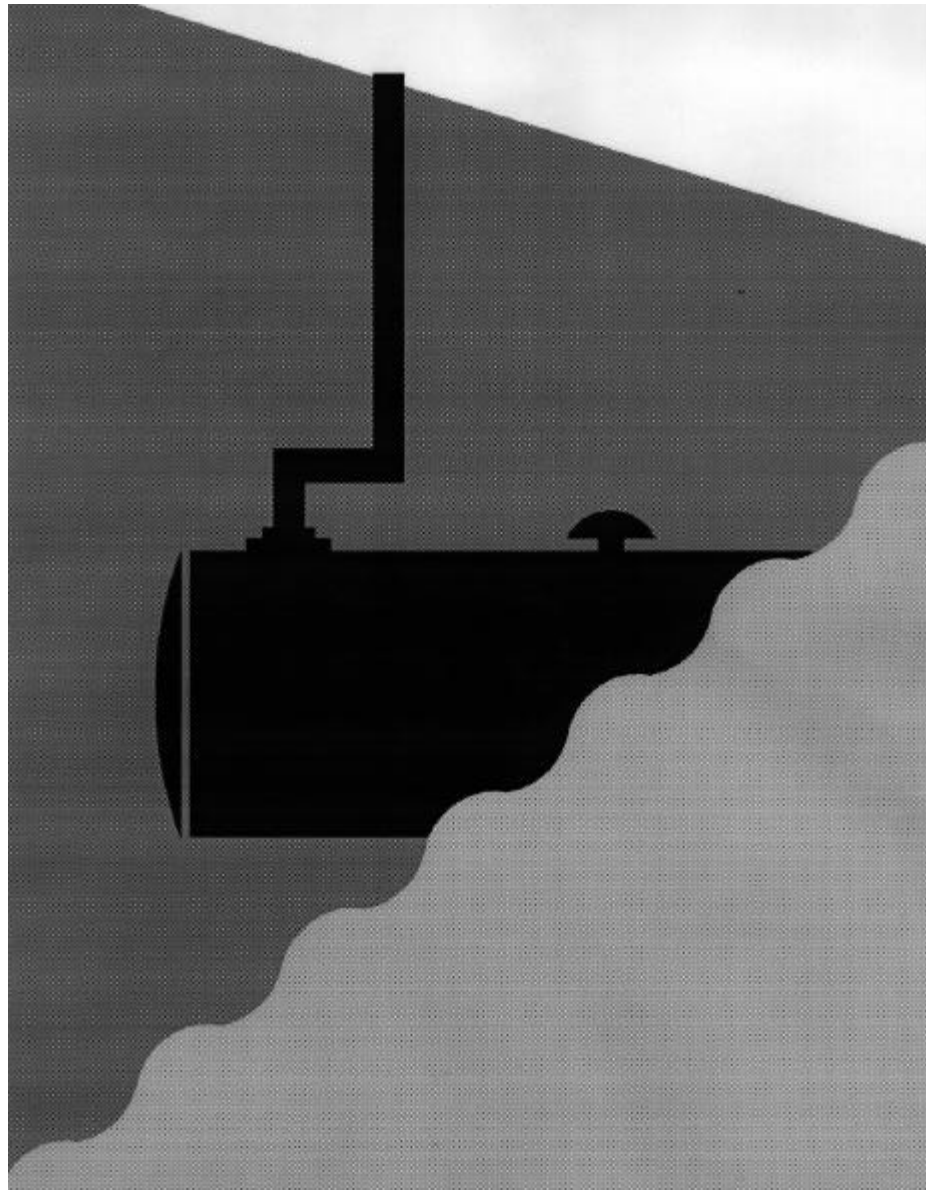




Musts For USTs

A Summary Of Federal Regulations For Underground Storage Tank Systems



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WHAT ARE THESE REGULATIONS ABOUT?

Over one million underground storage tank systems (USTs) in the United States contain petroleum or hazardous substances regulated by the U.S. Environmental Protection Agency (EPA). Many of these USTs have leaked or are currently leaking. More USTs will leak unless owners and operators make sure their USTs meet the requirements described in this booklet.

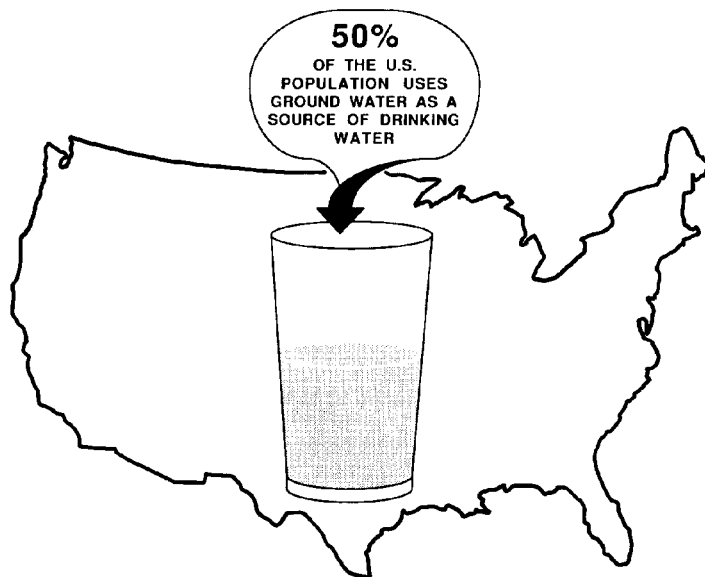
Releases from USTs--from spills, overfills, or leaking tanks and piping--can cause fires or explosions that threaten human safety. Releases from USTs can also contaminate the groundwater that many of us depend on for the water we drink.

Properly managed, USTs will not threaten our health or environment. Federal legislation, therefore, directed EPA to develop the UST regulations described in this booklet. Regulations require owners and operators of USTs to:

- # **Prevent** releases from USTs (see pages 7, 12-17, and 19-21);
- # **Detect** releases from USTs (see pages 8-11 and 19); and
- # **Correct** the problems created by releases from USTs (see pages 22-24).

In addition, the regulations require owners and operators of USTs to demonstrate their ability to pay for correcting the problems created if their USTs do leak (see pages 2 and 5).

Releases from USTs can threaten human health and safety. UST releases can also contaminate soil and drinking water supplies. As of April 1995, more than 287,000 UST releases had been confirmed. EPA estimates that about half of these releases reached groundwater.



Who Is The "Regulatory Authority"?

This booklet describes EPA's basic requirements for USTs, but your state or local regulatory authority may have requirements that are somewhat different or more stringent. Contact your regulatory authority for its specific UST requirements. If you are not sure who your regulatory authority is, see the list of state UST contacts starting on page 35.

If you don't know how to reach your state agency, see the list of state contacts starting on page 35.

What's An "UST"?

An UST is a tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground. The federal regulations apply only to USTs storing either petroleum or certain hazardous substances.

The "For Hazardous Substance USTs Only" section starting on page 28 identifies hazardous substances and special requirements for USTs storing them. Generally, the requirements for both petroleum and hazardous substance USTs are very similar.

Some kinds of tanks are **not** covered by these regulations:

- # 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 or tunnels.
- # Septic tanks and systems for collecting storm water and wastewater.
- # Flow-through process tanks.
- # Emergency spill and overfill tanks.

Requirements and definitions of USTs are found in the Code of Federal Regulations, 40 CFR Part 280.

Other storage sites, such as surface impoundments, are not covered by the federal requirements. Some tanks, such as field-constructed tanks, have been deferred from most of the regulations. (For details see the **Code of Federal Regulations, 40 CFR Part 280.**)

U ***The tables on the next two pages display basic UST requirements and deadlines...***

When Do You Have To Act?

TYPE OF TANK & PIPING	LEAK DETECTION	SPILL & OVERFILL PROTECTION	CORROSION PROTECTION
New Tanks & Piping (installed <i>after</i> December 22, 1988)	At installation	At installation (Does not apply to piping)	At installation
Existing Tanks & Piping (installed <i>before</i> December 22, 1988)	No later than December 1993	No later than December 22, 1998 (Does not apply to piping)	No later than December 22, 1998

What Do You Have To Do?

LEAK DETECTION (see pages 8-11 and 19)	
NEW TANKS	<ul style="list-style-type: none"> ◆ Monthly Monitoring*; or ◆ Inventory Control Plus Tank Tightness Testing** (only for 10 years after installation)
EXISTING TANKS	<ul style="list-style-type: none"> ◆ Monthly Monitoring*; or ◆ Inventory Control Plus Tank Tightness Testing** (only for 10 years after adding spill, overfill, and corrosion protection); or ◆ Inventory Control Plus Annual Tank Tightness Testing (only until December 1998)
NEW & EXISTING PRESSURIZED PIPING	<ul style="list-style-type: none"> ◆ Automatic Shutoff Device or Flow Restrictor or Continuous Alarm System; AND ◆ Annual Line Tightness Test or Monthly Monitoring* [except Automatic Tank Gauging]
NEW & EXISTING SUCTION PIPING	<ul style="list-style-type: none"> ◆ Monthly Monitoring*; or ◆ Line Tightness Testing (every 3 years); or ◆ No Requirements (if the system has the characteristics described on page 11)
SPILL & OVERFILL PROTECTION (see pages 12-15)	
ALL TANKS	<ul style="list-style-type: none"> ◆ Catchment Basins; AND ◆ Automatic Shutoff Devices or Overfill Alarms or Ball Float Valves
CORROSION PROTECTION (see pages 16-17 and 20-21)	
NEW TANKS & PIPING	<ul style="list-style-type: none"> ◆ Coated and Cathodically Protected Steel; or ◆ Fiberglass Reinforced Plastic (FRP); or ◆ Steel Tank Clad With FRP (does not apply to piping)
EXISTING TANKS & PIPING	<ul style="list-style-type: none"> ◆ Same Options As For New Tanks & Piping; or ◆ Cathodically Protected Steel; or ◆ Tank Interior Lining; or ◆ Tank Interior Lining AND Cathodic Protection

* Monthly Monitoring includes: Interstitial Monitoring; Automatic Tank Gauging; Vapor Monitoring, Groundwater Monitoring; Statistical Inventory Reconciliation; and other methods approved by the regulatory authority.

**Tanks 2,000 gallons and smaller may be able to use manual tank gauging (see page 9).

How Does Financial Responsibility Work?

GROUP OF UST OWNERS AND OPERATORS	COMPLIANCE DEADLINE	PER OCCURRENCE COVERAGE	AGGREGATE COVERAGE
<p>GROUP 1: Petroleum marketers with 1,000 or more tanks OR Nonmarketers with net worth of \$20 million or more (for nonmarketers, the "per occurrence" amount is the same as Group 4-B below)</p>	January 1989	\$1 million	<p>\$1 million if you have 100 or fewer tanks</p> <p>OR</p> <p>\$2 million if you have more than 100 tanks</p>
<p>GROUP 2: Petroleum marketers with 100-999 tanks</p>	October 1989		
<p>GROUP 3: Petroleum marketers with 13-99 tanks</p>	April 1991		
<p>GROUP 4-A: Petroleum marketers with 1-12 tanks</p>	December 1993		
<p>GROUP 4-B: Nonmarketers with net worth of less than \$20 million</p>	December 1993	<p>\$500,000 if throughput is 10,000 gallons monthly or less</p> <p>OR</p> <p>\$1 million if throughput is more than 10,000 gallons monthly</p>	
<p>GROUP 4-C: Local governments (including Indian tribes not part of Group 5)</p>	February 1994		
<p>GROUP 5: Indian tribes owning USTs on Indian lands (USTs must be in compliance with UST technical requirements)</p>	December 1998		

WHAT DO NEW PETROLEUM USTs NEED?

✓ **Installed
Correctly**

New UST systems are those installed after December 22, 1988.

You must meet four requirements when you install a **new** UST system:

✓ **Leak
Detection**

✓ You must certify that the tank and piping are **installed** according to industry codes. See page 7.

✓ Your UST must have **leak detection**. See pages 8-11.

✓ **Spill And
Overfill
Protection**

✓ Your UST must have devices that provide **spill and overfill protection**. Also, you must follow correct tank filling practices. See pages 12-15.

✓ Your UST must have **corrosion protection**. See pages 16 and 17.

✓ **Corrosion
Protection**

The table on page 4 displays basic UST requirements and deadlines.

The following pages provide information on these requirements...

What you must do for installation:

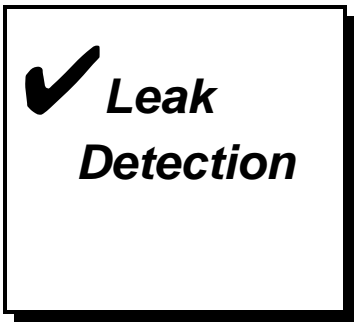
- # **Make sure your UST is installed correctly** by using qualified installers who follow industry codes. (See pages 31 and 34 for information on industry codes and installation practices.)
- # **Certify** on a **notification form** (see page 26) that you have used a qualified installer who can assure you that your UST has been installed correctly.

Installation problems result from careless installation practices that do not follow standard industry codes and procedures. Improper installation is a significant cause of fiberglass-reinforced plastic (FRP) and steel UST failures, particularly piping failures. Installation includes excavation, tank system siting, burial depth, tank system assembly, backfilling around the tank system, and surface grading.

Many mistakes can be made during installation. For example, mishandling of the tank during installation can cause structural failure of FRP tanks or damage to steel tank coatings and cathodic protection. Improper layout of piping runs, incomplete tightening of joints, inadequate cover pad construction, and construction accidents can lead to failure of delivery piping.

You need to make sure that installers carefully follow the correct installation procedures called for by industry codes.





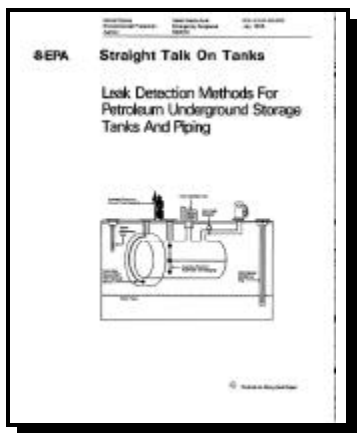
What you must do for leak detection:

You must provide your UST system with leak detection that allows you to meet three basic requirements:

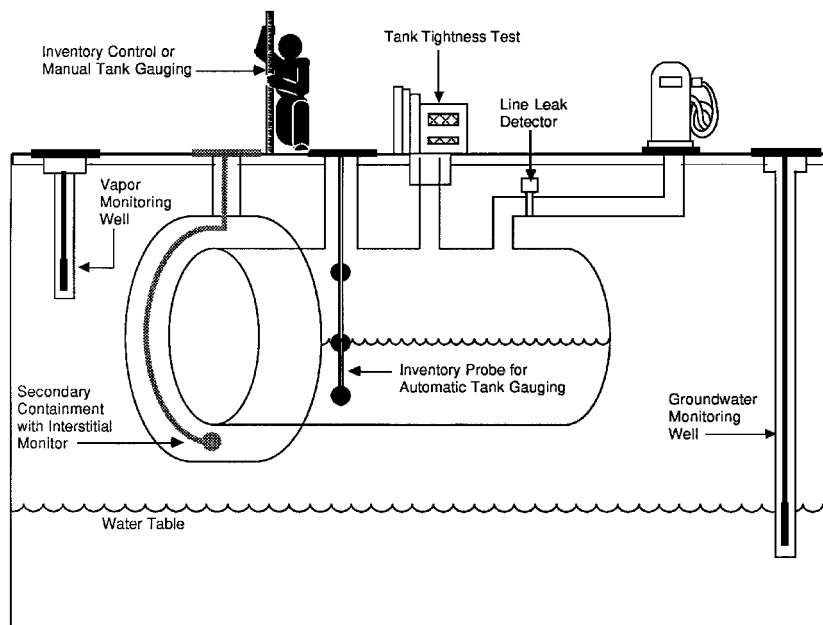
- # You can detect a leak from any portion of the tank or its piping that **routinely** contains petroleum;
- # Your leak detection is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions; and
- # Your leak detection meets the performance requirements described in the federal regulations (sections 280.43 and 280.44).

The **monthly monitoring methods** that you may use to meet the federal leak detection requirements are listed on the next page. As a **temporary** method, you may also use one of the two methods described on page 10. Please **note the additional leak detection requirements for piping on page 11.**

For a detailed booklet that focuses only on leak detection methods and requirements, order EPA's free booklet, **Straight Talk On Tanks**, by calling EPA's toll-free Hotline at 800 424-9346. Also, see page 32 and after for additional sources of information on leak detection.



Some Leak Detection Methods



Monthly Monitoring Methods

Interstitial Monitoring: This method detects leaks in the space between the UST and a second barrier. The regulations describe general performance requirements for interstitial monitoring with double-walled USTs, USTs fitted with internal liners, and USTs using interception barriers.

Automatic Tank Gauging Systems: This method uses automated processes to monitor product level and inventory control.

Monitoring For Vapors In The Soil: This method samples vapors in the soil gas surrounding the UST. Leaked petroleum produces vapors that can be detected in the soil gas. The regulations describe several requirements for using this leak detection method. For example, this method requires using porous soils in the backfill and locating the monitoring devices in these porous soils near the UST system.

Monitoring For Liquids On The Groundwater: This method monitors the groundwater table near an UST for the presence of released free product on the water table. Monitoring wells near the UST are checked frequently to see if petroleum can be detected. The regulations describe several requirements for the use of this method. For example, this method cannot be used if the water table is more than 20 feet below the surface of the ground.

Statistical Inventory Reconciliation: In this method, a trained professional uses sophisticated computer software to conduct a statistical analysis of inventory, delivery, and dispensing data, which you must supply regularly.

Other Methods Approved By The Regulatory Authority: If other methods can be shown to work as effectively as the methods described above for leak detection, these alternative methods can be approved by the regulatory authority.

Leak detection for USTs may consist of one or a combination of the monthly monitoring methods listed on this page.

Alternate Leak Detection Method Good For 10 Years

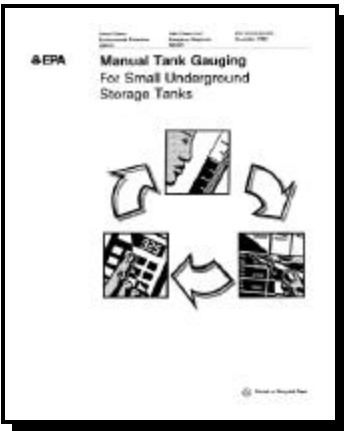
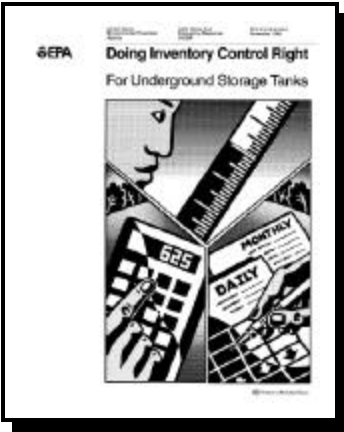
Instead of using one of the monthly monitoring methods noted above, you can combine inventory control with tank tightness testing, **but only for 10 years after you install a new UST**. Inventory control involves taking daily measurements of tank contents and recording deliveries and amount pumped. Based upon some daily and monthly calculations, you can discover if your tank may be leaking. Tank tightness testing usually requires taking the UST out of service while changes in level or volume over time are measured. Your UST will need a tank tightness test every 5 years. **After 10 years, you must use one of the monthly monitoring methods.**

The success of this temporary combined method depends on your performing inventory control correctly. EPA has a booklet available, **Doing Inventory Control Right**, that clearly explains how to do inventory control with simple step-by-step directions. The booklet also includes standard forms used to record inventory data. You can order this free booklet by calling EPA's toll-free Hotline at 800 424-9346 and asking for **Doing Inventory Control Right**.

One Additional Leak Detection Method For Small Tanks

Tanks of 2,000 gallons capacity or less may be able to use **manual tank gauging** as a leak detection method, either by itself or in combination with tank tightness testing. This method involves keeping the tank undisturbed for at least 36 hours each week, during which the tank's contents are measured, twice at the beginning and twice at the end of the test period. Manual tank gauging can be used as the sole method of leak detection for the life of the tank **only** for tanks up to 1,000 gallons. Tanks between 1,001 and 2,000 gallons can use this method only in combination with tank tightness testing. This combined method, however, can be used only during the first 10 years following tank installation.

EPA has a booklet available, **Manual Tank Gauging: For Small Underground Storage Tanks**, that clearly explains how to do manual tank gauging with simple step-by-step directions. The booklet also includes standard forms used to record inventory data. You can order this free booklet by calling EPA's toll-free Hotline at 800 424-9346 and asking for **Manual Tank Gauging**.



Additional Leak Detection For Piping

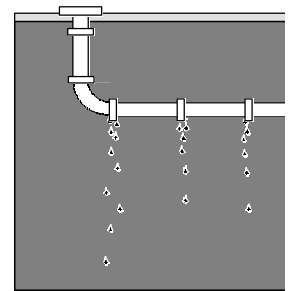
Pressurized piping must meet the following requirements:

- # The piping must have devices that automatically shut off or restrict flow or have an alarm that indicates a leak.
- # You must either conduct an **annual** tightness test of the piping or use one of the following monthly methods noted above for tanks: interstitial monitoring, vapor monitoring, groundwater monitoring, statistical inventory reconciliation, or other approved monthly methods.

If your UST has **suction** piping, your leak detection requirements will depend on which type of suction piping you have.

- # One type of suction piping does **not** require leak detection if it has the following characteristics:
 - ▶ Below-grade piping operating at less than atmospheric pressure is sloped so that the piping's contents will drain back into the storage tank if the suction is released.
 - ▶ Only one check valve is included in each suction line and is located directly below the suction pump.
- # Suction piping that does **not** exactly match the characteristics noted above must have leak detection, either monthly monitoring (using one of the monthly methods noted above for use on pressurized piping) or tightness testing of the piping every 3 years.

Leak detection for piping is particularly important, because most leaks come from an UST's piping.



✓ **Spill Protection**

You and your fuel deliverer should watch "Keeping It Clean," a video that shows how deliveries can be made safely with no spills (see page 34 for ordering information).

What you must do for spill protection:

- # **Your USTs must have catchment basins** to contain spills. Catchment basins are described below and on the next page. New USTs must have catchment basins when they are installed.
- # You and your fuel deliverer must **follow industry standards for correct filling practices**.

Many releases at UST sites come from spills. Spills often occur at the fill pipe when the delivery truck's hose is disconnected. Although these spills are usually small, repeated small releases can cause big environmental problems.

Human error causes most spills. These mistakes can be avoided by following standard tank filling practices. For example, you must make sure there is room in the UST for the delivery, and the delivery driver must watch the delivery at all times. If you and the delivery driver follow standard practices, nearly all spills can be prevented. For this reason, **federal UST regulations require that you follow standard filling practices.**

If an UST never receives more than 25 gallons at a time, the UST does not have to meet the spill protection requirements. Many small used oil tanks fall in this category.

What Are Catchment Basins?

Catchment basins are also called "spill containment manholes" or "spill buckets." Basically, a catchment basin is a bucket sealed around the fill pipe (see illustration below).

