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# Iowa Farm\*A\*Syst

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*A Farmstead Assessment System*

## Assessing Your Petroleum Storage & Management



*Simple*

*Confidential*

*Accurate*

## What is Iowa Farm\*A\*Syst?

Iowa Farm\*A\*Syst is a farmstead assessment system developed to assist rural residents in protecting their water resources, particularly their drinking water. Individuals can tailor the Iowa Farm\*A\*Syst program to meet their needs by choosing specific topics that fit their farmstead or acreage. The Iowa Farm\*A\*Syst program is based on a series of 12 publications, including the following:

- Assessing Your Farmstead Characteristics (EDC 264)
- Assessing Your Water Well Condition & Maintenance (EDC 265)
- Assessing Your Household Wastewater Management (EDC 266)
- Assessing Your Open Feedlot Manure Management (EDC 267)
- Assessing Your Confinement Livestock Manure Management (EDC 268)
- Assessing Your Milking Center Wastewater Management (EDC 269)
- Assessing Your Dead Animal Management (EDC 270)
- Assessing Your Pesticide Storage & Management (EDC 271)
- Assessing Your Fertilizer Storage & Management (EDC 272)
- Assessing Your Petroleum Storage & Management (EDC 273)
- Assessing Your Hazardous Materials Storage & Management (EDC 274)
- Assessing Your Emergency Response Planning for Manure Spills (EDC 328)

Each publication gives you a brief background on the subject and an assessment worksheet to evaluate on-farm practices affecting water quality. Also included are references to Iowa environmental laws and contact information for technical advice.

## Why should I use the Iowa Farm\*A\*Syst materials?

Seventy-five percent of Iowans get their drinking water from groundwater sources. These sources include private wells, in addition to municipal wells and rural water sources. If your drinking water comes from a private well, you have good reason to be concerned about the quality of your drinking water. A 1990 statewide survey of rural well water found that 45 percent of private wells are contaminated with coliform bacteria, 18 percent contain unsafe levels of nitrate, and 14 percent contain pesticides. The Iowa Farm\*A\*Syst publications help you to determine what environmental risks could threaten your family's health and financial security and suggest the resources to help make necessary changes.

## How do I start assessing my farmstead?

The 12 Iowa Farm\*A\*Syst publications are each designed to be stand-alone publications. However, the first step to assessing your farmstead should be to draw a map of the area, labeling any potential sources of contamination. *Iowa Farm\*A\*Syst Assessing Your Farmstead Characteristics* can help you get started. Every farmstead is unique. You need to evaluate your farmstead's site characteristics to determine the potential for groundwater and surface water contamination. You cannot change the features of your farmstead, but once you are aware of them you can modify your activities to minimize the potential for groundwater contamination. After you have mapped your farmstead, consider what management decisions may be affecting the quality of your water resources. This process will help you to prioritize which of the other Iowa Farm\*A\*Syst assessments you may want to complete.

**For more information or to download additional Iowa Farm\*A\*Syst publications, visit [www.iowafarmasyst.com](http://www.iowafarmasyst.com)**

**or**

**Contact Rick Robinson, Iowa Farm Bureau  
(515) 225-5432**

**Publications are also available through the Iowa State University Extension Distribution Center at [www.extension.iastate.edu/store/](http://www.extension.iastate.edu/store/) or 515-294-5247.**

# Petroleum Storage and Management

One gallon of fuel, or other petroleum product, is enough to contaminate 750,000 gallons of ground water. At low levels, humans may not be able to taste or smell petroleum contaminants in water – even at levels where human health is affected! In addition, vapors from an underground fuel leak can collect in basement sumps or other underground structures and cause explosions.

Storing liquid petroleum products, such as motor fuels, heating fuels, and fuel and lubricating oils can be a threat to your health and the environment. Petroleum fuel products contain toxic compounds that can potentially cause cancer. Contamination of groundwater and surface water by petroleum is one of the most serious environmental pollution problems because of adverse affects on human health and high clean up costs. Fortunately, preventing petroleum contamination of surface and groundwater can be easily achieved by following fuel tank regulations.

The Iowa Farm\*A\*Syst *Petroleum Storage and Management* publication will help you determine if:

- Your petroleum fuel storage and handling practices are conducted in a manner that will protect your drinking water.
- You are following existing state rules for aboveground storage tanks and underground storage tanks.

This publication will provide information on tank location, design, installation, monitoring for leaks, tank removal and closure requirements.

**NOTE: This publication does not summarize all laws related to petroleum storage and management. Due to the complexity of Iowa law, Iowa Department of Natural Resources (DNR) rules, State Fire Marshall rules, and Federal Environmental Protection Agency (EPA) rules, you are advised to contact the DNR or Fire Marshall's office if you have additional questions. Contact information is located in the "For More Information" section in the back of this publication.**

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A small gasoline leak of one drop per second can often go unnoticed, but it could result in the release of about 400 gallons of gasoline in one year.

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One gallon of fuel is enough to contaminate 750,000 gallons of ground water and severely pollute drinking water.

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The Iowa Department of Natural Resources regulates underground storage tanks. The Iowa State Fire Marshal and Environmental Protection Agency regulate aboveground storage tanks.



## “I have a fuel tank standing in my yard. Am I required to do anything special with it?”

### Aboveground Storage Tanks

An aboveground storage tank is defined as a petroleum storage tank installed above ground. Many farms and acreages keep fuel for vehicles and tractors on site and it is often stored in aboveground tanks.

The Federal EPA and Iowa State Fire Marshall require that all aboveground storage tanks must:

- Be approved by the Underwriters Laboratory (UL) or an equivalent rating system.

- Have an external gate valve, emergency internal check valve and emergency venting.
- Be at least 40 feet from any building.

Additionally, tanks of varying sizes have different minimum requirements. Answer the following questions to determine if your aboveground storage tank meets the

### Additional requirements for Aboveground Tanks

Do you...

NO YES

...have a tank with capacity more than 1,100 gallons?

If you answered YES to the above question, you are required to:

- Register that tank with the State Fire Marshall.
- Receive approval from the State Fire Marshall for additional installations and any modifications made to the tank.
- Have secondary containment.
- Abide by additional regulations as required by some local jurisdictions (full-time fire departments).

Do you...

NO YES

...have a total aboveground petroleum (new oil, used oil, and fuel in containers larger than 55 gallons) capacity of 1,320 gallons or more?

If you answered YES to the above question, you are required to have a Spill Prevention Control and Countermeasure (SPCC) plan. Adequate means of secondary containment are required as part of the SPCC plan.

## Spill Prevention Control and Countermeasure Plan (SPCC Plan)

A SPCC plan ensures that appropriate measures have been taken to reduce the risk of any petroleum product reaching surface waters in the event of a spill. The plan must clearly address operating procedures that prevent oil spills; control measures installed to prevent a spill from reaching surface water bodies; and countermeasures to contain, clean-up and mitigate the effects of an oil spill. SPCC plans must be prepared by a Registered Professional Engineer. For more information, contact EPA, as listed in the “*For More Information*” section in this publication.

## Secondary Containment

Secondary containment is a safety measure designed to prevent petroleum leaks and spills from contaminating the environment before they can be cleaned

up. Secondary containment structures consist of a hard impermeable surface with diking or a double walled tank system. The structure should hold at least 110 percent of the tank volume and provide liquid tight protection. Piping should be made of steel and coated to prohibit corrosion. All piping should be within the secondary containment system, if possible.

Secondary containment also simplifies petroleum clean-up. If water has collected in your secondary containment structure, and no petroleum film is present, the water can be drained. If a fuel film is present, purchase absorbent pillows at your local ag supply store or petroleum dealer. Use the pillows to remove the film before draining the water. Remove debris like sticks and leaves as they collect in the containment structure to simplify emergency clean out.



## “I have a buried fuel tank. Am I required to do anything special with it?”

### Underground Storage Tanks

An underground storage tank is a tank and associated piping with 10 percent or more of its volume below ground. Any underground tank containing a regulated substance is subject to state requirements for underground storage tanks. Examples of regulated substances include gasoline, diesel fuel and waste oil. Tanks used for storing heating oil, if used on the premises, are not subject to underground tank requirements. However, heating oil tanks can be a threat to your health and the environment. Proper tank maintenance and management is

recommended. Check with the local fire inspector for local ordinances concerning home heating oil tanks.

Owners of regulated underground storage tanks are required to register their tanks with the DNR. Tanks registered with the Department are issued small metal registration tags that must be attached to the tank fill pipe. Tanks without registration tags cannot be filled by petroleum suppliers. Answer the following questions to determine if your underground storage tank meets the minimum requirements.

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All underground storage tanks (except heating oil tanks) must have an **annual or permanent registration tag** from the DNR affixed to the fill pipe.

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## Additional Requirements for Underground Storage Tanks

Do you... NO YES  
...have an underground tank with capacity more than    
1,100 gallons?

If you answered YES to the above question, you are required to have an annual tag attached to the fill pipe by April 1 of each year. These tanks should have been upgraded prior to December of 1998 or be permanently closed.

Do you... NO YES  
...have an underground tank that was installed *before* July 1,    
1987 with capacity equal to or less than 1,100 gallons?

If you answered YES to the above question, you are required to register the tank with the DNR if it is used for farm or residential service. These tanks should have been upgraded prior to December of 1998 or be permanently closed.

Do you... NO YES  
...have an underground tank that was installed *after* July 1,    
1987 with capacity equal to or less than 1,100 gallons?

If you answered YES to the above question, you are required to have a permanent tag attached to the fill pipe before it can receive fuel. These tanks should have been upgraded prior to December of 1998 or be permanently closed.



### “What is required to upgrade my underground storage tank?”

#### Upgrading Underground Storage Tanks

Upgrading an underground storage tank improves the ability of the system to prevent a spill or release. DNR requires that all regulated (refer to blue boxes above) underground storage tanks be upgraded prior to December of 1998 or be permanently closed. Options for

upgrading include the addition or retrofit of an underground storage tank with cathodic protection for corrosion prevention, interior lining, or spill or overfill controls. Contact your regional DNR Field Office (listed on page 9 of this publication) for more information on upgrading an underground storage tank.



## “How do I install a new underground storage tank?”

### New Underground Storage Tanks

For new tanks, proper installation is key to minimizing leaks. Even scratches in a metal tank, caused by careless installation, can increase corrosion and tank deterioration. It is very important that you select an experienced or certified tank installer to install your new underground tank. The lowest job bid may not be the best if the tank installer is inexperienced or careless.

You must notify the Iowa DNR of your intent to install an underground storage

tank at least 30 days prior to installation of the tank. After installation, you have 30 days to register the tank with DNR. Proof of pollution liability insurance or some other proof of financial ability to address potential contamination to the environment is also required.

After you register your underground storage tank with the DNR and submit proof of financial responsibility, the Department will issue registration tags that must be attached to the tank fill pipe before the tank can be filled.



## “Where should I locate new aboveground or underground tanks?”

### Aboveground and Underground Storage Tank Location

The location of an aboveground tank or underground tank is very important. You are legally required to:

- Locate a petroleum storage tank and fueling area at least 100 feet down slope from wells, bodies of water, ag drainage wells, unused cisterns and unplugged abandoned wells.

- Locate aboveground tanks 40 feet from all buildings.

To protect surface water and groundwater from contamination it is best to also follow these recommendations:

- Locate petroleum tanks away from high vehicle traffic areas.

- Never locate tanks in flood plains or areas where the water table is close to the surface.

- Locate aboveground storage tanks on a waterproof-surface such as concrete or one of the newer synthetic fabrics. Spill and overfill collection devices, such as secondary containment structures or dikes, must be liquid tight.

- Securely anchor aboveground storage tanks to prevent displacement. This is especially important in areas such as a hillside.



## “How do I properly remove an old underground storage tank?”

Underground tanks that have been removed cannot be used to store food, a regulated product, petroleum or hazardous substances.

### Underground Storage Tank Removal and Closure

Tanks no longer in use can cause problems for owners and operators many years later. Unused tanks are likely to corrode, causing residual fuel to leak and leach into groundwater. If you have unused tanks on your property that contain fuels, use all the fuel in the tank if possible. If the tank contains unusable fuel, contact your petroleum distributor for removal.

The DNR must be notified at least 30 days prior to removal. Permanent closure is done by removing the tank from the ground or filling the tank in place with an inert solid material. A closure assessment must also be completed to determine if a fuel release occurred during the life of the tank.

Removed tanks can be reused in an approved manner, disposed of at a salvage yard or taken to a DNR-permitted landfill with a special waste authorization. You should always document the steps you have taken to close underground storage tanks, including notification of the DNR.



## What should I do if I have a spill?

### Spill Control for Aboveground and Underground Tanks

If you notice that your petroleum storage tank is leaking or a spill has occurred, make every possible effort to keep the spill from spreading. If an underground storage tank is leaking, it should be immediately emptied.

Petroleum spills and leaks can be contained with kitty litter, oil dry, adsorb or bales of straw or hay. Spilled materials must be removed immediately and used as fuel when possible.

If you find a leak or spill from any tank, whether above or below ground, Iowa law requires that you notify the DNR through the 24 hour spill reporting hotline. Specific guidelines for spill reporting include:

- If a petroleum distributor overfills your tank while depositing fuel, the tank owner must report the spill within 24 hours to DNR at 515-281-8694.
- All other spills and tank leaks must also be reported as soon as possible, but no later than 6 hours after onset or discovery. Call the DNR 24 hour spill reporting hotline at 515-281-8694.
- All spills reaching ditches, waterways and bodies of water must be reported to the National Response Center at 800-424-8802.
- The DNR will advise you on what other reports you may need to complete.

**Reporting a spill within six hours DOES NOT result in an automatic fine. However, the DNR may penalize you if you fail to report a spill within six hours, the spill causes a fish kill, is a prohibited discharge or you fail to take appropriate action to contain and/or cleanup the spill.**





## For More Information

### Iowa Department of Natural Resources

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

**Information** 515-281-5918

**24 Hour Spill Reporting** 515-281-8694

### Waste Management Assistance Divisions, Underground Storage

**Tank Program** 515-281-8135

- Provides technical assistance with underground storage tank installation, operation, maintenance, closure, compliance and enforcement.
- Administers State Underground Storage Tank Fund.
- Maintains database of underground storage tank sites.

### DNR Environmental Services

#### Division Field Offices

Atlantic 712-243-1943

Des Moines 515-725-0268

Manchester 563-927-2640

Mason City 641-424-4073

Spencer 712-262-4177

Washington 319-653-2135

- Assists with understanding Iowa law and DNR rule requirements.

### State Fire Marshal

[www.dos.state.ia.us/fm/](http://www.dos.state.ia.us/fm/) 515-281-5821

- Registers aboveground tanks that hold 1100 gallons or more of petroleum products.
- Assists with emergency venting and other fire code requirements.
- Assists with secondary containment requirements.

### Environmental Protection Agency

#### EPA Oil Spill Information

[www.epa.gov/oilspill](http://www.epa.gov/oilspill) 1-800-424-9346

#### Region 7

#### Tank Information

[www.ep9.gov/oust/](http://www.ep9.gov/oust/) 703.603.7137

- Assists with SPCC Plans.

### National Response Center

[www.nrc.uscg.mil/nrchp.html](http://www.nrc.uscg.mil/nrchp.html) 800-424-8802

- Assists with spills that contaminate ditches, waterways and surface water.

### Iowa State University Extension

[www.extension.iastate.edu](http://www.extension.iastate.edu)

Contact your county extension office. The county director or area ag engineer can answer your questions or direct you to other extension specialists.

- Distributes publications on a variety of topics. Publications are available at ISU Extension county offices or from the Extension Distribution Center, Ames, IA (515-294-5247). Many of the publications are available online at

[www.extension.iastate.edu/store/](http://www.extension.iastate.edu/store/)

# Assessment: Petroleum Storage and Maintenance

Evaluate your potential risk for having unsafe drinking water as a result of your petroleum storage and management practices. The evaluation areas are in the shaded “Risk” column. Choose the risk category that best fits your situation. Note how likely you are to have drinking water problems, as indicated by “low risk,” “moderate risk” and “high risk.”

Take special note of the critical evaluation points. If you fail to meet these standards, your drinking water supply is in immediate danger.



Those situations that violate Iowa law are indicated by ‘!’ and printed in bold text.

RISK	LOW RISK	MODERATE RISK	HIGH RISK
<b>Tank location</b>			
Tank proximity to water well 	<input type="checkbox"/> Tank is more than 100 feet away from the well AND <input type="checkbox"/> Tank is down slope from well.	<input type="checkbox"/> Tank is more than 100 feet away from well AND <input type="checkbox"/> Tank is on the same grade as the well.	<input type="checkbox"/> <b>Tank is less than 100 feet from the well OR</b> <input type="checkbox"/> Well is down slope from the tank.
<b>Aboveground tanks</b>			
Condition of tank	<input type="checkbox"/> Tank is approved by NSF or Underwriters Laboratory AND <input type="checkbox"/> Tank has external gate valve and emergency internal check valve AND <input type="checkbox"/> Tank has secondary containment.		<input type="checkbox"/> <b>Tank is not approved by NSF or Underwriters Laboratory OR</b> <input type="checkbox"/> <b>Tank does not have external gate valve nor emergency internal check valve OR</b> <input type="checkbox"/> <b>Tank does not have secondary containment.</b>
<b>Underground tanks</b>			
Condition of tank	<input type="checkbox"/> Registration tags have been affixed AND <input type="checkbox"/> Records of operation and maintenance kept up to date AND <input type="checkbox"/> Tank has secondary containment.		<input type="checkbox"/> Registration tags have not been properly affixed OR <input type="checkbox"/> Records of operation and maintenance not available OR <input type="checkbox"/> Tank does not have secondary containment.
Tank installation and upgrade	<input type="checkbox"/> Tank installed after 1987 by certified professional installer OR <input type="checkbox"/> Tank has been upgraded since 1998.	<input type="checkbox"/> Tank installed prior to 1987 or upgraded before 1998 OR <input type="checkbox"/> Tank not installed by a certified installer, but installed following manufacturers	<input type="checkbox"/> <b>Tank not installed by a certified installer OR</b> <input type="checkbox"/> <b>Tank installed prior to 1998 and not upgraded.</b>
Site characteristics of tank location	<input type="checkbox"/> Water table never reaches the tank AND <input type="checkbox"/> Tank has been properly backfilled with pea gravel or sand.	<input type="checkbox"/> Water table occasionally reaches the tank.	<input type="checkbox"/> Soil is saturated often OR <input type="checkbox"/> Tank is improperly back-filled with large rocks or soft soil.

RISK	LOW RISK	MODERATE RISK	HIGH RISK
<b>Underground tanks (cont.)</b>			
Leak detection and testing	<ul style="list-style-type: none"> <li><input type="checkbox"/> Tank system is double walled and uses interior monitoring device for leak detection AND</li> <li><input type="checkbox"/> Tank has automatic gauge that keeps track of inventory, deliveries and throughput AND</li> <li><input type="checkbox"/> Tank has one check valve at the dispenser.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Tank system is single wall fiberglass or steel AND</li> <li><input type="checkbox"/> Tank leak detection monitoring uses automatic tank gauging and/or internal monitoring device.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Tank has pressurized piping only OR</li> <li><input type="checkbox"/> No leak detection monitoring device OR</li> <li><input type="checkbox"/> Evidence of fuel leaks.</li> </ul>
Removal of underground tanks	<ul style="list-style-type: none"> <li><input type="checkbox"/> DNR is notified one month prior to tank removal AND</li> <li><input type="checkbox"/> Tank is properly cleaned, disposed of or filled with inert material AND</li> <li><input type="checkbox"/> Closure assessment is conducted.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Tank is not properly disposed OR</li> <li><input type="checkbox"/> DNR is not notified prior to excavation OR</li> <li><input type="checkbox"/> Closure assessment not conducted.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Old tank remains buried.</li> </ul>



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