



KY-A-Syst for the Home

Environmental Stewardship for Homeowners

Liquid Fuels: Safe Handling and Storage

Why Should You Be Concerned?

Liquid fuels are used every day to power vehicles, run machines, and heat homes. Most people own at least one piece of equipment that is powered by liquid fuels, such as a lawn mower or automobile. Fuels are hazardous, and if not properly managed, they can pollute the water you drink and the air you breathe. Fuel spills can quickly contaminate groundwater to above health advisory levels, and they can also contaminate soil, leading to costly cleanups and lower property values.

Fuels may be stored in many different ways. If you have gasoline-powered equipment such as lawn mowers and chain saws, you probably keep fuel in portable containers that hold 1 to 5 gallons. For home heating and vehicle use, you may have larger quantities of fuel stored in underground, basement, or aboveground storage tanks. Regardless of the quantity of fuel you store, better management can help you safeguard the health of your family, community, environment, and home.

How Can KY-A-Syst Help?

This publication leads you through an evaluation of your home and property to assess your liquid fuel storage practices. The publication is divided into two sections. The first section is about storage of small quantities of liquid fuel in portable containers. The second section deals with storage of larger quantities of fuel in underground, basement, or aboveground storage tanks. This second section applies only to noncommercial tanks that hold less than 1,100 gallons. Larger tanks or those used for business purposes are typically subject to more regulation. Storage of liquefied gases, such as liquid propane and liquid natural gas, is not addressed in this publication.

After you have read this publication, walk around your home and property and answer the questions in the boxes, circling the answers that best apply. Your answers will help you become familiar with how you maintain and store liquid fuels so you can reduce the risk of polluting the water, air, and soil.

If you answer all questions with choice A, you have few risks associated with liquid fuel storage and management. If you answer any questions with choice B, there may be a problem. If you answer any questions with choice C, you will want to consider making changes. Use the action checklist in this publication to help you.

If you would like further help in assessing your liquid fuel management practices and related activities, please contact your county office of the Cooperative Extension Service.

Portable Fuel Containers

Buying Fuel

Buy fuel in small quantities, buying no more than you need for a month or so of mowing or snow blowing. If you have left-over fuel at the end of the season, try to use it up in some way. However, oil-blended fuels (such as those used in electric trimmers) should be used only in engines designed for them. Excess



gasoline can be poured into a car's gas tank. To protect your car's engine, dilute old fuel with new fuel, one part old to five parts new.

Storing and Using Fuel

It is important to use only the original containers or safe, UL-approved containers to store fuels. It is dangerous to store fuels in unapproved containers because they can become damaged easily and leak or spill. Spilled fuel can catch fire. Containers that are UL-approved (red for gasoline, blue for kerosene, and yellow for diesel) can be purchased at local hardware or discount stores. A container should be clearly labeled to identify its contents, and it also should be fitted with a spout or some other device to allow pouring without spilling.

Do you store fuels in approved portable containers?

- A. Fuel is stored in the original or a UL-approved container.
- B. Fuel is stored in the original or a UL-approved container with signs of age or damage.
- C. Fuel is stored in a non-approved container (for example, a glass jar or milk jug).

Do you regularly check your fuel containers and machinery?

- A. Storage containers and fuel-powered devices are checked often for leaks.
- B. Storage containers and fuel-powered devices are sometimes checked for leaks.
- C. Storage containers and fuel-powered devices are never checked for leaks.

Periodically check for leaks from storage containers and fuel-powered devices, especially if they haven't been used for some time. Small leaks can add up over time. Always recycle or safely dispose of fuel containers and unused fuel.



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

Where are your fuel containers stored?

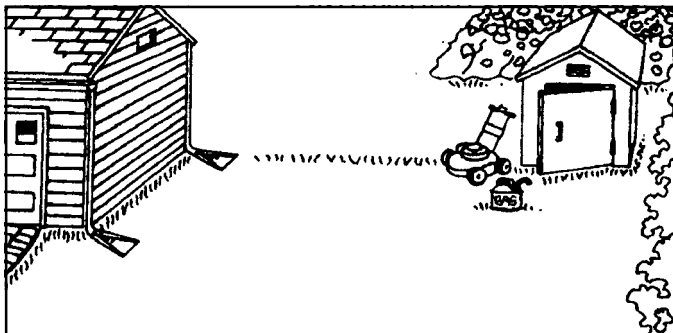
- A. Fuel is stored in a well-ventilated, unattached garage or a shed away from the house.
- B. Fuel is stored in a garage attached to the house. The storage area is poorly ventilated.
- C. Fuel is stored inside the home or in the basement.

Underground, Basement, and Aboveground Storage Tanks

It is important 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. You are financially responsible for leaks from a tank on your property, even if you are unaware of the tank's existence.

Tank Location

With both underground and aboveground storage tanks, location is very important. Kentucky recommends a minimum distance of 150 feet between your fuel tank and nearby wells, but the greater the distance, the better. The minimum 150-foot distance also applies to springs, cisterns, sinkholes and surface water. Fuel tanks are safer when located downslope (downhill) from drinking water sources and surface water. Keep in mind that certain soil types, including sandy soils, allow pollutants to seep more rapidly into groundwater.



It is best to store fuels in an unattached shed or garage. Make sure you keep them out of the reach of children.

Leak Protection

With underground tanks, knowing the age of the tank is vital. Tanks more than 15 years old have a dramatically higher chance of leaking. Corrosion protection helps keep steel tanks from leaking, but most older tanks do not have this protection and are at high risk for leaks. New underground tanks should have a safeguard against corrosion, such as an interior tank liner, a protective coating on the tank exterior, or cathodic protection. Fiberglass tanks do not corrode but are vulnerable to other problems, such as puncture by sharp objects.

The pipes, hoses, valves, and fittings connected to a storage tank also can be a major source of leaks, and age is again a factor. Piping fails because of corrosion, accidents, and weather-related causes such as frost heaving. To avoid problems, make sure all parts are installed by a professional and are regularly inspected.

Detecting Leaks

Detecting leaks is more complicated with underground storage tanks and is critical for underground tanks more than 15 years old. Set up a regular schedule to inspect all tanks for leaks and damage, including heating-oil tanks in your basement. Some testing for leaks can be costly, but an inexpensive way to check for leaks is to monitor the fuel level 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.

If you have a fuel storage tank, how close is it to nearby sources of drinking water and surface water?

- A. The tank is more than 150 feet from a water well, spring, cistern, sinkhole, or surface water.
- B. The tank is between 50 and 150 feet from a water well, spring, cistern, sinkhole, or surface water.
- C. The tank is less than 50 feet from a water well, spring, cistern, sinkhole, or surface water.

If you have a metal underground fuel storage tank, how old is it?

- A. My tank is less than 15 years old and is protected from corrosion, *or* the tank is synthetic.
- B. My tank is less than 15 years old and is not protected from corrosion.
- C. My tank is more than 15 years old.

How often do you check underground, basement, or aboveground tanks for leaks?

- A. The tank is regularly tested for "tightness," and monthly accounting of fuel use is done.
- B. Monthly accounting of fuel use is done.
- C. No testing or accounting of fuel use is done.

This method is not always accurate, and small leaks will be missed, but it is better than ignoring the possibility of leaks. If you need to obtain a tank measuring stick or suspect a problem, contact your tank or fuel supplier.

Avoiding Spills

Overfilling is the most common cause of spills. Never walk away while filling a vehicle with fuel. Also, closely supervise all fuel transfers. Automatic shutoff devices are available to prevent spills, but they are not suitable for every tank. Spills caused by overfilling basement tanks can be reduced by installing a vent whistle or fill-level indicator. Ask a tank or fuel supplier about these devices. For aboveground storage tanks, boxlike containment structures can prevent leaks and spills from spreading. You can construct a concrete dike and pad or purchase a structure made especially for containment.

Protecting Tanks

Tanks can become damaged if they are not well supported and protected from impact. Aboveground tanks should be placed on a solid, stable base or on footings made of brick, cinder block, or concrete. Do not store anything around, over, or under a heating oil tank in your basement. Heavy objects can damage pipes, so all tanks located in a garage or outdoors need to be protected

Do you supervise fuel transfers?

- A. All fuel transfers are closely supervised, and I never walk away while filling a vehicle.
- B. Most fuel transfers are closely supervised. I occasionally walk away while filling a vehicle.
- C. Tanks transfers are not supervised, and filling is unattended.

If you have an aboveground fuel tank, what spill protection procedure is in place?

- A. The tank is on a containment pad or dike capable of holding 125 percent of the tank volume.
- B. The tank is on a surface that liquids cannot pass through, and no dike is in place for containment.
- C. The tank has no protection to contain leaks or spills.

Is your tank protected from damage?

- A. Tanks and pumps are on stable concrete or steel supports. Barriers or structures protect tanks from damage by impact. Nothing is stored around basements tanks.
- B. Items are occasionally stored above, near, and under basement tanks.
- C. Aboveground tanks are in contact with the ground. Outdoor and garage tanks are not shielded from impact.

from being damaged by your vehicle. If a storage tank is not enclosed in a structure, install posts or other barriers around it.

Abandoned Tanks and Tank Removal

Unused tanks may pose risks to health and the environment and cost you money. Sometimes old pumps or fill pipes indicate where forgotten underground tanks are located. Otherwise, the previous owner or a neighbor may be your best source of information. If you have an abandoned fuel storage tank on your property, your best environmental and legal protection is to have the tank removed. Though state law does not require use of a state-certified remover for tanks holding under 1,100 gallons, it is highly recommended. If you do plan to remove a tank on your own, contact for advice the Kentucky Division of Waste Management (502-564-6716), the State Fire Marshal's office (502-564-4010), or a state-certified tank remover.

Leaks are sometimes discovered when tanks are removed. Be sure to check the soil near and under a tank for obvious signs of leaking—odors, stains, or visible fuel. If contaminated soil is found, hire an environmental consultant to properly remove the soil from the site.

More Information About . . .

- **Liquid Fuel Storage**
 - *Assessing and Reducing the Risk of Groundwater Contamination from Petroleum Product Storage (IP-42)*, Mark Dravillas and Tom Ilvento, University of Kentucky Cooperative Extension Service.
 - *Underground Storage Tanks: General Information Packet* (write the National Center for Environmental Publications and Information/P.O. Box 42419/ Cincinnati, OH 45242-2419. Order number: PA/510/E93/001).
- **Liquid Fuel Tank Leaks and Spills**
 - Kentucky Department for Environmental Protection Emergency Response Team (for emergency, call 502-564-2380 or 1-800-928-2380).
 - Kentucky Division of Waste Management, Underground Storage Tank Branch. Call 502-564-4010 or visit the division's Web site at <<http://www.nr.state.ky.us/nrepc//dep/waste/programs/ust/usthome.htm>>.
 - Kentucky Fire Marshal's Office (call 502-564-4010).
- **Liquid Fuel Tank Monitoring**
 - Kentucky Division of Waste Management, Underground Storage Tank Branch (call 502-564-6716).
 - Your regional fuel supplier (check local listing).
- **Tank Removal**
 - Kentucky Fire Marshal's office (call 502-564-4010).
 - A state-certified storage tank remover (list available from the Kentucky Fire Marshal's office).



Home "A" Syst

What Is the KY-A-Syst for the Home Program?

The KY-A-Syst for the Home program is a series of publications that can help you be a good environmental steward and protect the health and well-being of your family. KY-A-Syst for the Home publications provide problem-solving information and also list agencies that can provide help in specific areas.

Action Checklist

Look back at the assessment questions and make sure you have answered all questions. Record all B and C responses and list the improvements or changes you plan to make. You can use recommendations from this publication or from other sources to help you decide on action you are likely to take. Write down a date to keep you on schedule. Read back through the assessment questions from time to time to see if any responses have changed and take any action needed to address new concerns.

Write all B and C responses below.	What can you do to reduce risk?	Set a target date for action.
<i>Sample:</i> Fuel is stored in a milk jug.	Purchase a UL-approved container.	Two weeks from today: June 20.

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