

Common Issues with UST Systems

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Common Problems Found at UST Facilities

An owner or operator of underground storage tanks (USTs) storing petroleum or other hazardous substances must be knowledgeable of the key components of the UST system, including leak detection. The owner/operator is responsible for appropriate maintenance, monitoring, record keeping and reporting related to the UST system. The following are some of the common issues with UST systems have been identified by inspectors.

Notification and Permitting Documentation

- UST Notification forms are not readily available at the facility or alternate location.
- The notification form has not been updated with new equipment or if a UST change-in-service has occurred. Frequently, USTs will be used to store various petroleum products (e.g. gasoline to diesel or vice versa) during its service period, requiring a notification form to the implementing agency.
- A current State-issued UST certificate must be prominently displayed and available for review during inspections.

Release Detection

Given the potential for gasoline and other product releases to impact the environment, notably groundwater, leak detection is a critical part of UST management. Leak detection also helps prevent fires and explosions resulting from vapors in sewers and basements. This is why release detection is so important.

In most instances, releases from buried piping and USTs cannot be visually detected. Therefore, other release detection systems must be in place. The following are some of the common UST leak detection systems:

For Automatic Tank Gauges (ATGs)

A commonly used ATG system consists of a probe installed in the USTs and wired to a monitor to provide information on product/water levels and temperature. ATG systems automatically calculate any changes in product volume that can indicate a leak. Common problems with an ATG system include the following:

- ATG not operating properly or not programmed properly (not set at a minimum of 0.2 gal/hr).
- ATG denotes (“invalid”) for the monthly “Leak Check”, “CSLD” or “SCALD” reports.
- ATG denotes “probe out” - the in-tank probe is inoperative.
- Monthly ATG records are not kept for a minimum of 12 months or are not appropriately organized.
- No paper or ink in the ATG to print reports.
- No operator manuals.
- ATG alarms go unnoticed or are disregarded as nuisances.
- Failure to investigate an ATG alarm or failed leak test result.
- Failure to notify the implementing agency of a suspected release within 24 hours.

Interstitial Monitoring

Interstitial monitoring detects leaks in the space between the tank (and/or piping) and secondary containment. Basic problems identified with this system include the following:

- If using an electronic monitoring device, no record or monthly log of monthly monitoring results are available at the time of the inspection.
- Interstitial probes are broken or inoperable.

Vapor and Groundwater Monitoring

Vapor monitoring measures product vapors in the soil around the UST to identify a leak, while groundwater monitoring monitors the underlying groundwater for evidence of leaks. While these methods rely on detecting the leak after it has already impacted the environment, they can detect leaks (notably vapor leaks) that may go undetected by other leak detection methods. The following are issues with these systems :

- There are no records of baseline monitoring results.
- No initial site assessment for well siting and/or no well construction information.
- Failure to check well monitoring systems every thirty days.
- Failure to keep records of monitoring and monthly detection records are unavailable.
- Groundwater levels can fall below the bottom of a monitoring well.
- Monitoring wells are not clearly marked or secured.

Manual or Statistical Inventory Control

Manual Inventory Control can only be used for up to ten years after the UST has been upgraded for spill, overfill and corrosion protection, and most tanks were required to be upgraded by December, 1998. Common problems seen with the manual method include the following:

- The measuring stick is broken or rounded at the end, or the stick markings are not discernible.
- Product inventory data is not reconciled.
- Inventory reports are missing within a 12 month period.

Statistical Inventory Reconciliation (SIR) uses computer software to conduct a statistical analysis of inventory, delivery, and dispensing data. This method of release detection can be used for both USTs and product piping. However, SIR reports must say “pass”, and not “failed” or “inconclusive”, in order to meet the monthly monitoring requirement.

Release Detection for Product Piping

Studies have shown that most releases are caused by piping failures in both pressurized piping and suction piping systems. The following are some of the common problems with product piping:

- Failure to conduct annual line tightness tests and a functionality test of the automatic line leak detector (ELLD and ALLD) for pressurized piping.
- Failure to conduct line tightness tests every three years for “American” type suction systems.
- Failure to keep records of tightness tests.
- Failure to keep records of monthly “sensor status” reports for interstitial monitoring.
- Failure to install a line leak detector (LLD) on systems using only interstitial monitoring.

Spill and Overfill Prevention

The following problems are found in the tank sump man-ways where the product piping is connected to the submersible pumps in pressurized systems:

- The UST sumps are filled with water and/or fuel. Any fuel in the sump should be treated as a suspected release.
- Sump product sensors are installed too high to detect a release of product.
- Thermoplastic flexible product piping may be bent or deformed.
- Sealed rubber “test” boots that surround the ends of double walled piping prevent product from being detected by the sump sensor.

Spill prevention equipment (spill buckets) and overfill devices such as a “flapper valve” or an alarm, are intended to prevent the release of product to the environment. The following are some common problems found with spill prevention equipment:

- Cracked or broken spill buckets.
- Spill buckets that are filled with water or fuel.
- A broken, defective or willfully disabled flapper valve.
- In-operable alarm or that the alarm is located too far away to be heard during product delivery.

Corrosion Protection

Although now rare, any bare steel tanks and other metal components of UST systems must be protected from corrosion. Cathodic protection systems are designed to protect the UST systems from the effects of corrosion. The following are some of the basic problems found with corrosion protection systems:

- Failure to have a certified technician inspect the cathodic protection system every three years.
- Failure to keep records of the last two cathodic protection tests.
- For impressed current systems, failure to check the impressed current system every 60 days and/or to provide electrical power to the impressed current system.

Additional Record Keeping

- Failure to keep all records of leak detection, repairs and warranty claims.
- Records are not readily accessible.
- Lack of knowledge by facility personnel of the record keeping system or the record locations.

adapted from: <http://www.epa.gov/region4/usttoolkit/commonproblemsfoundatustsites.html>