

## Protecting Your Groundwater Through Farmstead Assessment: Assessing Your Petroleum Product Storage Practices

AE-1078, July 1998

**John Nowatzki**, Water Quality Associate  
**Bruce Seelig**, Water Quality Specialist  
**Thomas Scherer**, Agricultural Engineer

Fuel storage tanks are commonly found on farmsteads throughout North Dakota. Many people, however, don't realize that these tanks are a potential source of groundwater contamination. A fuel storage tank leaking at a rate of one drop per second can lose almost 250 gallons of fuel in one year and could contaminate over a billion gallons of water or 375 water towers containing 500,000 gallons of water each.

This circular contains a brief discussion of each question on the Farmstead Assessment checklist, and a section discussing what you can do and who to call if you answer "Yes" to any of the questions.

### **1. Do you have an underground fuel storage tank?**

Underground fuel storage tanks have a life expectancy of 15 to 20 years. The potential for leaks increases with tank age. Special management practices for underground tanks are described in Section 5 of the publication.

### **2. Do you have a fuel storage tank less than 20 feet from your well?**

The most important consideration of your liquid petroleum storage tank location is how close it is to your drinking water well. Currently, there are no requirements in North Dakota regarding minimum distances between a well and fuel storage tanks. In Minnesota, for example, state regulations require that a new water well be at least 20 feet from any existing fuel storage tanks. Putting distance between your well and your fuel storage tanks helps protect your water supply from both leaks and spills.

Fuel storage tanks, whether they are aboveground or underground, should be located down-slope from your well. Your fuel storage tanks also should be located away from areas of heavy traffic that could damage underground tanks.

### **3. Do you have a fuel storage tank, of any type, more than 15 years old or a bare steel fuel storage tank more than 3 years old?**

As fuel storage tanks age, the chance of leaks developing increases. Underground storage tanks have a life expectancy of 15 to 25 years. Fuel storage tanks are made out of a variety of materials, the most common of which is uncoated steel. Uncoated steel tanks offer no protection against corrosion. Highly corrosive conditions such as saline, wet, or acid soils can significantly increase the rate of corrosion of underground metal tanks and piping.

#### **4. Have you failed to inventory your fuel use or check your fuel storage tanks for leaks?**

Regularly monitoring your fuel use and comparing it to the measured amount of fuel in the tank can discover leakage. This is one of the easiest ways to prevent groundwater contamination. Monitoring your fuel use does not require a big expenditure of time or money and can help you detect a leaking fuel storage tank before significant losses of fuel occur.

An easy way to monitor your fuel use is to have a stick on which you determine the level of fuel in your storage tank. You need to check the level of fuel in the tank before you withdraw fuel, to make sure the level in the storage tank has not changed since your last use. If the level changes between withdrawals, then your tank may be leaking.

#### **5. Is protection against leaking or spills from your fuel storage tanks lacking, i.e., no catch basin or concrete catch pad and containment?**

A concrete or other non-permeable containment area that will hold the contents of your fuel storage tanks is cheap insurance compared to cleaning up a fuel leak. For new underground tanks, a high liquid level protection device can be installed. This allows for careful monitoring of fuel levels. For existing underground tanks, regular monitoring as mentioned above is your only option for groundwater protection.

##### **Underground tanks:**

All underground storage tanks should be coated to prevent corrosion. There are basically three different types of protective measures that can be taken:

- Using a fiberglass tank instead of a uncoated steel tank. However, fiberglass tanks may not be suited for alcohol-blended fuels.
- Coating a steel tank with a layer of non-corrodible material, such as fiberglass-reinforced plastic.
- "Cathodic protection." A common type of cathodic protection uses sacrificial anodes attached to the underground tank. Sacrificial anodes are pieces of metal more electrically active than the bare steel tank. Because the anodes are more active, they are attacked and corroded instead of the metal in the tank. Therefore, the storage tank is protected from corrosion until the attached "anode" is depleted.

##### **Aboveground tanks:**

All aboveground tanks should be made of high quality steel. Above-ground tanks must be approved and built to the specifications and tolerances developed by the Underwriters Laboratories, Inc. Tanks that are used and designed for underground storage should NEVER be used above-ground. Underground storage tanks used for aboveground storage can easily fail, because the structural support provided by

the soil does not exist aboveground.

### **Tanks no longer in use:**

Tanks that are to be out of service for extended periods of time should be removed if feasible. This is also a good way to determine if a tank has been leaking.

The tank should be emptied before removal. Dig a hole large enough to allow you to easily lift the tank out of the ground.

After removal, check the hole and the tank for any signs of leakage. Make sure vapor and sludge are removed from the tank before it is cut or transported to a scrap dealer.

Owners and operators should always notify the State Department of Health and Consolidated Laboratories - Division of Waste Management and local fire officials before removing an underground storage tank.

## **Leaks and Spills**

All leaks and spills should be dealt with immediately. For help, call the North Dakota State Department of Health, Division of Waste Management, at (701) 328-5166.

If you have questions concerning underground storage tank rules, call the North Dakota State Department of Health, Division of Waste Management, at (701) 328-5166. Aboveground fuel storage tank regulations and standards are mandated through the North Dakota Office of the Fire Marshal, at (701) 328-5390.

Underground storage tank regulations in North Dakota do not apply to farm or residential tanks of 1,100 gallons or less capacity that are used for storing motor fuel for noncommercial uses. However, this does not release individuals from the legal accountability for environmental damage that may result from leaking storage tanks. All clean-up costs for leaking tanks are still the responsibility of the owner. It is in the best interest of every storage tank owner to follow good management practices.

Any underground storage tank greater than 1,100 gallons capacity (commercial or noncommercial use) must be registered with the North Dakota State Insurance Department - Petroleum Tank Release Compensation Fund.

Any aboveground storage tank used for noncommercial purposes may also be registered (regardless of size). This registration is not mandatory. However, registration qualifies the owner for financial assistance if a leak causes environmental damage. For further details regarding tank eligibility and procedures, contact the North Dakota State Insurance Department at (701) 328-4903.

## **Assessing Petroleum Product Storage Practices**

-----  
 If you  
 answered  
 "Yes" to the  
 following  
 questions

What you  
 should do

Who to call

Other  
 references

-----  
 Question 1. Consider removing  
 your underground  
 fuel storage North Dakota  
 Department of Health.  
 (701) 328-5166. North Dakota  
 Underground  
 Storage Tank

	facility. Carefully monitor fuel levels in the tank.		Rules. North Dakota Department of Health.
Question 2.	Consider moving your fuel storage facility. Carefully monitor fuel levels in the tank.	North Dakota Department of Health. (701) 328-5166.	North Dakota Underground Storage Tank Rules. North Dakota Department of Health.
Question 3.	Find out how old the tank is and what material it is made from. Monitor fuel levels to detect leakage.	EPA (Region 8 Denver) Regional office about U.S. EPA rules. (303) 293-1514.	Musts for USTs: A Summary of the New Regulations for Underground Storage Tank Systems. U.S. EPA.
Question 4.	Start monitoring fuel use with a stick.	North Dakota State Insurance Department, Division of Tank Release Fund about Reimbursement, liability and insurance for cleanup costs.	Handling and Underground Storage of Fuels. WQ01, Michigan State University, Extension Service. (Available through NDSU Extension Ag & Biosystems Engineering Office, Fargo).
Question 5.	Construct a catch basin for aboveground tanks and monitor underground tanks for leakage.	Local county Extension office for plans of a catch basin or pad.	Underground Fuel Storage Tanks: Tips For Farmers and Homeowners. WQ37, Michigan Extension Service. (Available through NDSU Extension Ag & Biosystems Engineering Office, Fargo).

**AE-1078, July 1998**

County Commissions, North Dakota State University and U.S. Department of Agriculture cooperating. North Dakota State University does not discriminate on the basis of race, color, national origin, religion, sex, gender identity, disability, age, status as a U.S. veteran, sexual orientation, marital status, or public assistance status. Direct inquiries to the Vice President for Equity, Diversity and Global Outreach, 205 Old Main, (701) 231-7708. This publication will be made available in alternative formats for people with disabilities upon request, 701 231-7881.

**INFORMATION ACADEMICS RESEARCH EXTENSION PUBLICATIONS CALENDAR WEATHER DIRECTORY**

[Information for Prospective Students](#)

NDSU is an equal opportunity institution

This information may be photocopied for noncommercial, educational purposes in its entirety with no changes. Requests to use any portion of the document should be sent to [NDSU.permission@ndsu.edu](mailto:NDSU.permission@ndsu.edu).  
North Dakota State University Agriculture and University Extension  
Dept. 7070, Morrill 7, P.O. Box 6050, Fargo, ND 58108-6050