on the rate, method and timing of all nutrient applications since this will help compare the expenses and returns from year to year.
- Give proper consideration and credit to manure fertilizer sources.



- Banding, side-dressing and injection are examples of methods to place nutrients where they are most likely to be used by plants. Cover crops or green manures can be used to similar effect; they help nutrients stay in the soil where plants can use them.
- Tailor nutrient application rates to the needs of each soil type rather than using the same rate across an entire field whenever possible.
- Examples of strategies related to timing include (1) splitting the total amount of fertilizer into two or more applications during the growing season, and (2) avoiding fall application of nitrogen altogether (i.e., applying it in the spring, closer to when crops need it). The latter is especially important in SE Minnesota where fractured bedrock (karst geology) increases the risk of nitrates leaching into groundwater.



### **WHY PRACTICE NUTRIENT MANAGEMENT ON YOUR FARM?**

- Enhances profitability by significantly reducing purchased fertilizer costs.
- Protects groundwater and drinking water supplies.
- Aids compliance with Minnesota feedlot regulations, which limit manure application rates.
- Improves soil quality and productivity by increasing nutrient retention, water holding capacity and soil structure.
- Helps protect public health when nutrient application occurs near municipal or domestic wells, residences, businesses, schools and public lands.

### **WHERE CAN I GET ADDITIONAL INFORMATION?**

Detailed information can be obtained by visiting the MN Dept. of Agriculture, University of MN Extension Service and the Natural Resource Conservation Service websites or by visiting with staff from your local U.S. Department of Agriculture Service Center.

<http://www.mda.state.mn.us/index.htm>

<http://www.mda.state.mn.us/protecting/bmps/nitrogenbmps.htm>

<http://www.extension.umn.edu/index.html>

<http://www.mn.nrcs.usda.gov/>

City Contact Info:



[www.mrwa.com](http://www.mrwa.com)



### **WHAT IS NUTRIENT MANAGEMENT?**

Nutrient management for crop production involves using nutrients (manure and / or commercial fertilizers) as efficiently as possible to both increase plant productivity and protect the environment. Nutrients that are not effectively utilized by crops have the potential to leach into groundwater. Applying fertilizers at the correct agronomic rate in relation to the crop grown and setting realistic yield goals reduces the likelihood of excess nutrients from negatively impacting groundwater and drinking water supplies.

