

RELEASE DETECTION: MEETING THE TANK REQUIREMENTS

In 1988, federal regulations were adopted requiring all owners and operators of regulated underground storage tanks (USTs) to test their tanks for releases at least once every 30 days using a testing method that meets the requirements of the federal Environmental Protection Agency (EPA) and to maintain records of those tests for at least 12 months. In 1989, Pennsylvania adopted the same requirements for release detection.

EPA estimates that as many as 25 percent of the nation's UST systems may now be leaking or will leak, contaminating soil, surface water, and groundwater. Leaking UST systems have been the largest source of groundwater contamination in the nation and in Pennsylvania.

EPA-accepted release detection methods are designed to detect releases from tanks and connected underground piping that routinely contain product.

Conducting proper release detection helps owners find leaks quickly, reducing the environmental impact and cleanup costs. Release detection also benefits tank owners from a business perspective. Release detection quickly alerts a tank owner or operator of potential releases, allowing response before extensive damage and loss of product occurs. When the release detection method indicates a release, the Pennsylvania Department of Environmental Protection (DEP) must be notified by the owner/operator within 24 hours of confirming the release. A quick response can help minimize cleanup costs. The average cleanup costs over \$100,000, but costs can be reduced if a release is detected quickly.

Conducting release detection correctly and maintaining complete and accurate records of test results is beneficial to tank owners. Recordkeeping helps to document that a tank is in compliance and not releasing product. Records of release detection results must be kept for all storage tanks (if kept off site, they must be easily obtained) and made available upon request.

Piping that routinely contains product must also be monitored. Piping release detection methods are addressed in DEP Fact Sheets 2630-FS-DEP1507, "How to Detect Releases in Underground Piping Systems," and 2630-FS-DEP2132, "Tightness Test for Underground Piping Systems."

Beginning on December 22, 2018, owners and operators of UST systems installed after that date must meet the annual testing requirements for electronic and mechanical components of release detection equipment at installation. Owners and operators of UST systems installed on or before December 22, 2018, must meet the requirements for annual testing of electronic and mechanical components of release detection equipment before the next required Facility Operations Inspection occurring after December 22, 2019, but not later than December 22, 2021.

Owners and operators who fail to conduct required release detection on their UST systems are in violation of federal and state regulations and are subject to more frequent third-party inspections and enforcement actions such as civil penalties and/or mandatory closure of the systems. A tank that is out of service may be exempt from release detection requirements if it is registered in temporary out-of-service status and contains no more than one inch of product and residue.

TANK RELEASE DETECTION OPTIONS

For UST systems installed or replaced on or before November 10, 2007:

- Monthly monitoring methods: interstitial monitoring, automatic tank gauging (ATG), statistical inventory reconciliation (SIR), groundwater monitoring, or vapor monitoring; or
- Manual tank gauging (for tanks that are 1,000 gallons or less).

For UST systems installed or replaced after November 10, 2007:

- Monthly monitoring method: interstitial monitoring.

MONTHLY MONITORING METHODS

Interstitial monitoring requires a barrier (secondary containment) between the UST and the backfill. For UST systems installed or replaced after November 10, 2007, this must be accomplished by use of a double-walled tank. Automated monitors or manual checks are used to detect the presence of liquid in the interstitial space of

the double-walled system. Monitoring for liquids should be done at the lowest point of containment. This method can provide maximum protection because it detects problems before product is released to the environment.

ATGs require a probe that is installed into the UST. The probe is connected to a monitor (also referred to as a control box) that measures the product level and gives information and monthly test results. The monitor must be third-party certified to detect a loss rate of 0.2 gallons per hour (gph). In some systems, up to eight tanks can be connected to a single monitor. The monitor may trigger an audible or visual alarm when a possible release is detected.

SIR involves gathering data, similar to manual inventory control, that are analyzed monthly by specialized software. Additional information is available in the DEP booklet 2630-BK-DEP1940, *Introduction to Statistical Inventory Reconciliation for Underground Storage Tanks*.

Groundwater monitoring requires the drilling of one or more permanent wells close to the UST. The monitor may be a simple hand-held device or a more advanced device connected to the well. Groundwater monitoring can only be used if: 1) The stored product does not easily mix with water, and floats on top of water; and 2) The water table is no more than 20 feet below the surface. Also, the material between the UST and the sampling wells must be porous enough (including sand and gravel) to allow any release to pass quickly to the wells. A site evaluation, completed by a Pennsylvania-licensed professional under the Engineer, Land Surveyor and Geologist Law (63 P.S. 148-158.2), is necessary to determine the suitability of the site for this method.

Although this may be one of the least expensive methods to install, the monitor indicates a release only after groundwater has already been contaminated, thus increasing cleanup costs.

Vapor monitoring requires the installation of monitoring wells within the backfill. An audible or visual monitor may be used with this method. The use of this method, however, is limited because it can only be used with products that evaporate easily. A site evaluation must be completed by a Pennsylvania-licensed professional under 63 P.S. 148-158.2 to determine the suitability of the site for this method. Releases are detected only after leaving a UST system.

Tank tightness testing is conducted by DEP-certified individuals that specialize in tank testing. Tightness testing usually involves filling the UST with product and measuring any loss over a period of time. Most tank tightness testing techniques require that fuel not be dispensed while the testing takes place.

When a UST is filled to the overfill set point, an owner/operator may use an ATG certified to perform a 0.1-gph tank test to perform a tank tightness test. The 0.1-gph test must be selected and the results documented.

Manual tank gauging can be used as the sole method of release detection without having to convert to a monthly monitoring method, but only with USTs up to 1,000-gallon capacity. This method involves putting the tank out of service each week for at least 36 to 58 hours, depending on tank size, and taking several stick readings before and after the idle time. See EPA booklet *Manual Tank Gauging for Small Underground Storage Tanks*.

Choosing a release detection method:

UST owners and operators should start by consulting with a knowledgeable professional who can determine which release detection methods are acceptable for a facility. A good source of information is an experienced petroleum equipment dealer. Contact several dealers to get a comparison of options and costs. Other sources of information are business associations, product distributors or DEP-certified installers, and the EPA booklet *Straight Talk On Tanks*.

For more information, visit www.dep.pa.gov, Businesses > Land > Storage Tanks.