A Quick Overview of Tank Tightness Testing

EPA studies have shown that tank tightness testing can be done reliably and affordably. For many existing tanks, it is the best available release detection option because permanent installation of equipment is not necessary, capital requirements are limited, and many commercial methods are available.

Tank tightness testing identifies leaks in closed tank systems and must be performed every 5 years for tank systems that do not have monthly monitoring such as automatic tank gauging, interstitial monitoring, vapor monitoring, or groundwater monitoring. Tank tightness testing must be performed along with monthly inventory control, but this combined method can only be used during the first 10 years following installation of a new UST or the upgrade of an existing UST with corrosion protection. Neither inventory control nor tightness testing alone is an acceptable method of leak detection.

How Tank Tightness Testing Works

The two types of tank tightness testing are volumetric and non-volumetric testing. The generic term "precision test" may be applied to all of these test methods.

a. Volumetric Testing

Changes in product level or volume in tanks are measured precisely (in milliliters or thousandths of an inch) over several hours. Changes in product temperature must also be measured in some methods to account for temperature-induced changes in product volume. Some methods require that the tank contents be mixed.

Tests are conducted either on partially filled or overfilled tanks. In a partially filled tank, tests are conducted with the product level below the top of the tank. Because product level changes occur over a large surface area, small changes in volume will create very small changes in product level. For example, in a half-filled 10,000-gallon tank, 8 feet in diameter, a volume change of 0.05 gallons will cause a level change of about 0.00006 inches. Level sensing devices must be considerably more sensitive for partially filled tank testing than for an overfilled tank to achieve the same accuracy.

In an overfilled tank test, the tank is filled until the product level reaches the fill tube or a standpipe located above grade. Because product changes occur in a small surface area, small changes in volume cause large changes in level. A net decrease in product volume during testing indicates a leak.

b. Non-volumetric Testing

Instead of monitoring for changes in product level or volume, these methods look for some other evidence of a leaking tank. Acoustic testing methods use equipment that 'listens' for the sound of air bubbling through a hole or the sound of turbulent product flow at a hole. This method may not work well where the water table is high or where the tank sits in mud. Tracer methods add an easily detected liquid or vapor to the tank. The backfill surrounding the tank is monitored to see if the tracer escapes.