

*Farm & Residential*

# Petroleum Storage Tanks



An overview  
of issues and regulations  
in Wisconsin

---



Storage tanks for vehicle fuel and heating oil are common on farms and rural residences nationwide. These above-ground and underground tanks historically have been constructed of steel, and over the years tens of thousands of the tanks have corroded and leaked petroleum products into soil and groundwater.

The Wisconsin Department of Commerce, which regulates storage tanks, estimates that underground gasoline tanks begin leaking after 12 to 17 years (heating oil tanks seem to last a few years longer). While underground tanks present the greatest threat to health and the environment, above ground tanks can fail too, as weathering corrodes the tank and associated piping. Both above-ground and underground tanks are also subject to spills when refilling or pumping.

Even small leaks can add up to big problems. A tank leaking one drop every 10 seconds could release 60 gallons per year. Unfortunately, it takes only a few quarts of gasoline to severely contaminate a family's drinking water or a nearby stream or lake. In addition to the environmental and health problems, property owners are financially responsible for clean-up costs, which can range from \$10,000 to a great deal more.

Obviously, farmers and other rural homeowners need to pay close attention to the installation and maintenance of fuel storage tanks. This publication provides an overview of what you need to know if you have petroleum storage tanks on your property. It summarizes:

- the health, environmental, safety and liability issues surrounding fuel storage;
- state regulations affecting storage tank replacement and upgrading;
- tank replacement/upgrade options;
- considerations when buying or selling property;
- additional sources of information.

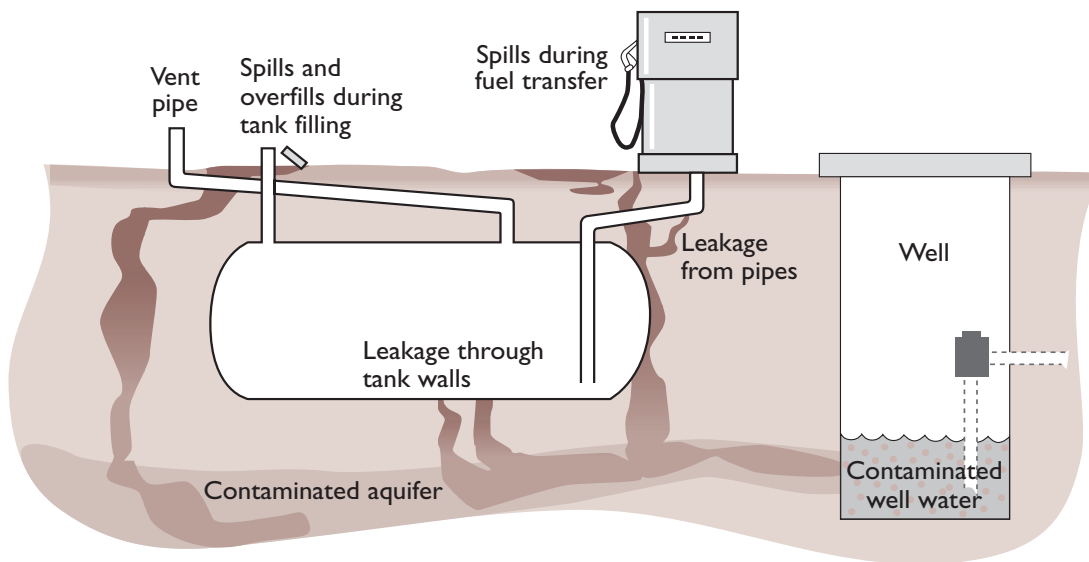
### A note of caution

This publication presents an introduction to petroleum storage tank issues and regulations affecting farmers and other rural property owners. It is not a complete guide to the regulations, which are complex and detailed. If you are considering changes in your petroleum storage, or simply have questions about tanks on your property, make sure you get expert advice from the sources listed in the back of this publication, and make sure you thoroughly understand the regulations affecting your situation. Information in this publication is current as of June, 2000; however the regulations may change over time.



Old buried fuel tanks often rust through and leak contents directly into the soil.





## On-Site Fuel Storage: Why You Should be Concerned

### Contaminated water

Leaking tanks can be a source of groundwater problems for you and your neighbors. Petroleum-based fuels contain toxic compounds including benzene, toluene, xylene and ethylene dibromide. These compounds are thought to cause cancer, and pose a number of other health risks including nervous system damage, reproductive problems and immune system depression. Very small amounts of these compounds in drinking water may not produce noticeable tastes or smells, but can have serious health effects if ingested over many years.

If fuel has leached into the groundwater, the location, type and depth of your drinking water well may affect whether your drinking water will be contaminated. Shallow wells that tap into the water table near the surface have a greater risk of contamination than deeper wells, because the well will be withdrawing water near the level at which the contaminants have entered the soil. Deep, properly constructed wells with steel casing will help keep contaminants from entering the well because petroleum products “float” near the top of the water table.

The soil and geologic conditions at the tank’s location can also affect the likelihood of groundwater contamination. The more porous the soil (sands and gravels, for example) the faster pollutants will travel down to groundwater. Some soils are also more corrosive than

others and will accelerate the rate at which underground metal corrodes. In general, new tanks should be located 100 feet or more from wells and downslope where possible.

Large spills and overfills can also contaminate nearby surface waters. Less visible, but equally a threat to surface waters, is petroleum that seeps down to the water table and then travels horizontally underground into a nearby stream or lake.

### Safety

Although many property owners have removed their underground tanks because of environmental concerns, one of the reasons people put tanks underground originally was to reduce fire hazards. Owners of above-ground tanks must still take care: the most common hazards involve above-ground tanks too close to buildings and failure to properly label tanks as to stored contents.

Tanks designed for underground use are constructed differently than those for above-ground use. Underground storage tanks rely on the support of the soil to help hold them together. If placed above ground and filled with fluids, tanks designed for underground use can split open.

### Know the law or pay the price!

Petroleum storage regulations are complex, but taking time to understand them before taking action can save property owners significant sums of money. Here are two examples:

- A farm was eligible for state reimbursement for environmental cleanup costs. However, several years later the landowner subdivided some fields for development, and the farm no longer met acreage and income requirements. The landowner spent thousands of dollars on cleanup expecting reimbursement, which never came.
- A homeowner sold a property but withheld information about a leaking tank. When contamination was discovered the new owner was legally liable for cleanup costs. A costly lawsuit followed.



### *Liability and property value*

Property owners are responsible for storage tanks on their property, a legal fact with important implications. Property owners can face significant legal expenses and environmental cleanup costs for failing to follow state and federal regulations. Legal and financial issues to be aware of include:

- Registering installation and closure of underground tanks with the Wisconsin Department of Commerce;
- Removing or upgrading older underground tanks;
- Informing property buyers of the status of tanks and existing or past problems;
- Reporting leaks, spills and overfills and paying for remedial action;
- Paying for damage to other property and the environment.

These issues are discussed in more detail on the following pages.



This tank excavation reveals a pool of leaked oil soaking into the ground.

## Wisconsin Storage Tank Regulations: an Overview

State petroleum storage regulations for farms and rural homes cover both above-ground and underground tanks. These tanks typically store home heating oil and gasoline or diesel fuel for personal vehicles and farm equipment. Most problems come from older underground tanks installed before today's environmental awareness and regulations.

Older tanks were made of metal. Unlike modern tanks they did not have a corrosion-resistant exterior and components such as pipes were not made to withstand pressure, vibration and movement within the soil. Moisture entering the tanks from small cracks and loose fittings corrodes tanks from within. Many tanks were installed improperly. Some were dropped into excavated holes rather than being lowered carefully. Others were placed in beds of ashes or cinders that accelerated the natural corrosion process.

Above-ground tanks can also experience

corrosion problems, but they are more easily recognized and corrected. Concerns about above-ground tanks primarily focus on the separation distance from buildings and drinking water wells, and vehicle collision protection.

### *Registration*

All underground tanks storing petroleum products greater than 60 gallons must be registered with the Wisconsin Department of Commerce. Registration allows property buyers and sellers to know the age and status of underground tanks, and allows the state to assess environmental and safety hazards.

Registration is free, and forms are available from Commerce. (see list of contacts in the back). To find out if your tank is registered, check the Commerce internet data base of registered tanks at [www.commerce.state.wi.us](http://www.commerce.state.wi.us) (click on "petroleum programs") or call Commerce at 608/266-7874.

Above-ground tanks containing heating oil do not require registration if they are directly connected to a home heating device. Above-ground tanks containing 1,100 gallons or less of vehicle fuel do not require registration provided the fuel is not resold.

### *Closure and removal*

Because of potential environmental damage, many property owners are having their underground tanks removed or replaced. If a tank has not been used for 12 months, it must be closed. Under state law “closure” means having a state certified tank remover pump out the remaining fuel, clean the interior of the tank of any sludge or residue, confirm that there has been no leakage, and remove the tank from the site. (Note that it is illegal to remove and reuse an underground tank above ground.) All pipes and supply lines must also be removed. Tanks that are not being used may be “temporarily” closed, although this usually means that the owner must provide corrosion protection and a method of leak detection and meet other requirements. Check with the Department of Commerce for specific requirements.

In limited situations a “closure in place” is permitted, which allows the tank to be left in the ground after it has been cleaned and filled with an inert material. Typically, closure in place is permitted only when the removal

might threaten the structural integrity of a building or removal of mature trees.

The Department of Natural Resources (DNR) regulates situations where a tank has been removed and there is evidence of leakage and contamination of soil and water. If the tank remover identifies significant contamination at the time of removal, the DNR is notified. A certified soil assessor will collect soil samples, and after analysis further site actions may be needed to clean up the contaminated site. The Department of Commerce oversees the environmental cleanup unless there are high risk factors. (Financial aid is sometimes available to help pay for cleanup. See the note below.)

Sometimes older heating oil tanks are located in the basement of a home. Like underground tanks, these tanks must be permanently closed if they have not been used for 12 months. However, regulations do not require removal of the tank provided that fill pipes are removed and plugged and that the tank is cleaned and rendered vapor free. Closure of above-ground tanks, including basement tanks, does not have to be performed by a certified tank remover. However, closure by a certified remover is strongly recommended because of the inherent safety issues of handling combustible liquids and tanks weighing thousands of pounds.

## **Financial aid for environmental cleanup**

Wisconsin’s Petroleum Environmental Cleanup Fund Act (PECFA) reimburses property owners for a substantial part of environmental cleanup costs. The following may be eligible for assistance:

- Home heating oil underground tanks if the owner pays 25% of cleanup costs up to a maximum of \$2,500. The state contributes 75% up to \$7,500. Expenses beyond \$10,000 are the owner’s responsibility.
- Based on farm income and other qualifying factors, farm vehicle fuel underground and above-ground tanks 1,100 gallons or less may receive up to \$100,000 in state assistance. The owner pays a deductible of \$2,500 plus 5% of eligible costs not to exceed \$7,500.
- Farm vehicle fuel storage tanks greater than 1,100 gallons may be eligible for higher levels of assistance.

Contact the Wisconsin Department of Commerce for more information. (**Important!** Eligibility for PECFA funds is determined at the time the state reviews the claim for reimbursement. This has been a source of confusion with some farm tank cleanups. For example, a farm might now meet income and acreage requirements for reimbursement. But if the landowner subdivides some land for rezoning and development or makes other significant changes the farm may no longer meet the eligibility criteria. The lesson is, know the rules before you act!)



## Wisconsin regulations: a summary

Wisconsin regulates all above-ground and underground tanks that store heating oil or vehicle fuel.

*Note: The regulations described here do not apply to LPG fuel (propane); different regulations apply to LPG.*

An underground tank (UST) is one that has at least 10% of its volume, including piping, underground. An above-ground tank (AST) is one that is above ground, inside a building, in a vault that contains no earth, or in a basement provided the basement does not have an earthen floor. A tank in a basement with an earthen floor is considered an UST.

The Department of Commerce regulates above-ground and underground petroleum storage tanks based on their capacity and whether they store vehicle fuel or heating oil. (Commerce also regulates farm vehicle-mounted fuel tanks, but those regulations are not covered in this publication.)

Check with Commerce before proceeding with alterations to existing tank systems or installation of new tanks. Note that many of the terms used in this summary have specific meanings that are defined in the main text of this publication.

### Underground Storage Tanks (USTs)

All USTs greater than 60 gallons must be registered with the Department of Commerce. To find out if your tank is registered contact the department at 608/266-7874 or check their internet database at [www.commerce.state.wi.us](http://www.commerce.state.wi.us) (click on "environmental regulations").

#### Vehicle fuel USTs

Tanks containing 1,100 gallons or less must be upgraded, removed by a certified tank remover/installer or replaced by May 1, 2001.

Tanks containing more than 1,100 gallons fall under federal regulations and should have been upgraded or replaced by December 22, 1998.

#### Heating oil USTs

Tanks greater than 4,000 gallons currently are required to have an approved method of leak detection (also called "tightness testing").

Beginning May 1, 2001 tanks containing between 1,100 gallons and 4,000 gallons are required to have an approved method of leak detection.

Farm and residential heating oil tanks 1,100 gallons or less are exempt from the leak detection requirement.

If the tank owner does not begin leak detection according to the schedule above, then the tank and

piping must be upgraded with corrosion protection, overfill protection and spill containment by April 30, 2006 or be removed by a certified tank remover.

#### Closing a UST

Tanks no longer in use after 12 months must be closed. Tank closure means emptying and removing the tank and all piping and related equipment. In isolated cases a tank may be closed in place and filled with an inert material.

All tank closures must occur under supervision of a certified tank remover.

An authorized agent of Commerce (usually a local fire department) must be given at least 15 days notice prior to closing.

If the tank has not yet been registered, it must be at time of closing.

Evidence of soil or water contamination must be reported to the Department of Natural Resources (DNR), which then determines if steps are needed to clean up the site. A site assessment for soil contamination must be conducted for all vehicle fuel tanks and heating oil tanks greater than 4,000 gallons.

### Above-Ground Storage Tanks (ASTs)

Depending on the size of the tank, various Commerce regulations apply to tank location, design, overflow protection, spill containment and other tank elements. Check with Commerce for specific requirements.

#### Vehicle fuel ASTs

ASTs that store 1,100 gallons or less of vehicle fuel do not have to be registered with Commerce provided the fuel is not resold.

#### Heating oil ASTs

ASTs of 1,100 gallons or less directly connected to a heating device at a single residence do not have to be registered.

#### Closing an AST

All ASTs that have not been used for 12 months or longer must be closed. Excess petroleum in the tank and excess sludge must be removed, and vapors released from the tank.

Tanks can be left in place after closure if the fill pipe is removed and the tank inlet plugged.



Removing a corroded tank



New installation of a fiberglass underground tank.

### *Tank upgrades and replacement*

If you are planning to replace your tank, be aware that siting and design requirements are stringent and complicated, and this publication provides only an overview. Before making changes in your fuel storage, be sure to contact the appropriate authorities. These include:

- The Department of Commerce for registration information, a list of certified installers/removers, and clarification on state and federal regulations;
- A certified tank installer/remover, local co-op or other fuel supplier for assistance in planning the appropriate storage system for your requirements;
- Local zoning and fire officials for information on siting, setbacks and other safety concerns;
- Your insurance company.

Remember that the property owner is responsible for following all state and federal regulations and is legally liable for damages resulting from improper or illegal petroleum storage.

Upgrading a tank means either replacing an old underground steel tank with a new tank of corrosion-resistant materials such as fiberglass, or adding corrosion protection to the existing tank and installing devices to protect against spills and overfills. Corrosion protection for existing tanks involves use of an interior tank liner and cathodic protection. Liners are made of synthetic materials and can be retrofitted into existing tanks, although the process can be expensive. Cathodic protection involves a special metal attachment to the tank that reverses the electric current that causes corrosion. In most cases pipes must be replaced.

Regulations also require spill and overflow protection for new underground tanks and upgrades to old tanks. These devices are important because even small amounts of petroleum spilled periodically over a number of years can contaminate groundwater. Spill protection typically is a small catch basin to collect liquids spilled during tank filling. Overfill protection typically consists of an automatic shut-off valve or ball float valve in the fill tube, or an overfill alarm.



Above-ground tanks should also be fitted with spill and overfill protection. In addition, tanks larger than 1,100 gallons must have secondary containment (and it is recommended for smaller tanks). Containment typically consists of a dike and pad structure or a double-walled tank. The dike and pad structure for large tanks must be able to contain 125% of the capacity of the tank.

### *Leak detection and tightness testing*

Above-ground tanks can be tested for leaks by inspecting the tank and the ground around it. Leak detection or “tightness testing” is

required on most underground tanks.

Leak detection means that the tank has an electronic leak detection device or that a certified contractor conducts a leak detection test every two years. (A list of certified contractors and approved methods is available from the Department of Commerce.)

Apart from these technical tests, a good practice is to regularly measure and record a tank’s inventory. A simple way to do this is with a dipstick. If measurements show any decrease in fluid level beyond what you have used, it may be an indication of a leak. However, this method will not detect small leaks.



These above-ground tanks have a concrete pad and dike to contain spills and overfills.

### **A leak or spill: now what?**

If you detect a leak or spill from a petroleum tank, either visually or as a result of a leak detection test, state law requires that you report it to your DNR regional office (see list of phone numbers on page 11). For after-hours emergencies, call the 24-hour Wisconsin Emergency Government Hotline (1-800/943-0003). Calls to this number also automatically alert the DNR. Spills contained on an impervious surface, or spills of less than one gallon of gasoline or five gallons of other petroleum products do not need to be reported provided the spill is cleaned up and does not present a fire hazard or a health or environmental threat.



## Considerations when Buying or Selling Property

If you are purchasing property with an underground tank, have the tank tested for leaks (contact the Department of Commerce at a phone number listed on page 11). Once a property is purchased the purchaser usually becomes legally liable for damage caused by a leaking tank. Testing a residential tank costs between \$300 and \$500, but can save the owner many thousands of dollars in the long run.

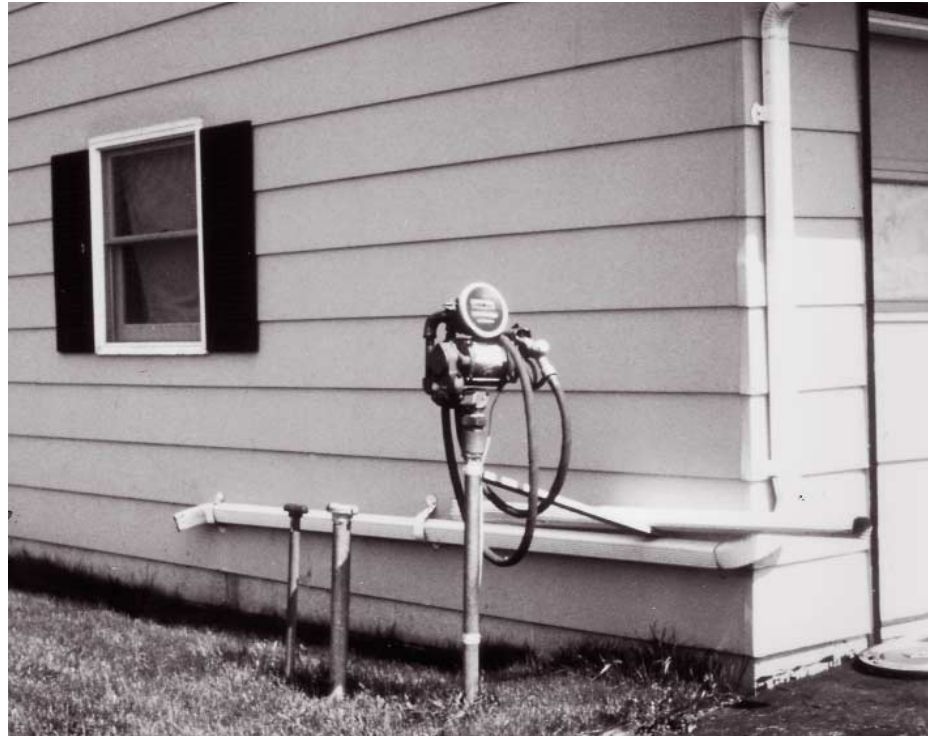
Keep in mind that when a leak or other regulatory violation becomes a matter of record, the current owner of the property is usually responsible for compliance with codes and the cost of environmental cleanup, even if the problems occurred under a previous owner.

If you are selling property with an underground tank, be honest about the status of the tank. Misrepresenting the tank's status can result in significant legal consequences.

Because of the significant liability issues surrounding petroleum storage, buyers and sellers of property, and even lenders and realtors involved in the transaction, need to know the status of any tanks on the property and deal honestly with the other parties. If contamination is discovered after a transaction, any of the parties involved may be the subject of lawsuits.

Lenders will sometimes require a formal site assessment of a property. Based on a soil sample analysis, the DNR determines whether further investigation, and ultimately site cleanup, are necessary.

If a site assessment is not conducted, the property buyer should take steps to understand the status of tanks on the property. Prior to May 1, 1991 (or 1988 for some larger, federally-regulated tanks) state regulations allowed the property owner to fill an under-



Before a property transaction, buyers, sellers and lenders need to know the status of tanks on the property.

ground tank with inert material and leave it in the ground. If you think there might be such a tank on the property, first check the tank registration inventory maintained by the Department of Commerce.

If there is no record of tank registration or legal closure, old vent or fill pipes might still be visible on the property. A petroleum vendor or neighbors may also have knowledge of an old underground tank. Insurance records may also be a source of information. If you know where the tank is, check for signs of leakage such as soil saturated with petroleum, an oily sheen in nearby streams or ponds, or a petroleum odor in or around the house. Neighbors can tell you whether there are or have been drinking water problems in the area.

Many home buyers hire a home inspector before finalizing a purchase. Home inspectors are not typically trained to conduct a comprehensive storage tank assessment. However, if the tank is visible and accessible, the



inspector and buyer can conduct a simple visual survey of the following conditions:

- The exterior should be sound, with no signs of dead vegetation under the tank or near the location of an underground tank, as this may be a sign of leakage;
- Vents and fill lines should be black or galvanized iron, not plastic or PVC, which can break in cold weather and come apart at the seams during fill-up;
- The tank vent pipe should be 1½" to 2" in diameter and capped to keep out water and prevent clogging by mud or insects. The pipe should be equipped with a whistle or similar alarm to alert the delivery person when the tank is full;
- All pipes, fill gauges and related equipment should be tight;
- Support legs on above-ground tanks should be sound and on firm footing. A standard 275-gallon home heating oil tank weighs 2,000 pounds. Placed on an earthen or wood base, the tank can tip or shift and cause a leak. (Note that it is illegal to use an old underground tank for above-ground storage.)



### Common Concerns

Sometimes the owner or new buyer of a property discovers that a tank has not been properly registered or closed, or was closed under old regulations. The present owner should contact The Department of Commerce and inquire about necessary actions. Here are a few common situations:

**A tank was closed but the closure was not documented with the Department of Commerce.** The property owner should provide Commerce with written documents with as much detail as possible and verification by the person/contractor who closed the tank. Information should include the tank size, the product it contained, date of closure, and copies of invoices and any local permits that were granted.

**A tank was closed in place by filling with water.** If the tank was closed before August 1971 and documented with Commerce, as was allowed at that time, the tank was closed legally. However, water leaking from the tank may spread contaminants or the tank might corrode and collapse. Commerce encourages the owner to fill the tank with an inert material or remove it. If the tank was closed with water but not documented, the water must be removed and the tank filled with an inert material or the tank removed. If the tank was closed with water during or after August, 1971, a site assessment is also required.

**A tank was removed by a contractor who was not certified.** Prior to May 1, 1991, a certified tank remover was not required to close an underground tank. For tanks removed after that date, where no documentation exists, the owner must complete a tank inventory form and a letter explaining the circumstances, and the contractor must complete a removal checklist. Both forms are available from Commerce. After reviewing the materials Commerce determines whether the removal was satisfactory and may require a site assessment.

## Contacts and Additional Information

### Information about petroleum storage tank registration, tank testing methods and suppliers, changes in ownership and requirements for closing a tank and new tank installation:

Wisconsin Department of Commerce  
Bureau of Storage Tank Regulation  
P.O. Box 7837, 201 W. Washington Avenue  
Madison, WI 53707 608/266-7874  
<http://www.commerce.state.wi.us>  
(click on "petroleum programs")  
Telephone numbers, alphabetically by county:  
Adams through Eau Claire 608/267-2051  
Florence through Marquette 608/267-1383  
Milwaukee through Rusk 608/267-5280  
Menominee, and St. Croix through Wood 608/267-1382

### Leaks and spill reporting:

Report all leaks and spills to a DNR regional office:

*Northeast Region*  
Green Bay 920/492-5800

*Northern Region*  
Spooner 715/635-2101

*Southeast Region*  
Milwaukee 414/263-8500

*South Central Region*  
Madison 608/275-3266

*West Central Region*  
Eau Claire 715/839-3700

For after-hours  
emergencies, call the  
Wisconsin Emergency  
Government Hotline,  
1-800/943-0003.

### Financial assistance with environmental cleanup:

For information about the Petroleum Environmental Cleanup Fund Act (PECFA), contact the Department of Commerce at the address and web site listed above, or call 608/267-3753 or 608/267-2424.

### Federal tank regulations:

Environmental Protection Agency, U.S. EPA Region V  
77 West Jackson Boulevard, DRU 71  
Chicago, Illinois 60604  
phone 312/886-6636

### Health effects of drinking water contaminants:

Wisconsin Department of Health and Social Services  
Environmental Epidemiology and Prevention  
1441 East Washington Avenue  
Madison, WI, 53707  
phone 608/266-0923

National Farm Medicine Center  
Marshfield Clinic  
1000 North Oak Avenue  
Marshfield, WI 54449  
phone 715/387-9298 or 1-800/662-6900  
fax: 715/389-4950  
<http://www.marshfieldclinic.org/nfmc>

### Publications and other educational materials:

*Assessing the Risk of Groundwater Contamination from Petroleum Product Storage*

University of Wisconsin-Extension publication G3536-4W, available from county Extension offices or from Extension Publications, phone 608/262-3346. This fact sheet is part of the Farm\*A\*Syst (Farmstead Assessment System) program designed to help farmers and homeowners rank their activities according to how they might affect groundwater and their drinking water supply.

*A Guide to Safe Agricultural Fuel Storage Systems*

Golden Sands Resource Conservation and Development Council, Inc., phone 715/343-6215. An 18-minute videotape that provides an overview of issues surrounding fuel storage and safe practices to avoid health, safety and environmental concerns.

*Wisconsin Department of Commerce web site and brochures*

The Department of Commerce is the most complete source of detailed information about storage tank issues and regulations. Refer to their web site ([www.commerce.state.wi.us](http://www.commerce.state.wi.us)) which contains online fact sheets on storage tank issues as well as regulations. Brochures on a variety of issues can be requested from the Bureau of Storage Tank Regulation, 608/266-7874.

This fact sheet is based on materials and information developed by the Wisconsin Department of Commerce, Wisconsin Department of Natural Resources, the University of Wisconsin-Extension Farm\*A\*Syst Program, the National Farm Medicine Center, and the Wisconsin Federation of Cooperatives.

This fact sheet was developed by:

Bruce Webendorfer, University of Wisconsin-Extension  
Nancy Young, National Farm Medicine Center  
Tim Clay, Wisconsin Federation of Cooperatives  
Sharon Schwab, Golden Sands Resource Conservation and Development Council, Inc.

Editing and design by the Environmental Resources Center, University of Wisconsin-Extension.

This publication is available from county UW-Extension offices or from Extension Publications, 45 N. Charter St., Madison, WI 53715. (608) 262-3346.

A publication of the University of Wisconsin-Extension.

Thanks to the Wisconsin Department of Commerce and Wisconsin Department of Natural Resources for technical review of this publication.

©2000 by the Board of Regents of the University of Wisconsin System. Send inquiries about copyright permission to: Director, Cooperative Extension Publications, 201 Hiram Smith Hall, 1545 Observatory Dr., Madison, WI 53706. University of Wisconsin-Extension is an EEO/Affirmative Action employer and provides equal opportunities in employment and programming, including Title IX and ADA requirements.



Printed on  
recycled paper



## Farm & Residential Petroleum Storage Tanks

GWQ030  
I-07-00-15M-75-S