Overfill Prevention for Underground Storage Tanks

Overview

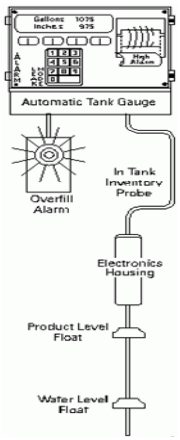
In underground storage tanks (USTs), overfill prevention devices help prevent releases of petroleum by shutting off the flow of product or alerting a delivery driver before an UST gets overfilled. This document describes the types of devices currently used in Virginia and overfill prevention device testing requirements.

Many releases at underground storage tank (UST) sites come from spills and overfills that occur during delivery. These can be large and immediately impact the environment, or they may be repetitive small releases that add up to large environmental problems over time. Overfill prevention devices are designed to prevent overfills by restricting or shutting off flow into the UST and/or alerting the delivery driver when the tank is nearly full. Each UST must have at least one overfill prevention device.

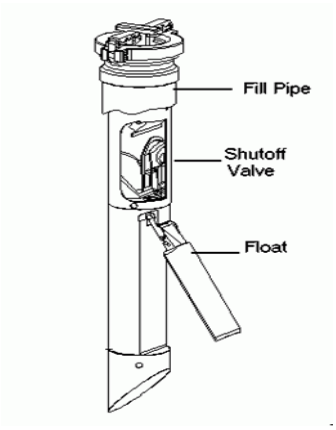
Types of Devices

There are three types of overfill prevention device currently in use in Virginia:

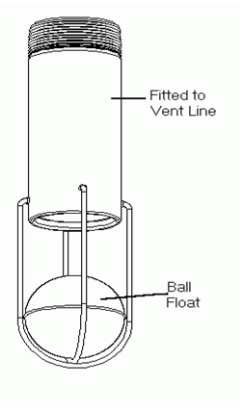
Overfill Alarm



Automatic Shut Off Valve



Ball Float Valve



Overfill Alarm: Overfill alarms are devices that alert the delivery driver through an alarm or flashing light that the tank is full. The alarm is connected to a fuel level float through an automatic tank gauge and must be programmed to go off when the tank reaches 90% capacity (or less). It must be placed so that the delivery driver can see or hear it (flashing lights, horn) from the tank field. Overfill alarms should not be impacted by the presence and/or operation of other overfill prevention devices and should reliably alert the fuel truck driver to a potential overfill.

Automatic Shut Off Valve: Shutoff valves are devices that physically shut off the flow of product into the tank. During the filling process, the fuel level raises the float, eventually closing the shut off valve to stop the flow of fuel into the tank. Complete shutoff must occur at no higher than 95% tank capacity. When the valve closes, the delivery hose will jump, alerting the driver to stop the delivery.

Ball Float Valve: Ball float valves are devices that alert the delivery driver that the tank is full by restricting the flow of product into the tank. During the filling process, the rising fuel level lifts the ball in the cage against the assembly, which is fitted to the vent line. This prevents petroleum vapors from escaping, increasing the vapor pressure inside the tank and significantly slowing down the flow of fuel into the tank. This change in flow rate alerts the delivery driver to stop the delivery. These devices must be set to restrict flow at no more than 90% tank capacity if they are used to meet the overfill requirements.

Device Inspection

Every three (3) years: all overfill prevention devices must be inspected by a qualified tester. The inspection must follow one of two procedures: (1) the equipment manufacturer's testing instructions or (2) Petroleum Equipment Institute's (PEI) RP1200. (https://pei.org/test/rp1200/)

Once a month: (as part of your monthly walkthrough inspection) check the fill pipe for blockages, such as sticks, which will prevent a shutoff valve from operating properly.

Important Considerations

- If you have more than one overfill prevention device installed on a tank system and the devices haven't been tested, you must test them all. After the first round of testing, you can designate a primary device and test only that one every three years.
- If an overfill prevention device fails its inspection and cannot be repaired, it must be removed from the tank system. Failing ball floats must be removed and can only be replaced with a shutoff valve or an alarm.
- If a ball float valve fails its inspection, the entire ball float device must be removed from the tank. This includes the nipple and cage assembly.
- Ball float valves *cannot* be used with suction piping systems, coaxial Stage 1 vapor recovery, or remote fills. Any ball float installed on a tank with this equipment will automatically fail its inspection and must be removed and replaced with a shutoff valve or alarm.
- Shutoff valves and ball floats can interfere with each other. If a shutoff valve and ball float are installed on the same tank, both devices must be tested and pass. Any ball float valve used together with a shutoff valve must activate at 95% or greater tank capacity; if it activates at less than 95% tank capacity, it automatically fails its inspection and must be removed.

Recordkeeping

Overfill device inspection and testing results must be kept on site or be made available upon request for at least three years.

What to Do If You Have an Overfill

If the overfill is less than 25 gallons and is immediately cleaned up and records of the cleanup retained, no release report is necessary. If the overfill is over 25 gallons (or is less than 25 gallons but not cleaned up within 24 hours) OR reaches state waters, report the release to DEQ immediately using the form at https://www.deq.virginia.gov/our-programs/land-waste/petroleum-tanks/cleanup-activities/tools-and-resources.or by contacting your DEQ regional office (https://www.deq.virginia.gov/get-involved/about-us/contact-us). If the overfill is significant and presents an imminent threat to human health or the environment, **call 911 and the Virginia Emergency Operations Center at 1-800-468-8892**.

For more information

- Contact the Office of Spill Response & Remediation at tank@deq.virginia.gov
- Contact your regional DEQ Office: https://www.deq.virginia.gov/get-involved/about-us/contact-us