

# LIQUID FUELS: Safe Management of Gasoline, Heating Oil, Diesel, and Other Fuels

Liquid fuels are used every day to power vehicles, run machines, and heat homes. This chapter helps identify potential fuel-related risks to the environment and your family's health. It is divided into two parts:

1. *Portable Fuel Containers.* Fuel stored in portable containers and gas tanks of gasoline-powered machines is a potential risk to groundwater and surface water. If you own any of the following, this part of the chapter applies to you:

- lawn mower
- chain saw
- leaf blower or snow blower
- weed trimmer
- auxiliary generator
- kerosene heater
- snowmobile
- camp stove
- motorboat
- automobile
- farming implements

2. *Above-ground, Underground, and Basement Storage Tanks.* This part of the chapter is for homeowners with above-ground, underground, or basement fuel tanks—active or inactive—on their property.\* Topics discussed include:

- tank location
- tank management
- tank removal and abandonment

- \* *The information in this document is applicable to Kansas farm and residential tanks that hold a total of less than 1,100 gallons. Larger tanks or those used for business purposes are subject to more stringent regulation. This chapter does not cover the storage of liquefied gases, such as liquid propane (LP) and liquid natural gas.*

## What are the environmental and health concerns?

You may not have thought much about how you store gasoline, heating oil, and other fuels on your property. If you are like most people, you own at least

one fuel-burning device such as a lawnmower and probably keep fuel in portable containers that hold 1 to 5 gallons. For home heating and vehicle use, you may also have larger quantities of fuel kept in underground, basement, or above-ground storage tanks.

Fuels are hazardous. Improperly managed, they can pollute the water you drink and the air you breathe. It is critical to prevent spills and leaks. As little as 1 gallon of gasoline can quickly contaminate groundwater above health advisory levels. Petroleum products contain many toxic compounds, including benzene, which is known to cause cancer.

You cannot depend on taste or smell to alert you about fuel in your drinking water. Contamination can come from unexpected sources. Unknown or forgotten underground tanks have come back to haunt property owners. Contaminated soil and water can rob your property of its value, trigger environmental liability and costly cleanups, and drive away lenders and property buyers. Vapors from fuel can ignite fires or collect underground and explode.

Fuel stored in large tanks poses greater risks of contamination than small quantities stored for lawnmowers and similar equipment. While you should pay particular attention to high potential risks from large tanks, storing any amount of fuel increases the environmental risks around your home.

Improving fuel storage and management protects the health of your family, your community, and the environment. Better management can also safeguard your biggest investment—your home. This chapter can help you evaluate how you manage liquid fuels, identify areas of risk, and develop an action plan to reduce or eliminate potential problems.

## PART 1—Portable Fuel Containers

### How much fuel do you buy and use?

It is best to purchase and store minimum amounts of fuel for short periods. This means (1) buying in small quantities and (2) buying no more than you need for a month or so of mowing the lawn or blowing snow.

Do you have more than a gallon of leftover fuel at the end of a season? Next time, buy less. If there

are leftovers, try to use them up. Excess gasoline can be poured into a car's gas tank: Dilute one part old fuel with five parts new fuel to protect your engine. Leftover gasoline can also be given to a neighbor to use (Figure 8.1). Beware of oil-blended fuels, which should be used only in engines designed for them. Fuel stabilizers may extend the shelf life of fuels.

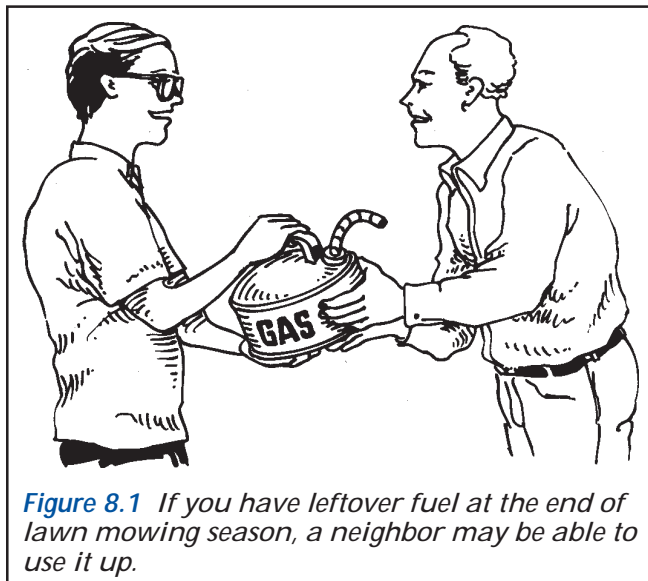
### **Do you store fuels in approved containers?**

It is important to use only safe, approved, or original sale containers to store fuels (Figure 8.2). UL-approved containers (red for gasoline, blue for kerosene, and yellow for diesel) can be purchased in places as convenient as your local hardware store. The container should be clearly labeled to identify its contents and fitted with a spout or other device to allow pouring without spilling.

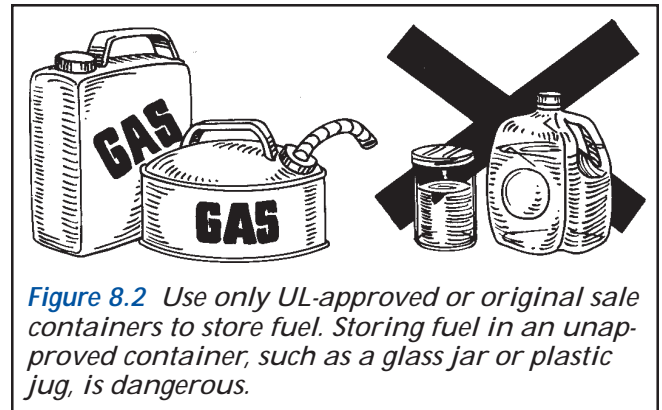
Storing fuels in an uncovered or unapproved container is dangerous. For an extra measure of spill protection, keep fuel containers inside a bucket or other container that can prevent leaks from spreading. Spills can occur anywhere you handle hazardous liquids. Areas where potentially dangerous spills could occur is a good place to put up the local and state spill response numbers and these reminders:

- ALWAYS read the label and follow directions
- think about how you would handle a spill should it occur
- avoid spills by using care
- place the receiving container in a larger pan or on an absorbent pad which can be discarded

Should a fuel spill occur, use kitty litter, vermiculite, newspaper, rags, or dirt to contain and absorb the liquid. Place the material in a plastic bag or sealable can and put it in the trash. NEVER wash it down the drain or into the gutter.



**Figure 8.1** If you have leftover fuel at the end of lawn mowing season, a neighbor may be able to use it up.



**Figure 8.2** Use only UL-approved or original sale containers to store fuel. Storing fuel in an unapproved container, such as a glass jar or plastic jug, is dangerous.

### **Are containers kept in a well-ventilated, safe place?**

To avoid fuel vapors—which are a health hazard and fire danger—keep fuel containers and fuel-powered devices in a secure, well-ventilated place with an impervious (paved) floor. Storage in an unattached shed or garage is safer than storage in a garage attached to your home or in a basement (Figure 8.3). Store containers off the floor. Keep them out of the reach of children and make sure the lids are tight to prevent easy access.

### **Do you check your fuel containers or machinery regularly?**

Periodically check for leaks from storage containers and fuel-driven devices, especially if they have not been used for some time. Small leaks can add up over time. You can keep on top of things through regular inspections and maintenance. Always recycle or safely dispose of engine maintenance products. (See Chapter 5, “Managing Hazardous Household Products,” for more information on disposal and recycling.)

### **Assessment 1—Portable fuel containers**

Check all the places where you store fuels—a garage, basement, or shed—and examine how fuels are stored. Use the assessment table on the following page to evaluate your practices. Some choices may not match your situation exactly, but answer the best you can. Refer to Part 1 above if you need more information to complete the table.

### **Responding to risks**

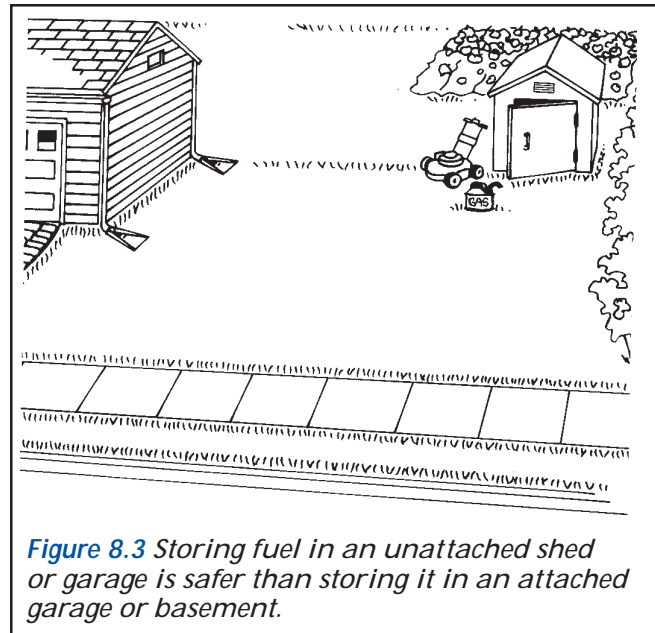
Your goal is to lower your risks. Turn to the Action Checklist on page 87 and record the medium- and high-risk practices you identified in the assessment table. Use the recommendations in Part 1 to help plan actions to reduce your risks. If you need more information, contact local fire officials.

## PART 2—Above-ground, Underground, and Basement Storage Tanks

It is vital to know about fuel storage tanks on your property—including tanks that are currently in use and those that are abandoned. As a tank owner, you have many responsibilities and must keep up with increasingly strict laws. Although owners of farm and residential tanks of less than 1,100 gallons capacity are not required to register with the Kansas Department of Health and Environment, providing registration makes financial assistance accessible should leakage occur.

You are financially responsible for leaks from a tank on your property, even if you are unaware of the tank's existence. Standard homeowner's insurance does not typically cover the costly clean-ups. Contact the Kansas Department of Health and Environment (KDHE) at (785) 296-1678 to learn more about your legal responsibilities.

Part 2 is divided into three sections: 2a, Tank Location; 2b, Tank Management; and 2c, Tank Removal and Abandoned Tanks. Review the informa-



**Figure 8.3** Storing fuel in an unattached shed or garage is safer than storing it in an attached garage or basement.

### ASSESSMENT 1—Portable Fuel Containers

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Quantities stored</b>	Moderate amounts of fuel are purchased. Fuel is stored for less than six months.	Fuel is stored more than six months before use.	Excess quantities of fuel are purchased. Fuel is stored more than twelve months.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Container safety</b>	Fuel is stored in a UL-approved or original sale container.	Fuel is stored in a UL-approved or original sale container with signs of age or damage.	Fuel is stored in a non-approved container (for example, a glass jar or open container).	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Storage location</b>	Fuel is stored in a well-ventilated, unattached garage or shed away from the house. Concrete floor is best.	Fuel is stored in a garage attached to the house. The area is poorly ventilated.	Fuel is stored inside the home or in the basement. Dirt floor is least safe.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Management and disposal</b>	Fuel is used up in devices, so disposal is unnecessary. Spill containment is always used.	Fuel is stored on-site indefinitely or until evaporated. Spills are not contained, but are wiped up.	Fuel is poured down a house drain or storm drain, poured on the ground, or sent to a landfill. Spills are ignored.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Leak detection</b>	Storage containers and fuel-driven devices are examined often for leaks.	Storage containers and fuel-driven devices are sometimes examined for leaks.	Storage containers and fuel-driven devices are never examined for leaks.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

tion in each section, then answer the assessment questions that follow.

For the assessments in Part 2, start by gathering basic information. How many tanks do you have and where are they located? Assess each tank separately. Using records or your memory, reconstruct the history of each tank. When was it installed? Has it been serviced or inspected? Unless you are certain you have no inactive underground tanks, it is best to check for them.

### **Part 2a—Tank location**

This section covers both aboveground and underground tanks but not basement storage tanks. In the assessment table at the end of the section, answer only those questions that apply to you. Remember to assess each tank separately.

#### **How far is your tank from wells and surface waters?**

Fifty feet is the minimum recommended distance between your tank and nearby wells, but the greater the distance, the better. Other factors can influence the risk related to distance. Tanks are safer when located downslope (downhill) from wells. Certain soil types—such as sandy soils—allow pollutants to seep more rapidly into groundwater. The 50-foot minimum also applies to the distance from streams, wetlands, ponds, and other surface water. Kansas recommends greater minimum distances and some jurisdictions have specific requirements. Check with local officials for the standards in your area.

For each high-risk tank, consider having a professional remove it or move it as far from wells and surface water as possible. If a tank must be near a well or surface water, aboveground tanks with secondary containment are preferred. Never try to convert an underground tank into an above-ground tank or vice versa. For professional assistance, contact the Kansas Department of Health and Environment at (785) 296-1678 for information about underground storage tanks, or the Kansas Fire Marshal's Office at (785) 296-3401 for information about above-ground storage tanks. If it is not possible to remove high-risk tanks, be extra careful to monitor them for spills and leaks.

#### **What is the distance to the water table?**

In most places, if you dig straight down, you will eventually reach water. This "water table" may be a few feet to hundreds of feet down. The distance to the water table is important for several reasons.

When water is close to the surface, there is greater chance for it to come in contact with the steel walls of a tank. In wet conditions, metal corrosion is more likely to occur. Some types of soil, especially clay, may also promote rusting.

Spills reach groundwater more quickly if the water table is close to the surface. Your tank may be exposed to similar water problems during flooding. You can get help finding out about your water table

from agencies such as the Kansas Geological Survey, the Kansas Department of Health and Environment, or professionals such as well drillers. If you do not know how deep your underground tank is buried, assume it is no more than 10 feet. Again, for each high-risk tank, consider having a professional relocate or remove it. The cost of moving it today may be far less than paying for cleanup in the future.

### **Assessment 2a—Tank location**

Evaluate your situation using the assessment table on the following page. Choose the response that best describes your situation. Refer to Part 2a above if you need more information.

#### **Responding to risks**

Turn to the Action Checklist on page 87 to record medium and high-risk practices. Use the recommendations in Part 2a to help plan actions to reduce your risks.

### **Part 2b—Tank management**

This section deals with all three types of tanks (aboveground, underground, and basement). In the information below, review the parts that apply to the tanks you have.

#### **Is your underground tank old and possibly leaking?**

This is your highest concern. Buried tanks over fifteen years old have a dramatically higher chance of leaking. But even newer tanks and piping can leak, especially if they were incorrectly installed.

Corrosion protection helps keep steel tanks from leaking. Most older tanks do not have this protection and are at high risk for leaks. It is expensive to put corrosion protection on existing tanks, and it may be more cost-effective to replace unprotected tanks.

It is highly recommended that new underground tanks located at farms and residences have corrosion protection such as an interior tank liner, a protective coating on the tank exterior, or cathodic (electric-chemical) protection. Fiberglass tanks do not corrode but are vulnerable to other problems, such as puncture by sharp objects.

#### **Have you checked pipes and hoses?**

The pipes, hoses, valves, and fittings connected to a storage tank can be a major source of leaks. They are often overlooked, especially if buried underground. Here, too, age is a factor. Piping fails because of corrosion, accidents, and weather-related factors such as frost heaving. Professional installation and inspection is your key to avoiding problems.

#### **How will you detect leaks?**

Leak detection is more complicated for underground storage tanks and is critical for tanks older than fifteen years. Set up a schedule to regularly

inspect all tanks for leaks and damage, including heating oil tanks in your basement.

One way to detect leaks is called “tank and pipe testing” or “tightness testing.” This involves placing the tank, piping, and contents under pressure and checking for leaks. Testing underground storage tanks is difficult and can be dangerous; only licensed professionals should attempt this procedure. A list of licensed tank testers can be obtained from KDHE by calling (785) 296-1678. Many tank owners choose to have their underground tanks removed rather than pay for costly testing.

**Do you keep track of fuel levels in the tank?**

A less expensive way to check for leaks is to monitor the level of fuel over time. Measure precisely and record the amount of fuel in the tank each month. Then compare your records to the amount of fuel delivered and dispensed. Differences in your records may indicate a leak. This method is generally not accurate enough to detect small leaks, and one gallon of fuel can contaminate millions of gallons of water. Underground tanks for heating fuel dispense automatically when in use and are best monitored in summer. If you suspect a problem, contact your local fuel supplier.

**What signs of trouble should you look for?**

*Environmental changes.* Your senses—sight, smell, and taste—are an important part of your leak detection plan. Is there an unexplained oil-like substance on streams or wet places near the tank?

Is nearby soil stained with petroleum? Is there a strong and constant smell of petroleum near your tank? Have you or your neighbors smelled fuel odors

**WHO ARE YOU GOING TO CALL?**  
 For more information on leak detection and for names of approved tank-testing methods and suppliers, contact KDHE officials at (785) 296-1678, or a representative from a fuel marketing association.

near plumbing or sewer line openings, or in basements, or have you tasted it in your drinking water? Normally you can see leaks from an aboveground tank, but you should be aware of leaks in areas you cannot easily see, such as where the tank is in contact with the ground.

*Mechanical changes.* Be aware of unusual or changing operating conditions at the pump. Does your suction pump rattle and does fuel flow unevenly? Does the pump hesitate too long before dispensing? These may be signs of leaks or damage to the piping.

**What spill-protection actions have you taken?**

Overfilling is the common—and most avoidable—cause of spills. Never walk away while filling a vehicle with fuel. Close supervision of fuel transfers is one of your best forms of protection. Automatic shut-off devices are available to prevent spills but are not suitable for every tank. Spills resulting from overfilling basement (home heating fuel) tanks can be reduced by installing a vent whistle or fill-level indicator. Ask a tank or fuel supplier about these devices.

Box-like containment structures for above-ground tanks can prevent leaks and spills from spreading. Even if the entire contents of a tank leak, well-designed containment should keep the fuel and any water that has accumulated in the containment

**ASSESSMENT 2a—Tank Location**

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Distance from your water well</b>	The tank is greater than 100 feet from a water well.	The tank is between 50 and 100 feet from a water well.	The tank is less than 50 feet from a water well.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Distance from surface water</b>	The tank is greater than 100 feet from a wetland, stream, river, pond, or lake.	The tank is between 50 and 100 feet from a wetland, stream, river, pond, or lake.	The tank is less than 50 feet from a wetland, stream, river, pond, or lake.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Water table</b>	The water table (distance to ground water) is consistently more than 20 feet below the surface.	The water table is consistently between 5 and 20 feet below the surface.	The water table is consistently 5 feet or less below the surface.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

structure from escaping. You can construct a concrete dike and pad, or purchase special structures made for containment. It is highly recommended that a containment structure be provided for all above-ground storage tanks and fueling areas. Many Kansas communities require such containment measures; contact your local fire official regarding requirements in your area.

Spills can occur anywhere you handle liquid fuels. Areas where potentially dangerous spills could occur are a good place to put up the local and state spill response numbers and these reminders:

- think about how you would handle a spill should it occur
- avoid spills by using care
- place the machine being fueled on an absorbent pad which can be discarded

Should a fuel spill occur, use kitty litter, vermiculite, newspaper, rags, or dirt to contain and

absorb the liquid. Place the material in a plastic bag or sealable can and put it in the trash. NEVER wash it down the drain or into the gutter.

#### Is your fuel secure from theft?

Preventing access to your gasoline and diesel pumps protects against theft and vandalism, and lowers pollution risks. Unauthorized users can damage your tank, add contaminants, or spill fuel. The simplest form of security is to lock your pump. Enclosing an above-ground tank within a 6-foot locked fence offers better security.

#### Are your tanks protected from accidents and damage?

Aboveground tanks can leak if they are not well-supported or protected from damage by vehicles and other objects. Tanks should be placed on a solid, stable base or on footings made of brick, cinder block, or concrete that resist changes in soil

### ASSESSMENT 2b—Tank Management

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Tank location</b>		Aboveground	Underground.	<input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Fuel tank type</b>	Aboveground		Underground	<input type="checkbox"/> Low <input type="checkbox"/> High
<b>Leak detection procedures</b> (primarily for underground tanks)	Tank is regularly tested for “tightness,” and monthly fuel use accounting is done.	Monthly fuel use accounting is done.	No testing or fuel use accounting is done.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Spill and overfill protection</b> (for gasoline or diesel)	Filling is closely supervised.		Filling is unattended.	<input type="checkbox"/> Low <input type="checkbox"/> High
<b>Tank containment</b> (aboveground tanks)	Tank is on a containment pad/dike capable of holding 125% of the tank volume.	Tank is on an impervious surface without a berm or dike for containment.	Tank has no protection to contain major leaks and spills.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Tank security</b> (for gasoline or diesel)	Tank or pump is surrounded by a 6-foot locked fence, plus there is a lock on the pump	Fill hose is locked.	No fence or enclosure is around the tank and there are no locks.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Damage protection</b> (aboveground and basement tanks)	Tanks and pumps are on stable concrete or steel supports. Tank is well-protected from damage by impact.	Tank is in contact with the ground or on poor footings.	Tank is not well-shielded from impact.	<input type="checkbox"/> Low <input type="checkbox"/> High

moisture and frost heaving. In your basement, do not store anything around or under a heating oil tank. Heavy objects can damage pipes. If your tank is located in a garage or outdoors, it needs to be protected from damage by your vehicle. If it is not enclosed in a structure, install posts or other barriers around it.

### Assessment 2b—Tank management

Evaluate your situation using the table on the previous page. Read the left-hand column to see which questions apply to you. Indicate your risk level in the right-hand column. Refer to Part 2b if you need more information.

### Responding to risks

Use the Action Checklist on page 86 to record medium and high risks identified above. Use the recommendations in Part 2b to help plan actions to reduce your risks.

### Part 2c—Tank removal and abandoned tanks

Unused tanks may pose potential risks to health, the environment, and financial assets (Figure 8.4). Sometimes old pumps or fill pipes reveal the location of forgotten tanks. Former owners of the property, neighbors, or local fuel suppliers may be able to help.

### What should you do with an abandoned tank?

Inactive tanks are an environmental threat until removed. Emptying and filling them with inert material like sand or soil is one solution, but it may not be permitted in your city or county.

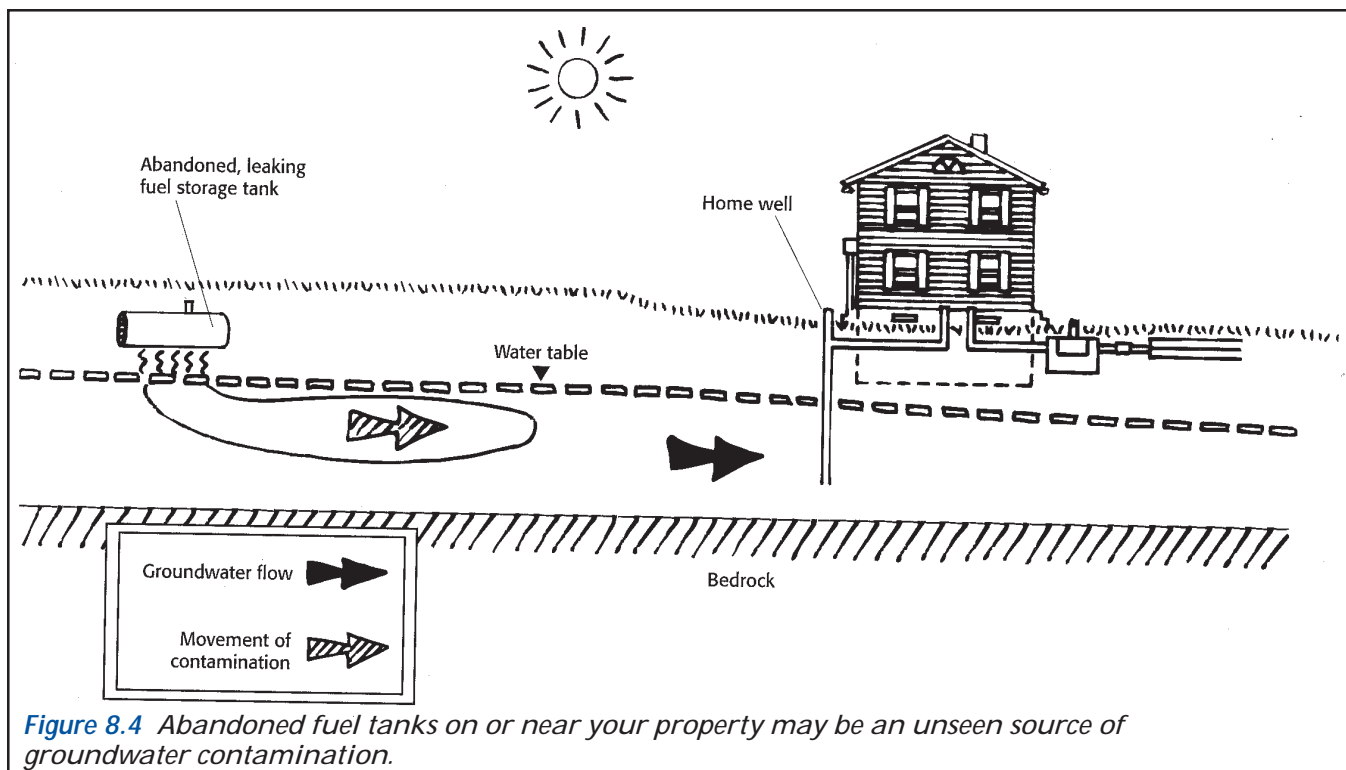
Your best environmental and legal protection is to have abandoned tanks removed and soil and groundwater checked for contamination. Contact the Kansas Department of Health and Environment (KDHE) to determine the best way to proceed. Even though farm and residential tanks of less than 1,100 gallons are not regulated by KDHE, it is beneficial to address any contamination on the property at the time the tanks are removed. The KDHE staff will perform soil testing at the time the tanks are removed at no cost to the property owner. If contamination is discovered, the site may be eligible for financial assistance from the Underground Storage Tank (UST) fund operated by KDHE. To request soil testing at the time of tank removal, contact the KDHE district office for your area as provided on page 85 under "More Information."

Even though your tank may not be regulated, hiring a professional is highly recommended, even if you are legally allowed to remove your own tank. Every year this dangerous activity kills or injures nonexperts. Contractors can help you properly dispose of the tank at a landfill or with a scrap dealer.

### What if contamination is discovered?

Tank owners may discover leaks when a tank is removed. Soil around and under a tank should be inspected for obvious signs of leaking—odors, stains, or visible fuel. If you suspect contamination, a more extensive site assessment should be promptly arranged. The KDHE will assist you with needed testing and cleanup as indicated previously.

Whenever you find a leak, it should be reported to local officials and the KDHE who will expect



**Figure 8.4** Abandoned fuel tanks on or near your property may be an unseen source of groundwater contamination.

you to respond to minimize harm to the environment. State funds may be available to help pay cleanup costs.

To protect yourself against legal claims, you should photograph and document all steps taken to remove a tank. Your written records should include: (1) state agencies contacted; (2) date the tank was filled or removed; (3) persons or companies who did the work; and (4) certified records that contamination was not found or, if it was found, detailed records of the resulting site examination.

### Assessment 2c—Tank removal and abandoned tanks

If you have an abandoned or unused tank, evaluate your situation using the assessment table below. Indicate your risks in the right-hand column. Refer to Part 2c above if you need more information.

### Responding to risks

Use the Action Checklist on the following page to record your medium and high risks. Plan to take actions to reduce your risks.

## ACTION CHECKLIST

When you finish the assessment tables, go back over the questions to ensure that all high and medium risks are recorded in the Action Checklist on the following page. For each of the risks, write down improvements you plan to make. To help you decide what to do, use recommendations from this chapter as well as information from other resources.

Pick a target date that will keep you on schedule for making the changes. You do not have to do everything at once, but try to eliminate the most serious risks as soon as you can. Often it helps to start with inexpensive actions.

### ASSESSMENT 2c—Tank Removal and Abandoned Tanks

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Inactive Tanks</b>	Inactive tanks have been removed.	Inactive tanks have been left in place, emptied, and filled with approved material. Caution: This may be illegal in some areas!	Inactive tanks have been abandoned and left underground (or aboveground).	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Inspection for contamination</b>	Tank sites have been checked for signs of soil and groundwater contamination.		Tank sites have not been checked for signs for contamination.	<input type="checkbox"/> Low <input type="checkbox"/> High

## For More Information

### Local and state contacts

Contact the Kansas Department of Health and Environment (KDHE) at (785) 296-1678, or the Kansas Fire Marshal at (785) 296-3401, or your county K-State Research and Extension office. They should have publications to send and experts on staff to help answer your questions.

District offices of the KDHE and phone numbers; ask for the Environmental Geologist:  
 Southwest Office in Dodge City: (316) 225-0596  
 South Central Office in Wichita: (316) 337-6020  
 Southeast Office in Chanute: (316) 431-2390  
 Northeast Office in Lawrence: (785) 842-4600  
 North Central Office in Salina: (785) 827-9639  
 Northwest Office in Hays: (785) 625-5663

### Spill response

- ✓ Call your Sheriff's Office
- ✓ Call your nearest Fire official
- ✓ Call the KDHE district office (above) or the Topeka office (785) 296-1679

### Publications

The U.S. Environmental Protection Agency (EPA) has a national clearinghouse for general information. The following EPA publications are available from the National Center for Environmental Publications and Information, P.O. Box 42419, Cincinnati, OH 45242-2419.

- "Guide to EPA Materials on Underground Storage Tanks." Order number EPA/510/B94/007.
- "Underground Storage Tanks: General Information Packet." Order number EPA/510/E93/001.

**The World Wide Web (Internet)**

A wealth of fuel storage tank information can be found on the World Wide Web (Internet). You can find web sites on this topic by using combinations of these terms in your searches: petroleum, storage, tanks, and residential.

**Kansas Home\*A\*Syst Helps Ensure Your Safety**

This *Kansas Home\*A\*Syst* handbook covers a variety of topics to help homeowners examine and address their most important environmental concerns. See the complete list of chapters in the table of contents at the beginning of this handbook. The end of each chapter lists resources and other useful information. For more information about topics covered in *Kansas Home\*A\*Syst*, or for information about laws and regulations specific to your area, contact your county K-State Research and Extension office.

Contact the Kansas Farm\*A\*Syst/Home\*A\*Syst office at Biological and Agricultural Engineering, Seaton Hall, Manhattan, KS 66506-2917; phone: (785) 532-5418. Web page: [www.engg.ksu.edu/enggext/ppi/homeasyst](http://www.engg.ksu.edu/enggext/ppi/homeasyst); or the National Farm\*A\*Syst/Home\*A\*Syst Office at: B142 Steenbock

Library, 550 Babcock Drive, Madison, WI 53706-1293; phone: (608) 262-0024; e-mail: <HOMEASYST@MACC.WISC.EDU>.

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- Juan Sexton, Tank Permit Unit, Bureau of Remediation, KDHE

This chapter was based on original materials coauthored by Richard Castelnuovo, Staff Attorney, National Farm\*A\*Syst Office, Madison, Wisconsin and Dean Solomon, District Extension Natural Resources Agent, W. K. Kellogg Biological Station, Michigan State University Extension. The Farm\*A\*Syst Petroleum Storage Training Manual was used as resource for this chapter.

**ACTION CHECKLIST—Liquid Fuels: Safe Management of Gasoline, Heating Oil, Diesel, and Other Fuels**

Write all high and medium risks below.	What can you do to reduce the risk?	Set a target date for action.
Sample: Gas for lawnmower stored in a glass jug.	Buy a UL-approved container from the hardware store.	One week from today: May 15

*Kansas Home\*A\*Syst*, an environmental risk-assessment guide for the home, is a cooperative project of the Pollution Prevention Institute, K-State Research and Extension Service, Kansas Department of Health and Environment, U.S. Environmental Protection Agency, and the Environmental Department, Conservation District, and Natural Resources Conservation Service of Johnson County, Kansas, and Johnson County/K-State Research and Extension Office.

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Special thanks are due to all those who so graciously reviewed the materials. They are listed at the end of each chapter. It is appropriate to also acknowledge the staff of the national Farm\*A\*Syst/Home\*A\*Syst office who originally coordinated development of the original materials at the University of Wisconsin–Extension.



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