

wellcare[®] information for you about Protecting Groundwater through Proper Petroleum Storage Practices on the Farm

Many farms have on-site storage tanks to hold petroleum products that are used to fuel farm machines and heat homes. Storage tank releases can contaminate soil and drinking water supplies. How quickly these petroleum products reach groundwater supplies depends on local geology and soil type. Once fuel reaches the groundwater, it is relatively stable, making it difficult to clean up. Even small spills or leaks in the same place over time are a potential threat to groundwater.

Petroleum products are made up of volatile organic compounds (VOCs), which can pose a threat to human health and the environment. They may also contain the additive methyl tertiary butyl ether (MTBE), which has not been shown to harm human health but may cause taste or odor problems. For more information on VOCs and MTBE, see the wellcare[®] information sheets on these topics.

Two types of storage tanks may be used on a farm. Above-ground storage tanks (ASTs) may be located above ground, partially buried, bunkered, or in a subterranean vault. By definition, underground storage tanks (USTs) and any connected underground piping have at least 10 percent of their combined volume underground.

What Federal Regulations Govern Under- and Above-ground Storage Tanks?

Owners and operators of USTs and ASTs must comply with federal regulations to prevent leaks and spills. Some states also have regulations in place which may differ from the federal requirements. State regulations must be at least as stringent as federal requirements, and may be more stringent, so check with local regulatory authorities to find out what regulations are in place in your area.

For example, local jurisdictions may require registration for tanks that are exempt from the federal regulations, in order to have some oversight of their construction and operation. In addition, local governments may only allow USTs and ASTs to be located in geographic areas that are away from drinking water sources. Local governments may also require permits that impose additional requirements such as setbacks, open spaces, buffers, walls and fences; street paving and control of site access points; and regulation of hours and methods of operation.

Certain USTs are subject to Federal regulations. Some are included in the next section. The full regulations can be found in the Code of Federal Regulations for USTs (40 CFR Part 280). Visit www.epa.gov/oust/fedlaws/cfr.htm.

The following USTs are exempt from Federal requirements:

- USTs not storing either petroleum or certain hazardous substances;
- Farm and residential tanks of 1,100 gallons or less capacity holding motor fuel used for noncommercial purposes;
- Tanks storing heating oil used on the premises where it is stored;
- Tanks on or above the floor of underground areas, such as basements; and
- Septic tanks and systems for collecting storm water and wastewater.

In addition, most ASTs must comply with the U.S. Environmental Protection Agency's (EPA) Spill, Prevention, Control and Countermeasure (SPCC) Requirements. See www.epa.gov/emergencies/content/spcc/index.htm. The SPCC Requirements are applicable to:

- Single ASTs with an oil storage capacity of more than 660 gallons; and
- Facilities with multiple tanks having a combined oil storage capacity of more than 1,320 gallons.

How do I Prevent Groundwater Contamination from My Petroleum Storage Tank?

Storage tanks releases can result from the corrosion of parts, improper installation, failure of piping systems, spills and overfills that occur during fuel transfers, and improper operation and maintenance of the system. If your tank is more than 20 years old, the potential for leaking increases dramatically. New tanks and piping can also leak, especially if they are not installed properly.

The following petroleum product storage practices offer the best groundwater protection:

LOCATION – *The most important aspect of a petroleum storage tank's location is its proximity to a water source.*

- Locate the tank downslope and more than 100 feet from a drinking water well.
- Floodways or areas where the water table is close to the surface are poor locations for storage tanks. Tanks placed in such areas require special installation. To reduce pollution potential, an AST may be preferable to an UST.
- Position the tank in medium-or fine-textured soils with low permeability.
- USTs should be located in well-drained soils. Highly corrosive clays, wet soils and acidic soils (low pH) can significantly increase the rate of corrosion of underground metal tanks and piping. Using clean backfill during tank installation can decrease the negative effects of surrounding soils.
- Regardless of soil conditions, ASTs should be located over a secondary containment area, such as an impermeable liner made of concrete or one of the newer synthetic fabrics, and there should be a collection device for spills. The containment area should be able to hold 125% of tank capacity. A manually controlled sump pump should be used to collect rain water that may accumulate in the secondary containment area. Any discharge should be inspected for petroleum or chemicals prior to being dispensed.
- To maximize system safety, seal the floors, containment area, and sump pump pit with an appropriate coating (e.g., petroleum resistant coating). Any accumulated water should be inspected for petroleum or chemicals prior to discharge.
- For special tank locations, such as hillsides, be sure to properly anchor and hold tanks in place.
- Be sure that pipes cannot twist or break if the tank is bumped or disturbed.
- To protect against explosion and fire, do not locate tanks (especially ASTs) closer than 50 feet to existing buildings.
- Sites that contain abandoned pipes and tanks, agricultural drainage tiles or waste materials pose special installation problems. Any metal already in the ground near the installation site could increase corrosion rates for the new tank.
- Assess traffic patterns around the tank. Determine whether the location of the tank or dispenser will block movement of vehicles during refueling or cause special problems if any work needs to be done to the tank. Protect piping from collision with vehicles.

TANK DESIGN AND INSTALLATION – *Proper installation is one sure way to minimize the leaks from the tank and piping. Even a minor scratch on a metal tank caused by careless installation can increase corrosion and tank deterioration. Follow the manufacturer's recommendations for installation, and these tips for groundwater protection:*

- ❑ Tanks should be installed by a professional tank installer.
- ❑ For USTs, a tank made of noncorrodible materials, such as fiberglass, is ideal. Other good options include tanks made of externally-coated and cathodically-protected metal, tanks with double walls, tanks made of metal having a thick, corrosion-resistant cladding or jacket, and tanks with an internal tank lining.
- ❑ ASTs should also have corrosion protection. Methods include elevating tanks, resting tanks on continuous concrete slabs, installing double-walled tanks, cathodically protecting the tanks, internally lining tanks, or a combination of these methods. All underground piping to the tank should be double-walled, located above ground or cathodically-protected.
- ❑ The tank should have spill and overflow protection, such as an impermeable catch basin plus overflow alarm. Other forms of overflow protection are automatic shutoff devices and ball float valves.
- ❑ ASTs should be surrounded by a 6-foot tall noncombustible building or fence with a lock. The building should be well-ventilated.
- ❑ A firewall should be in place if setbacks do not conform to code.

MONITORING – *Since cleanup of gasoline leaks is always costly and often not totally effective, it is important to regularly monitor USTs containing petroleum products, especially if your tank is more than 20 years old. Some states required that new USTs (over 1,100 gallons) have a method for detecting leaks.*

- ❑ Test the tank periodically for leaks, and measure the tank inventory on a monthly (or more frequent) basis to help detect leaks before major problems develop. The closer the tank is to a water well, the more important it is to ensure that an adequate leak-detection system is in place.
- ❑ Some good monitoring methods are:
 - Measure tank liquid levels. A decrease in liquid level over time without any withdrawal of fuel or an increase in liquid level without increased supply may indicate a leak. Use a measuring stick to measure tank liquid level, but be sure that the stick does not puncture or damage the bottom of the tank.
 - Heating oil and gasoline supply companies can test your tank for leaks with precious monitoring instruments, such as automatic tank gauges.
- ❑ Have your tank inspected periodically by a qualified professional.
- ❑ If you find a leak or spill, your state may require that you report it to the state environmental agency that monitors storage tanks. A list of State UST Program Contacts can be found at www.epa.gov/oust/states/statcon1.htm.
- ❑ Most states require inspections for ASTs by fire marshals. Inspection programs may be expanded to cover water contamination issues.

TANK CLOSURE – *Tanks no longer in use can cause problems for owners and operators many years later. They will continue to corrode and, if they still contain gas or oil, will likely contaminate groundwater.*

- ❑ Federal regulations require that the state or local authority be notified 30 days before UST closure.

- Ideally, the tank should be taken from the ground, and excavation checked for evidence of contamination. Tanks can also be closed in place or converted to another use.
- Check state regulations regarding unused tanks. Your state may require a permit to legally close a tank, and/or may require that only certain individuals pull a tank.
- Notify your local fire department before pulling a tank, at least a month before, so that precautions can be taken to prevent an explosion or other problem.
- Document steps you take to legally close your tank, so that you are protected from legal action in the event of groundwater problems.

TO REDUCE POTENTIAL LEAKS AND SPILLS DURING FUEL TRANSFER –

- Always supervise fuel transfer from storage to equipment to prevent spillover.
- Use a can to catch any drops that may follow after shutting off the fuel nozzle.
- Replace a leaking or defective nozzle promptly.
- Enforce a "no smoking" rule at the fuel handling and storage facility.
- Keep fuel pumps and nozzles secure from children or vandalism.
- Label each pump or nozzle as to the type of fuel dispensed.

How Can Storage Tank Leaks be Cleaned Up?

Several methods exist for cleaning up the site of a tank spill or leak. The best method for your situation depends on the site characteristics, including soil type and proximity to groundwater. A professional cleanup contractor will perform a site characterization or site assessment to choose the best cleanup method. Often, cleanup requires approval by your local environmental agency. In some cases, state or federal regulators will take the lead at a contaminated site and will make all cleanup decisions.

For more information on USTs, visit the EPA Office of Underground Storage Tanks website at www.epa.gov/oust. Additional information on ASTs can be found at www.epa.gov/OUST/cmplastc/asts.htm.

For more information about wells and other wellcare® publications

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