TCEQ REGULATORY GUIDANCE
Program Support and Environmental Assistance Division
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Petroleum Storage Tank Spill and Overfill Prevention and Control

This is *module e* of the PST Super Guide, a comprehensive guide on issues relating to petroleum storage tanks (PSTs). This super guide provides an overview of laws and regulations for PSTs and can be used as an aid in minimizing potential risks. The guide does not replace laws and regulations which take precedence over any information in this publication.

Who should use this guide?

Underground storage tank (UST) owners and operators should use *module e* to understand how to prevent spills and overfills from occurring at their UST facility. UST owners and operators should note the following:

- You, the owner and operator of a PST, are responsible for ensuring compliance with all applicable laws and regulations.
- If your PST system is located in Medina, Bexar, Comal, Kinney, Uvalde, Hays, Travis, or Williamson County, additional requirements related to the protection of the Edwards or the Trinity Aquifer may apply (Title 30, Texas Administrative Code [30 TAC],[1] Chapters 213 and 214).
- In addition to the laws and TCEQ rules, local governments and other state and federal agencies may have rules that apply.

For more compliance information, contact Small Business and Local Government Assistance at 800-447-2827 or TexasEnviroHelp@tceq.texas.gov.

What is spill and overfill prevention and control?

Overfills and repetitive spills can result in significant cleanup costs and lost product from your UST system. Spills and overfills are often a result of faulty filling practices. Spill and overfill prevention and control prevents the need for cleanup of contamination that may occur when a UST is being filled. It relies on equipment designed to prevent releases to the environment.

1. www.tceq.texas.gov/goto/view-30tac

Monitoring

The transfer of a regulated substance into a UST must be continuously monitored by the person making the transfer. There are two monitoring options for the person making the transfer:

- Be physically present at or near the transfer point with an unobstructed view of the transfer to abate any spill or overfill.
- Be physically present at the facility, using a central monitoring station that is electronically connected to remote sensing equipment designed to detect and prevent spills and overfills at the transfer point.

You must properly maintain spill and overfill equipment to ensure that spills and overfills of regulated substances do not occur. Regulations explaining the required equipment and proper fill procedures, maintenance, and record keeping are in 30 TAC Section 334.48[2] and 30 TAC Section 334.51.[3]

Equipment

Each tank needs three pieces of spill and overfill prevention equipment:

- a tight-fill fitting
- spill containment equipment
- an overfill prevention device

Tight-fill fittings

The tank's fill pipe must be equipped with a tight-fill fitting, an adapter, or a similar device to ensure a liquid-tight seal during the transfer of product into the tank. Use of such fittings between the delivery hose and the UST's fill port reduces the likelihood of leaks.

Spill containment equipment

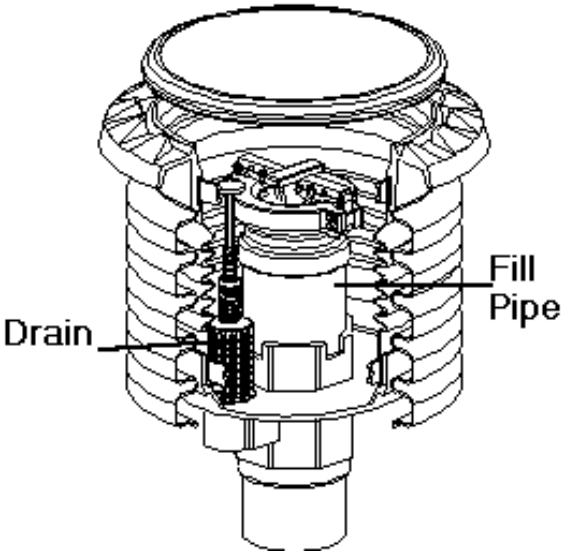
Spill containment equipment catches any spilled product from the delivery hose and is located at ground level, surrounding the tight-fill fitting. Spill containment equipment, such as a spill bucket (Figure 1) or a liquid-tight manway, riser, or sump, must be fitted around the fill tube.

Spill buckets (also known as spill-containment manholes or catchment basins) must be designed to prevent the release of regulated substances to the environment. They should have a liquid-tight lid or cover to minimize the entry of surface water, groundwater, or any other foreign substance into the container. Spill buckets should always be kept clear of debris and liquid. Any debris, liquid, or sediment found should be pumped out and disposed of properly. Manufacturers equip spill buckets with either pumps or drains to remove liquid (Figure 2). UST systems that require Stage I vapor recovery equipment must be vapor-tight and may have a vapor-tight drain valve.

2. www.tceq.texas.gov/goto/ust-general-requirements
3. www.tceq.texas.gov/goto/ust-spill-overfill-prevention

Figure 1. Spill bucket.

Figure 2. Spill bucket with a drain valve.



Overfill prevention devices

Each tank is required to have a valve or other device that will prevent the overfilling of the tank. There are three options for compliance:

- automatic shutoff devices
- automatic flow restrictors
- audible or visual alarms

Automatic shutoff devices

An automatic shutoff device stops flow of product into the tank at a preset level, which should not exceed 95% of the tank volume. The most common shutoff devices have a flapper or float (Figure 3) which rises as the tank is filled. When the liquid in the tank reaches the preset level, the flapper or float shuts off or reduces the flow into the tank (Figure 4). Automatic shutoff devices are commonly installed in the drop tube located in the fill pipe.

Figure 3. Automatic shutoff device with the float down and the fill valve open.

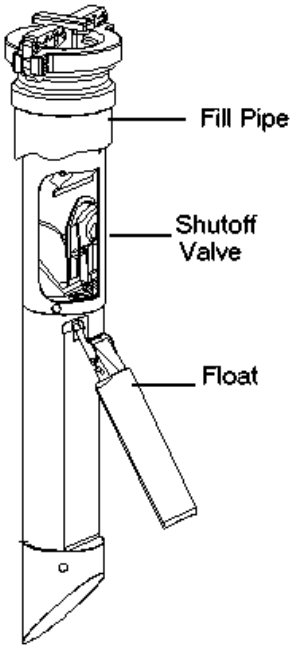
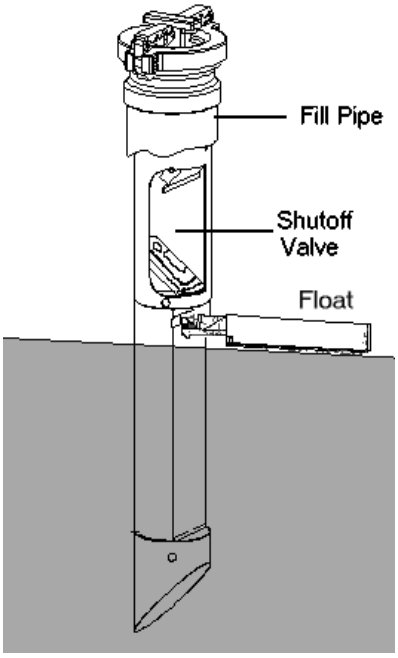


Figure 4. Automatic shutoff device with the float up and the fill valve closed.



Automatic flow restrictors

An automatic flow restrictor restricts flow to the tank above a preset level, which should not exceed 90% of the volume of the tank. A ball-float valve (Figures 5 and 6), the most common kind of flow restrictor, is installed in the vent line or in a separate, dedicated portal, such as in an automatic tank gauge probe riser or Stage I vapor recovery riser.

Automatic flow restrictors are no longer allowed to be installed or replaced as overfill prevention after September 1, 2018. Facilities currently using flow restrictors must install a different type of overfill prevention device once the flow restrictor needs to be repaired or replaced.

Figure 5. The ball-float valve with the ball at the bottom of the cage and the vent line open. The regulated substance is below the cage.

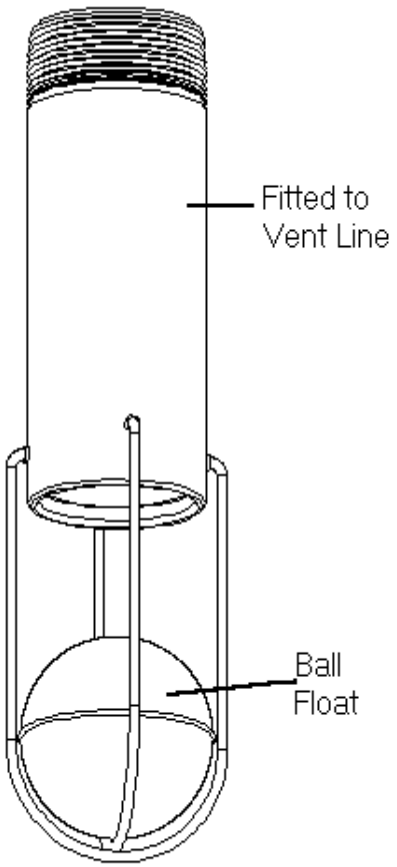
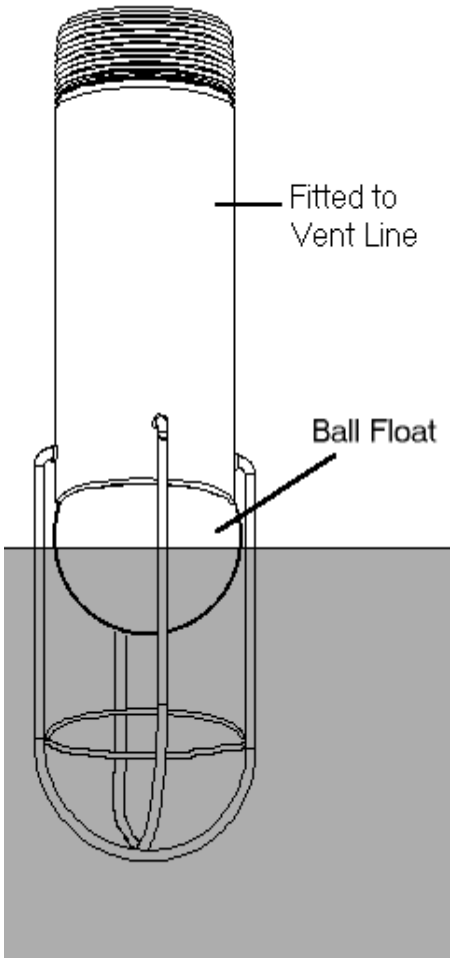


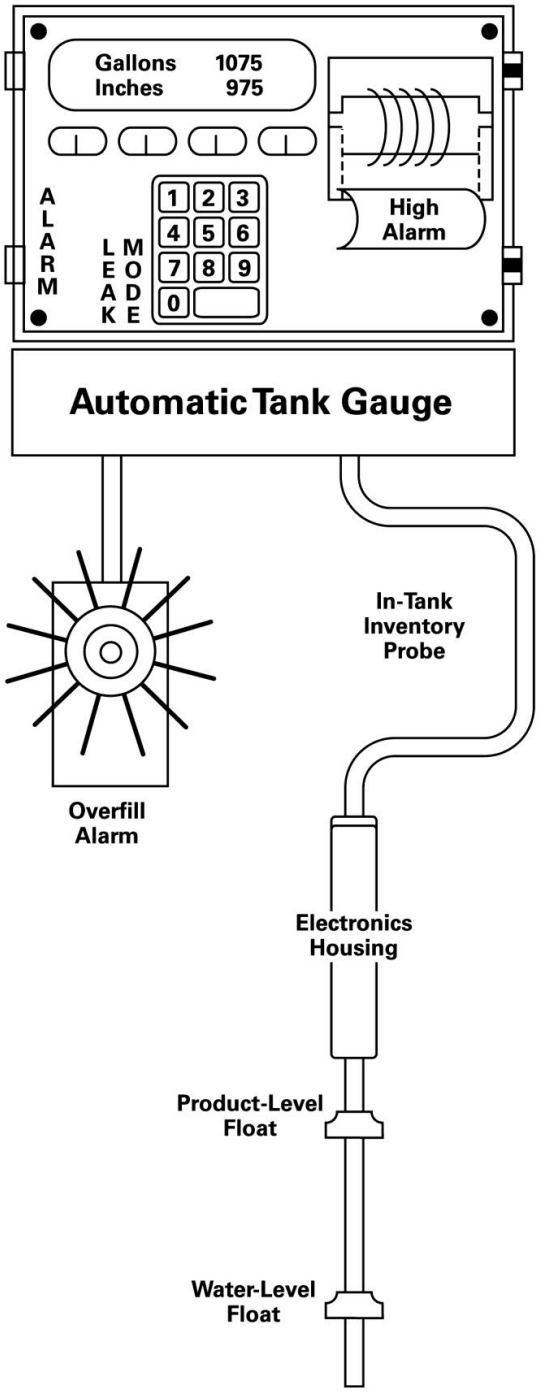
Figure 6. The ball-float valve rises as the regulated substance rises. The ball eventually seats in the vent line and restricts vapor flowing out of the vent before the tank is full.



Audible or visual alarms

An audible or visual alarm (Figure 7) should be set to alert when a tank's volume is 90% filled. Alarms may be used as an overfill device if they are used in conjunction with either an automatic shutoff device or a flow restrictor set at 98% of the tank's volume.

Figure 7. Overfill alarm.



How often do I need to inspect and test the equipment?

All facilities are required to conduct 30-day walkthrough inspections and periodic testing of their spill prevention equipment. The owner or operator should make sure that the spill container's sides, bottom, and penetration points are liquid tight.

During a 30-day walkthrough inspection:

- Remove any liquid and debris within 96 hours of discovery and properly dispose of it.
    - If the liquid contains fuel or chemicals, it could be considered a hazardous waste and should be disposed of at an authorized disposal facility.
- Make sure that the fill pipe does not have any obstructions and that the fill cap fits securely.
- Check for leaks in the interstitial area of double-walled spill buckets.

Periodic testing of spill prevention equipment must include one of the following:

- Conduct a vacuum, pressure, or liquid tightness test once every three years. Testing must be done according to manufacturer requirements or a code of practice developed by a nationally-recognized association.
- Monitor the wall integrity of double-walled spill prevention equipment during the 30-day walkthrough inspections. Keep records showing the equipment is double-walled and inspected every 30 days.

In addition, overfill prevention equipment must be inspected at least once every three years. During the inspections, check that your equipment is set to activate at the correct level and that it will activate when a regulated substance reaches that level.

What are sumps and what are their requirements?

A sump is any man-made pit or reservoir of a UST (including any connected troughs or trenches) that serves to collect and temporarily store regulated substances. Different types of sumps include submersible turbine pump sumps and under dispenser containment areas. Sumps have different requirements depending on when they were installed and their purpose.

You must conduct annual walkthrough inspections of your sumps. The different types of sumps and annual walkthrough requirements are summarized below.

- Containment sumps installed on or after Jan. 1, 2009, and any containment sump used for interstitial monitoring:
    - Check for damaged equipment, leaks to the containment area, and releases to the environment.

    - Check double-walled sumps with interstitial monitoring for leaks in the interstitial space.
    - Remove and properly dispose of any liquid or debris within 96 hours.
- Containment sumps installed before Jan. 1, 2009, and are not used for interstitial monitoring of piping:
    - Check for damaged equipment, any releases in the sump or to the environment, and for functioning cathodic protection if the metal components that routinely contain product are in contact with water.
    - Remove and properly dispose of any debris.
- Submersible turbine pump and under dispenser containment areas that do not have containment sumps:
    - Check for damaged equipment, releases to the environment, and for functioning cathodic protection if any metal components that routinely contain product are in contact with soil and water.
    - Remove and properly dispose of any debris.

Containment sumps used for interstitial monitoring of piping must also be tested periodically. They must include one of the following:

- Conduct a vacuum, pressure, or liquid tightness test once every three years when interstitial monitoring is the primary release detection method. Testing must be done according to manufacturer requirements or a code of practice developed by a nationally-recognized association.
- Monitor wall integrity of double-walled containment sumps during the 30-day walkthrough inspections. Keep records showing the containment sumps are double-walled and are inspected every 30 days.

Are there any exceptions?

Certain UST systems are not required to be equipped with spill and overfill prevention equipment. These exceptions are available for facilities that do not exceed 25 gallons per transfer, and any UST systems equipped with alternative equipment that has been reviewed and approved by the TCEQ.

If you receive product deliveries at frequencies greater than once every 30 days, then you may conduct your 30-day walkthrough inspections prior to each delivery.

What records do I need to keep?

You need to keep records to document that you are operating your UST system in compliance with applicable rules. Keep installation records for double-walled equipment and overfill-prevention devices for as long as the equipment is in use. Maintain records for walkthrough inspections and servicing, monitoring, testing, maintenance, and repair of spill and overfill prevention equipment for five years.

Required records include:

- Overfill prevention equipment three-year inspection results.
- 30-day spill prevention equipment walkthrough inspection results.
- Annual sump walkthrough inspection results.
- Periodic testing results or 30-day monitoring results of spill prevention equipment and containment sumps used for interstitial monitoring of piping.

You can create your own log for the 30-day and annual walkthrough inspections or use the example logs at the end of this document. Walkthrough inspection logs should show the date of the inspection, the name of the person performing the inspection, the results of the inspection, and any corrective actions needed.

Facilities claiming an exception need to maintain records of appropriate transfers or inventory for at least five years.

Where do I find more information?

Find complete requirements in 30 TAC[4] or:

- General Operating and Management Requirements (30 TAC Section 334.48)
- Spill and Overfill Prevention and Control (30 TAC Section 334.51)
- Tanks in the Edwards Aquifer (30 TAC Chapter 213)
- Tanks over other aquifers (30 TAC Chapter 214)

Other online resources include:

- Forms for PST facilities.[5]
- Spill and overfill prevention assistance[6] developed by our Small Business and Local Government Assistance program.
- UST Compliance Notebook[7] (RG-543) recordkeeping tool.
- Links to additional webpages about registering PSTs, technical requirements for regulated PSTs, and LPST cleanup are available on the Petroleum Storage Tanks Registration webpage.[8]
- UST Systems: Inspecting and Maintaining Sumps and Spill Buckets[9] (EPA 510-R-05-001).
- TCEQ's forms and publications search.[10]

4. www.tceq.texas.gov/goto/view-30tac
5. www.tceq.texas.gov/remediation/pst_rp/downloads.html
6. www.tceq.texas.gov/assistance/industry/pst/pst-spill-and-overfill-prevention
7. www.tceq.texas.gov/downloads/assistance/publications/rg-543.pdf
8. www.tceq.texas.gov/permitting/pst_cert.html
9. www.epa.gov/ust/ust-systems-inspecting-and-maintaining-sumps-and-spill-buckets-practical-help-and-checklist
10. www.tceq.texas.gov/publications

Industry standards of practices for UST activities:

- National Fire Protection Association Standard 385 “Standard for Tank Vehicles for Flammable and Combustible Liquids”
- American Petroleum Institute (API) Recommended Practice 1007 “Loading and Unloading of MC 306/DOT 406 Cargo Tank Motor Vehicles”
- API Recommended Practice 1621 “Bulk Liquid Stock Control at Retail Outlets”
- Petroleum Equipment Institute Publication RP1200 “Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities”

30-Day Spill Prevention Equipment Inspection: Log Sheet

Inspection Date:		***Inspector Name:***	

Bucket Number:		
Conditions to Check	**Response**	**Date Fixed (if needed)**
Is the spill bucket free of any liquid or debris?	☐ Yes ☐ No	
Is the spill bucket free of cracks or holes?	☐ Yes ☐ No	
Is the fill cap secured tightly on the fill pipe?	☐ Yes ☐ No	
If present, was any liquid or debris removed within 96 hours?	☐ Yes ☐ No	
Is the fill pipe free from obstructions?	☐ Yes ☐ No	
Double-walled equipment with interstitial monitoring: is the interstitial area free of leaks?	☐ Yes ☐ No	

Bucket Number:		
Conditions to Check	**Response**	**Date Fixed (if needed)**
Is the spill bucket free of any liquid or debris?	☐ Yes ☐ No	
Is the spill bucket free of cracks or holes?	☐ Yes ☐ No	
Is the fill cap secured tightly on the fill pipe?	☐ Yes ☐ No	
If present, was any liquid or debris removed within 96 hours?	☐ Yes ☐ No	
Is the fill pipe free from obstructions?	☐ Yes ☐ No	
Double-walled equipment with interstitial monitoring: is the interstitial area free of leaks?	☐ Yes ☐ No	

Comments (e.g. repairs made, corrective actions taken, etc.)

Annual Sump Inspection: Log Sheet

Inspection Date:		***Inspector Name:***	

Sump Number:		
Conditions to Check	**Response**	**Date Fixed (if needed)**
Any damage to the sump or equipment?	☐ Yes ☐ No	
Any leaks in the containment area?	☐ Yes ☐ No	
Any releases to the environment?	☐ Yes ☐ No	
Any regulated substances in the sump?	☐ Yes ☐ No	
If present, was any liquid or debris removed within 96 hours?	☐ Yes ☐ No	
Cathodic protection present and working?	☐ Yes ☐ No	

Sump Number:		
Conditions to Check	**Response**	**Date Fixed (if needed)**
Any damage to the sump or equipment?	☐ Yes ☐ No	
Any leaks in the containment area?	☐ Yes ☐ No	
Any releases to the environment?	☐ Yes ☐ No	
Any regulated substances in the sump?	☐ Yes ☐ No	
If present, was any liquid or debris removed within 96 hours?	☐ Yes ☐ No	
Cathodic protection present and working?	☐ Yes ☐ No	

Comments (e.g., repairs made, corrective actions taken, etc.)