

25 YEARS of UST Compliance

Looking Back — and Looking Forward

by Brad Hoffman

Few developments have changed the landscape in the retail petroleum industry as dramatically as the 1984 amendments to the federal Resource Conservation and Recovery Act. With one stroke of the pen, President Ronald Reagan put in place a set of regulations that brought underground storage tanks (USTs) within the jurisdiction of the Environmental Protection Agency (EPA).



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These much-anticipated regulations launched a radically new era of environmental compliance for petroleum dispensing facilities.

While expensive and arduous for most operators, the bold new regulations were created for noble reasons. At the time, the EPA estimated that 25 percent of the 2 million USTs in the United States were leaking liquid petroleum hydrocarbons and other hazardous chemicals into the ground. With nearly half of the nation's drinking water coming from groundwater supplies, leaking USTs were becoming an extraordinary problem.

Now, 25 years later, the EPA reports that nearly 1.7 million of those USTs have been properly closed and removed; that incidents of leaks have been reduced from 67,000 per year in 1990 to about one-tenth of that number in 2008; and that more than 377,000 leaks have been cleaned up.



Clockwise from top left: Excavated leaking UST, circa 1985; Station tank testing, 1998; Tank deflection testing option, 1991; Line test, 1990.

Today, there are approximately 623,000 federally regulated USTs in the United States. With the environmental success accomplished so far, the EPA is taking a fresh look at UST regulations—examining what has worked, what hasn't and what's changed. This is no random exercise. The EPA will use this data to draft updated regulations that will take us through the next 25 years.

A LOOK BACK

Much has changed in the world of UST environmental compliance over the past 25 years. In previous days, fuel in a UST was measured with a dipstick dropped into the tank once a day. Leaks typically went undetected—often until an oil slick appeared in a nearby stream or foul-tasting water came out of a tap. By that point, the problem was big—and so was the price tag for clean-up. Even if a gas station's tanks and piping weren't leaking, considerable contamination occurred from delivery hoses draining into

the ground around the unprotected fill pipes and from dispensers leaking into the soil.

The new regulations initially focused on testing existing tanks and pipes, and stopping corrosion of existing steel tanks. Seemingly overnight, dozens of companies were formed to fill the new, substantial demand for UST testing and compliance services.

First came "volumetric" systems, which measure product level and temperature changes over a period of time to calculate a change in volume. If the volume change is larger than a predetermined threshold, the tank is declared to be leaking.

Following quickly thereafter was an array of "non-volumetric" test systems. The most popular proved to be the vacuum method, which eliminated the need to fill tanks prior to testing, thereby mitigating many of the significant logistical and safety issues inherent in other testing systems.

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'ALL' ABOUT TANKS

Also of intense focus in the early days of compliance programs was controlling corrosion in unprotected bare steel tanks. Many UST leaks were occurring through holes that developed as steel tanks and piping corroded. By December 1998, steel tanks and piping had to be protected from corrosion. Existing tanks were protected by installing cathodic protection systems. New UST systems were either made of cathodically protected steel or of non-corrodible materials, such as fiberglass.

A large percentage of the "Mom and Pop" gas station operators that were so prevalent in the 1980s chose to exit the market after 1998, rather than face the often exorbitant costs of upgrading their sites. This radical shift in the market has led to the elimination of more than two out of every three USTs in the United States since implementation of the regulations.

BROADENING REGULATORY SCOPE

The EPA's UST regulations set minimum standards throughout the country. They defined baseline technical requirements for protection from leaks, as well as for establishing financial responsibility in the event a leak did occur. Many state and local governments took the requirements further—in some cases, much further.

California is a prime example. The California Air Resources Board (CARB) created additional regulations designed to minimize the air pollution generated by UST fueling systems. This was the genesis of Stage II vapor recovery systems. CARB standards, which have been adopted in other states, as well, also included compliance testing for pressure decay, dynamic backpressure, air/liquid



Stage II dispenser training, 2009, top;
Leak detector testing, 2009, bottom.



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ratio, vacuum vent cap integrity, drop tube integrity and others. Stage I vapor recovery requirements have since been adopted at the federal level, and new requirements are currently being phased in.

California also implemented testing requirements for secondary containment systems, including tank and line interstitial spaces, sumps, and spill containers. California and some other state regulations require annual inspections of the permanent monitoring systems that are installed to monitor the UST systems.

Other regulatory inspections or actions required in some jurisdictions include site maintenance and compliance inspections, fuel integrity sampling and testing, tank deflection testing, fuel filtration and cleaning requirements, meter calibration, and continuity testing. The list goes on and on.

The evolution of the company for which I work illustrates the point. In 1989, more than 90 percent of Tanknology's business was derived from tank testing. Today, tank testing is less than 20 percent of our work. The remaining 80 percent represents tests and services related to other UST requirements that have come into existence since then. Field technicians, who in 1989 had a single certification for tank tightness testing, today frequently have more than 20 certifications for the various technologies they utilize, test and certify.

THE NEXT 25 YEARS

The EPA is now looking ahead. In a process involving a wide array of industry stakeholders, including PEI, the agency is preparing to revise, update and, in many cases, expand the regulations governing UST sites. One of its top

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'ALL' ABOUT TANKS

priorities is to meet a mandate created by the Energy Act of 2005 requiring inspection of all regulated USTs at least once every three years.

Some of the additional areas of potential focus related to *release prevention* include:

- Operation and maintenance requirements, such as overfill equipment functionality testing, mandatory walk-through inspections, spill bucket testing and interstitial integrity testing
- A possible ban on new ball floats and increased regulation of existing flow restrictors
- Verification and testing when repairs are made to interstitial areas or after non-release tank repairs.

Related to *release detection*, some of the significant changes being considered are:

- Mandating periodic operational checks and

testing of automatic tank gauges, probes, sensors, line leak detectors and alarms

- More stringent release detection requirements for high throughput facilities, such as truck stops
- Additional technologies, such as statistical inventory reconciliation and continuous in-tank leak detection systems
- Exploring how to address interstitial alarms in terms of reporting suspected releases
- Adjusting leak rates and other performance criteria based on the method of release detection.

One hot button that also has the attention of the EPA is the impact to fueling systems from alternative biofuels. Questions have arisen about their compatibility with certain older fiberglass and steel tanks, and associated components.

Concerns also are being raised about the accuracy of current leak detection systems in tanks containing ethanol-blended fuels. The EPA has commissioned a study to evaluate this issue. If the fears are validated, the ramifications for the industry could be enormous.

The EPA also is examining whether to regulate, exclude or continue to defer regulations governing release detection for emergency generator USTs, airport hydrant systems, field-constructed USTs, wastewater treatment tank systems and systems containing radioactive substances. Most of these systems were excluded from the initial regulations because economically practical methods for leak detection did not exist at the time. However, that is not necessarily the case today. The EPA is likely to be interested in monitoring those systems if it can be proven economically viable to do so.

These are just some of the considerations the agency says it is contemplating. So what's likely to actually happen? It's difficult to predict what will change. But a study of how the regulations have evolved, particularly in leading states like California, suggests there will be more intensive focus on "operational compliance." This would mean more stringent inspections, both by operational

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personnel on site and periodically by a qualified third party. It also likely would mean more ongoing verification of the detection and prevention systems that are in place.

As anyone involved in UST inspection knows, complying with the letter of the law doesn't mean you won't end up spending hundreds of thousands of dollars cleaning up a leak. For example, our experience shows that a large percentage of double-contained systems have leaked, even after they were upgraded to comply with the new regulations. Leaks from spill containers are another example. There is increasing evidence that they are one of the main sources of leaks at dispensing facilities.

Clearly, the UST compliance program launched by the EPA 25 years ago was only the beginning of the effort to keep liquid petroleum hydrocarbons and dangerous

chemicals from damaging our environment. Regulations have evolved, been strengthened and expanded to touch virtually every aspect of a fueling facility. Tremendous progress has been made. And in the months ahead, the EPA will be determining what the next stage will look like for all of us. ☺

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