



UST TALK

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A Newsletter for Underground Storage Tank Owners / Operators

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Observations from the field..... by Ted Unkles

By the time you read this newsletter, we will be about halfway through all the facility inspections we need to conduct during the fair-weather months of 2015.

Overall, we are finding good compliance rates. Most tank owners and permittees are doing the required leak detection monitoring, and most are keeping good records of that monitoring. (If you are among the few who are not monitoring their leak detection equipment, or are not keeping good records, now is a very good time to start!) Most are also conducting the required monthly walk-through inspections, and are keeping good records of those as well.

So what compliance problems are we finding? Not surprisingly, the most common problems we are finding this year are the same problems that have plagued us for years. The good news is that we are not finding those problems as often as in the past. Here they are:

Crud in spill buckets. The function of a spill bucket is to catch and contain a small fuel spill that might occur when the delivery driver disconnects the hose from the fill port. But if the spill bucket is already half full of water, sand, grit, mud, or heaven-knows-what, the bucket's capacity is severely diminished. Spill buckets need to be kept free of debris and water.

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When a delivery driver tries to add product to this tank, water will flow down the fill pipe. And the spill bucket's capacity to contain a fuel spill is severely diminished.

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Observations from the field..... by Ted Unkles (cont. from page 1)

Rusty spill buckets. Spill buckets are subjected to a tremendous amount of stress: freeze-thaw cycles, heavy traffic, drivers chipping ice from round the fill port (yet another critical reason to keep spill buckets clean), etc. etc. They wear out quickly: it is not uncommon for spill buckets at busy stations to have to be replaced after just 4 or 5 years. Spill buckets should be replaced long before they start to leak.



If this spill bucket isn't leaking now, it will be very soon. Seriously folks, why wait for one of our inspectors to find a spill bucket in this condition? You know what we're going to say!

Water and debris in containment sumps. Yes, I know – we have been dealing with this headache for decades. All sump penetrations must be sealed tightly, and even though the seals tested tight when the system was installed, there is no guarantee that they will remain tight after several years of freezing and thawing, and traffic stress. If sump penetrations are leaking, they must be re-sealed, which sometimes involves breaking concrete and excavating around the outside of the sump. Right now, while the weather is warm, is a much better time to do that work, than, say, mid-January. But there are some simple steps that can be taken that cost next to nothing: hand digging the soil between the sump side-wall and the manhole rim will give water the opportunity to soak into the soil before it leaks into the sump, and ensuring that sump lids are properly sealed are two simple measures.



The space between the sump and the manhole rim is so silted in, the sump lid no longer fit correctly, and water and dirt had no place to go except in the sump. Is it any surprise that the sump is filled with crud?

Finally, an issue that is not directly related to Vermont's UST Rules, but that almost cost the owner of a mini mart a lot of money: a few weeks ago, while inspecting the tanks at a store in the Northeast Kingdom, a delivery truck pulled up. The delivery driver and I chatted while he prepared to deliver fuel, and I checked the condition of the sumps (which were very clean, by the way). The driver suddenly looked perplexed, not entirely certain what to do. "I'm sure I have delivered super unleaded gasoline to this tank many times," he said. "But the tag on the fill pipe says it's on-road diesel." I checked the state's records, and told the driver that our database indicated that there was one regular unleaded gasoline tank, and one diesel tank. He called his dispatch center, and was again told that he was to deliver diesel to that tank. Turns out that the store owner wasn't selling much premium gasoline, and had recently switched that tank to diesel fuel. But the driver didn't know that. "I pretty much ignored the yellow lid on the spill bucket," he told me. "People lose those lids all the time, and they throw on any lid they can find. But see the red ring painted on the concrete? That tells me the tank holds super unleaded gasoline. I almost dumped a compartment full of high-test gas in his diesel tank!"

From our point of view as environmental regulators, there would be no violation if the delivery driver had contaminated the diesel fuel with gasoline. As long as the fuel doesn't leak into the environment, they are not violating our rules. But how much would it have cost the store owner to have the tank pumped and cleaned, the piping purged, and the unusable fuel hauled away? How many drivers of diesel-powered vehicles would have ruined their engines before the problem had been discovered? **Let this close call be a lesson to everyone: when you switch a tank from one product to another, relabel the fill pipe with a new tag, and repaint both the spill bucket lid, and the concrete ring around the spill bucket! ■**

25th Anniversary of the Americans with Disabilities Act (ADA) -a guest column by Karen Richards, of the Vermont Human Rights Commission



July 26, 2015 marks the 25th anniversary of the Americans with Disabilities Act (ADA). What does this have to do with my gas station/convenience store you might ask? Gas

stations, like all other places of public accommodation that offer goods and services to the general public, are required to comply with the ADA and with Vermont state law, 9 V.S.A. §4110a. These laws have been in place since 1990-91. Failure to comply is a violation of federal law (ADA) (enforced by the U.S. Department of Justice) and the Vermont Fair Housing & Public Accommodations Act (VFHPAA) (enforced by the Vermont Human Rights Commission).

By law, you are required to provide every motor vehicle operator with a disability, who has been issued a registration plate or parking card for persons with disabilities, the following:

1. provided that more than one staff person is on duty, you must pump the gas for the individual, and
2. charge that individual the same self-service price available to patrons who pump their own gas.

In addition, your gas station must prominently display the international symbol of accessibility and provide a means for individuals with disabilities to communicate their need for assistance either

through a call button on the fuel dispenser, signage with a telephone number to call and/or signage indicating that individuals with disabilities may honk their horn twice for assistance.

Finally, if you have undertaken any major alterations to your station (fuel dispenser or tank replacement, paving, interior or exterior renovation) on or after September 15, 2010, the operable parts of the fuel dispensers are required to be no more than 54" from the surface of the vehicular way if the fuel dispenser is installed on an existing curb or 48 inches from the vehicular way if it is not on a curb.

You should also be aware that other ADA regulations concerning accessible parking, entry, public restrooms and width of store aisles may apply to your business. Businesses are required to address accessibility by removing barriers to access that are "readily achievable" at any time renovations are undertaken and spend at least 20% of the total costs of any renovation on accessible design features that address these four major areas.

If you have questions about your responsibilities, please contact Vermont Human Rights Commission (VHRC) at human.rights@state.vt.us for more information. Our goal is to assist you into coming into compliance through education rather than enforcement. Thank you for taking steps to ensure that your business is accessible for all Vermonters. ■

ETHANOL, COMPATIBILITY, AND PHASE SEPARATION

Most gasoline sold in Vermont (and throughout the northeast) these days is known as E-10 gasoline, and contains 90% conventional gasoline, and 10% ethanol. Ethanol is also known as ethyl alcohol, or grain alcohol. Ethanol is being added to our nation's gasoline supply because of the federal renewable fuels mandate. Seven or eight years ago, when ethanol was first added to gasoline, Vermont tank owners experienced a few problems, mostly because the tank systems were not adequately cleaned before the first load of E-10 was delivered. Ethanol is a very strong solvent, and if an underground tank had a thin layer of sludge on the bottom, the ethanol quickly dislodged that sludge and drew it into the liquid. That is why so many people had clogged dispenser filters almost immediately after the gasoline was delivered.

One of the requirements of both the federal and Vermont UST Rules is that all components of the UST system must be compatible with the material stored. The reason for this requirement is simple: if the fuel being stored in the tank system was not compatible the fuel being stored could degrade any component that was not compatible with that fuel, resulting in leaks, lost product, environmental damage, and other problems.

As a general rule, all tanks, piping, gaskets, pipe dope, and dispensers that are compatible with conventional gasoline are also compatible with E-10 gasoline. One notable exception is the first generation of Enviroflex piping. The first generation Enviroflex was yellow in color, and it had many problems: ethanol incompatibility was only one of its many shortcomings. There are very few facilities left in Vermont that have first generation Enviroflex, but those that do will need to replace that old piping soon.

We are not aware of any gas being sold in Vermont with more than 10% ethanol, but there is talk of increasing the ethanol content in gasoline to 15%. If that should happen (and we have not heard anything suggesting that it will), it will be imperative that all tank owners contact the manufacturers of their tanks, piping, and dispensers to make sure that their systems are compatible with this higher alcohol blend.

Water in gasoline tanks has always been a concern, but

the addition of ethanol has amplified those concerns tremendously.

Ethanol mixes reasonably well with conventional gasoline, so ethanol by itself will not separate from the gas, as long as there is no water present. (Ethanol is a super-polar molecule, and petroleum compounds are all non-polar, so it might appear to the lay person that those two liquids would not mix. The reason why they do mix is because only one end of the ethanol molecule is super-polar; the other end is not.)

Ethanol has a very, very strong affinity with water. If any water at all is present in the tank, the ethanol will quickly draw that water into the fuel. E-10 gasoline can hold a small amount of water with no major problems, but if too much water enters the tank – and we're only talking about one half of one

percent – the water and ethanol separate very suddenly from the gasoline and drop to the bottom of the tank. The result is called phase separation: a layer of water and ethanol on the bottom of the tank, and a layer of low-octane gasoline above. Because both pressurized and suction systems draw from the bottom of the tank, the dispensers will very quickly start filling customers' cars with the alcohol/water blend, which results in cars that will not run and very unhappy customers.

The best defense against this problem is checking your tank bottom for water very diligently, but even that is more difficult than it used to be. Conventional water-finding paste often will not turn color if there is a layer of alcohol and water at the bottom of the tank, which can lead a tank owner to believe that all is well when in fact they are pumping unusable liquid (we really can't call it "fuel") into their customers' cars. (continued on page 5)



ETHANOL, COMPATIBILITY, AND PHASE SEPARATION (Cont. from page 4)

You need to use water-finding paste that is formulated specifically for use with ethanol-blended fuel, and you must follow the directions for that product very exactly.

People with electronic in-tank monitors can also be lulled into a false sense of complacency. Conventional probes for in-tank monitors have two plastic floats that are slightly different in density: the lower one sinks in gasoline but floats in water; the other floats in gasoline. The upper float tells the in-tank monitor how much product is in the tank; the bottom float is supposed to warn the tank owner if any water is present. But here's the problem: a mixture of ethanol and water has a lower density than pure water. This means that even if phase separation has occurred, the water sensing float may sink in that mixture. As long as the monitor senses that the float is sitting on the tank bottom, the monitor will indicate that there is no water in the tank, leading to all the problems described above. At least one manufacturer of in-tank monitors has designed a very innovative probe that has plastic components of varying densities, which allows some of the pieces to float in the phase separation layer, regardless of the ratio of water to ethanol. If other manufacturers have not yet introduced such probes, I suspect they will soon.

You have surely noticed that throughout this article we say that water finding paste may not turn color, and that a conventional ATG water sensing float may not pick up the presence of water, etc. Why can't we say definitively how a phase separation layer will behave? It's because when phase separation occurs, all of the water drops out, but some of the ethanol usually remains in the gasoline. The amount of ethanol that drops out with the water varies depending on temperature, the amount of water (more water pulls more ethanol from the gasoline), and several other factors. The density of the phase-separated layer depends on the ratio of water to ethanol.

With E-10 gasoline, preventing phase separation is the key: it may be difficult to keep water out of your tank, but those challenges pale in comparison to the headaches a tank owner will face if they actually experience phase separation. Make sure all your tank-top fittings are tight, and make sure you remove all water from containment sumps and spill buckets. ■

TANK LOANS TO HELP WITH THE SINGLE-WALL DEADLINE

JANUARY 1, 2016 AND JANUARY 1, 2018 are two important dates for tank owners with single-wall tanks.

- If your single-wall tank has single-wall piping or no piping then the tank has to be removed by January 1, 2016.
- If your single-wall tank has double-walled piping then the tank has to be removed by January 1, 2018.

Loans are available to qualified tank owners. Applications including financial information has to be submitted to the state's contractor who reviews and makes recommendation to the Agency as to the applicant's ability to repay. Tank owners who own five (5) or more Vermont facilities will pay 2% interest over the term of the loan, all others will pay 0%. Most loans are granted for 10 years repayable by equal monthly payments. The loan application can take up to three months to be processed.



Loans are available up to \$150,000 for the removal or replacement of tank systems. If you are interested in a loan please call June Reilly, the loan administrator.

2015 Self Certification will be available online in August 2015. Information will be mailed to permittees.



State of Vermont - Peter Shumlin, Governor
 Agency of Natural Resources - Deb Markowitz, Secretary
 Department of Environmental Conservation - David Mears, Commissioner

Name
 Address
 City State Zip



Federal UST Regulations
 October 1, 2015

NEW FEDERAL UST REGULATIONS WILL MEAN SOME CHANGES TO VERMONT'S UST RULES

The US EPA adopted federal UST regulations in 1988, and those regulations had remained in place until now. Anyone who has managed underground storage tanks for more than a few years knows that the petroleum business and petroleum storage technology has changed a lot in those 27 years, but until now, the federal UST regulations were frozen in time. EPA has just published their new UST regulations, which are expected to take effect around October 1. Most of the new federal requirements will have no effect on Vermont tank owners, since many of the new federal provisions have been required in Vermont for years. But a few of the federal requirements will have a noticeable effect on Vermont tank owners:

- **Spill and overfill equipment must be tested every three years.** When we inspect your facilities, we check to make sure that spill and overfill prevention equipment is present. But we don't check to make sure it works properly. It will be your responsibility once every three years to test the equipment to make sure it works properly. Overfill equipment will have to be removed from the UST system and tested. While the equipment is out of the tank, we will also require that its setting be double-checked to make sure it is set to activate at the right height (ball float valves and audible alarms must engage when the tank is no more than 90% full; fill pipe shutoff valves must engage when the tank is no more than 95% full.) Spill buckets will have to be filled with water and tested hydrostatically (unless the spill bucket is double-walled, in which case the interstitial space may be tested.)
- Similarly, **tank-top containment sumps must also be tested every three years** and if they are not liquid-tight, they must be replaced or re-sealed.
- **Ball float valves (also called float vent valves) will no longer be allowed in new construction.** If you have ball float valves as your overfill prevention method and they work correctly, you can keep them in operation. But all newly constructed or substantially modified UST systems must use a different method of overfill prevention.

In order to be consistent with these new federal requirements Vermont will update its UST Rules, probably this coming winter. (We would like to start the process right now, but while the nice weather is here we're all too busy doing inspections!) We will have a more complete description of the federal changes, and our anticipated schedule for revising the UST rules, in a future edition of UST Talk.