

ANR-790-4.8.5

ALABAMA A & M AND AUBURN UNIVERSITIES

Underground Storage Tanks (USTs) And NPS Pollution Managing Privately Owned USTs: Guidelines For Private Property Owners

If you have underground fuel tanks on private property, it is easy to ignore them since they are out of sight. However, the potential problems associated with them will never go away. Sooner or later, someone will have to deal with them.

Most old tanks on private property are bare steel tanks, and almost all bare steel tanks are going to leak if left in the ground long enough. Some have actually leaked when left in the ground less than a year.

Even if neither the tank nor lines leak, contamination may still occur from careless spills during filling or dispensing fuel. Contamination can also occur from abandoned tanks that still contain petroleum products. Contamination can be relatively light, or it can be severe and have far reaching consequences.

What you must do about USTs on private property depends on the tank size. Tanks with a capacity 1,100 gallons or less are exempt from federal regulations and state regulations in Alabama. Tanks with a capacity greater than 1,100 gallons are regulated by federal guidelines. However, both regulated and unregulated tanks can be liabilities.

Regulated Tanks

If you have an underground fuel tank that holds more than 1,100 gallons on your property, you must comply with EPA's Underground Storage Tank Program and any federal or state regulations that apply.

Underground tanks installed after December 21, 1988 must have correct installation, corrosion protection, spill prevention, and leak detection. Owners of tanks installed before that date have until December 1998 to upgrade them for corrosion protection and to add spill and overfill prevention devices. All regulated tanks including new, existing, and even out-of-service tanks, should have been upgraded for leak detection by December 1993. All regulated tanks must be checked for leaks.

Replacement. Most individual tank owners are opting to replace underground tanks with aboveground tanks. Spills and leaks from aboveground tanks can

also cause problems, but they are usually easier to locate and fix. It is usually less expensive to replace below ground tanks than comply with other requirements of the UST legislation.

Removal And Cleanup. If your tank has a confirmed leak, you have no alternative but to remove it or close it in place and clean up the contamination.

Removal and cleanup can be quite expensive. For example, digging up and disposing of a tank with a 2,000 gallon capacity plus treating contaminated soil may cost from \$50,000 to more than \$100,000. Cleanup costs are based on the following activities:

- Excavation.
- Soil analysis.
- Groundwater analysis.
- Soil transportation and disposal.
- Groundwater cleanup.
- Regrading.
- Special management options that must be followed.

Alabama has a trust fund to assist in the cleanup costs of regulated tanks which are in substantial compliance with state and federal regulations. In 1994, the Alabama Underground Storage Tank Trust Fund Act was amended to include aboveground storage tanks (ASTs) that contain more than 1,100 gallons. The use of these funds must be approved through ADEM on a site specific basis. The state tank trust fund may cover as much as 90 percent of the total combined costs for excavation, tank disposal, and treating of any contaminated soil. The owner of regulated tanks is liable for the first \$5,000 in costs for USTs and the first \$10,000 for ASTs. The Trust Fund, however, does not apply to non-regulated tanks.

Closure. When regulated USTs are permanently taken out of use, they must be decommissioned. The complete decommission plan involves the following:

- Locating and uncovering the tank and pipelines.
- Removing flammable vapors, product, and sludge.

ANR-790

Water Quality 4.8.5

Visit our Web site at: www.aces.edu

- Cleaning and disposal of tank, or disposal in place by filling with an inert material.
- Disposal of product and sludges.
- Final site assessment, with records maintained at least 3 years.

Unregulated Tanks

Currently, all underground and aboveground farm fuel tanks, which hold 1,100 gallons or less; all heating oil tanks regardless of size; and other specific tanks which hold 110 gallons or less are exempt from federal underground storage tank regulations and both state aboveground and underground storage tank regulations.

However, property owners with non-regulated tanks may still be faced with costly cleanup. For example, if a non-regulated tank is found to be contaminating groundwater, the state water quality agency (ADEM in Alabama) can intervene under other regulatory authority. Also, if a non-regulated tank contaminates someone else's water supply, the property owner can be sued for negligence or nuisance. What all of this means is that non-regulated tank owners may still have a costly cleanup and no source of federal or state funds to help pay the cost.

Therefore, property owners with unregulated tanks still need to know the condition of their tanks. By testing and monitoring the condition of your tank, you could reduce the possibility of future problems or liability. Keep in mind that the bottom of aboveground tanks and underground piping to and from aboveground tanks can be leaking underground.

Testing For Tank Tightness. If you wish to investigate an individually owned tank in Alabama that does not fall under federal and state regulations, it must be at your own expense. Engineering firms that test tank tightness are listed in Appendix J. You can contact an engineering contractor or independent laboratory that does soil and water analyses for petroleum contamination.

Replacing Or Abandoning. You may excavate yourself to check on tank condition. If you have a single-wall steel tank buried somewhere on your property, your safest action may be to dig it up immediately. If it is not leaking, it most likely will sometime in the not too distant future. By replacing any below ground tanks with aboveground tanks and using proper containment, you can reduce the risk of fuel leaks, which may contaminate your water supply, your neighbor's water supply, or a major aquifer. Aboveground tanks can be more easily monitored for leaks or spills, while buried tanks are bound to leak after some peri-

od of time and may not comply with future groundwater legislation. The safest choice is an aboveground tank with secondary containment and a roof to keep rainfall out of the containment area.

If you excavate and find a leak and contaminated soil in the immediate vicinity of a fuel tank, you should deal with it now. Ignoring the situation may cost you more at a later date. Although UST regulations do not apply to these tanks, you are still responsible for cleaning up contaminated soil and groundwater under provisions of the Alabama Water Pollution Control Act.

Cleaning Up Contaminated Soil. If an underground storage tank leak has contaminated soil or groundwater, special contractors are available for soil remediation and water treatment if necessary, but they are expensive.

If the leak has not contaminated soil or groundwater, you may proceed on your own by excavating and removing the tank according to accepted techniques to prevent future contamination. Contact the UST section in the Groundwater Branch, Water Division of ADEM for guidelines in Alabama.

Small-Scale Onsite Soil Remediation (Cleanup).

The simplest approach for remediating a small volume of petroleum contaminated soil at the farm level is bio-remediation through land application. (A small volume would be less than 25 cubic yards or some volume you can handle within one working day.) The contaminated soil can be spread on agricultural land at a rate not to exceed 50 parts per million of total petroleum hydrocarbons (TPH) after the material has been incorporated into the top 7-inch plow layer. This mixing would dilute the toxic chemicals to the most common action level specified in many remedial work plans and allow for rapid degradation in the biologically active topsoil without causing any plant or soil problems. Laboratory measurements for TPH will be necessary to determine your land application rate.

Example Calculation. If the contaminated soil contains 5,000 parts per million (milligrams per kilogram, mg/kg) of TPH, an application rate of 10 tons per acre would give a concentration of 50 ppm when contaminated soil is incorporated in the top 7 inches of most field soils. (The top 7 inches of most soils weigh about 1,000 tons.)

$$\begin{aligned}
 \text{Rate per acre} &= \frac{50 \text{ ppm (desired field concentration)}}{\text{TPH concentration in ppm (mg/kg)}} \times 1,000 \text{ tons} \\
 &= 50 \text{ ppm}/5,000 \text{ ppm} \times 1,000 \text{ tons} \\
 &= 10 \text{ tons}
 \end{aligned}$$

If you have 25 tons of contaminated soil, then only 2.5 acres of land would be required. The measurable rate of TPH should be less than the 5 parts per million level within 5 to 10 days depending on climatic conditions and soil temperature. Another laboratory analysis can confirm this.

If you are not equipped to spread bulk soil material, another bio-remediation approach is to spread the contaminated soil over an impervious soil area preferably on an artificial liner in a sunny area that is not prone to flooding. Dikes should be built around the entire area to prevent water from running onto or off the treatment area. Cover the area during rainfall events if possible. In low rainfall areas, water should be added. Non-contaminated soil or special microorganisms may be added to furnish microbial populations for the decomposition process. Nitrogen fertilizer, preferably in the urea form, at a rate of 100 to 200 ppm or about 0.025 to 0.050 pounds (0.4 to 0.8 ounces) per cubic yard of mixture is recommended to help feed the active microorganisms. Thorough mixing and aeration will further accelerate decomposition. If the contaminated layer is 1 foot or less in thickness, mixing may not be necessary.

A test for TPH will confirm when the remediation process has been completed. This may take from 10 days to more than 3 months depending on the contamination level and climatic conditions. This process is very similar to composting and could be accelerated further with additional sources of carbon, nitrogen and water to promote the growth of thermophilic bacteria.

Conclusion

You need to be aware of the condition of any underground fuel tanks buried on your property, even those that have been abandoned in the past. A leaking underground tank is not only a personal health risk, but also a potential financial liability, should you have to pay for the cleanup of contaminated groundwater.

A property owner can be held accountable for damage to another individual's water supply when the source of contamination is traced to a UST on his property, regardless of the size of the tank. In most cases, the current property owner is liable, even if the property was just purchased, unless it can be proved that the previous property owner was negligent.

References

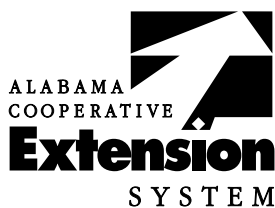
- Alabama Department of Environmental Management. 1993. Amendments To The *Alabama Underground Storage Tank Trust Fund Act*, Title 22, Chapter 35 Of The Code Of Alabama During The 1993 Regular And Special Sessions Of The Alabama Legislature. Fiscal Note to Accompany Proposed Revision To The Alabama Department Of Environmental Management's Administrative Code. Montgomery, AL.
- Autry, Andrew R. 1992. Soil Remediation: A Fast, Economical, And Safe Approach. *Land And Water* (July/August): 40.
- Code Of Alabama. 1993. Alabama Underground And Aboveground Storage Tank Trust Fund Act, as amended. Sections 22-35-1 through 22-35-13. Montgomery, AL.
- Code Of Alabama. 1988. Alabama Underground Storage Tank And Wellhead Protection Act Of 1988. Sections 22-36-1 through 22-36-10. Montgomery, AL.
- Link, Joe. 1992. Tankfuls of Trouble. *Progressive Farmer* (February): 92-93.
- Robinson, Janet E., Paul Thompson, W. David Conn, and Leon Geyer. 1993. Issues In Underground Storage Tank Management: Tank Closure And Financial Assurance. CRC Press, Inc. Boca Raton, FL.
- Tolvin, Jeff, and Howard J. Rubenstein. 1992. Cleaning Soil Contaminated By Leaking Gasoline Tanks. *Land And Water* (September/October): 10-11.

This publication, supported in part by a grant from the Alabama Department of Environmental Management and the Tennessee Valley Authority, was prepared by James E. Hairston, *Extension Water Quality Scientist*, assisted by Leigh Stribling, *Technical Writer*.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

Issued in furtherance of Cooperative Extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, and other related acts, in cooperation with the U.S. Department of Agriculture. The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) offers educational programs, materials, and equal opportunity employment to all people without regard to race, color, national origin, religion, sex, age, veteran status, or disability.

UPS, **New June 1995**, Water Quality 4.8.5



ANR-790-4.8.5