



UST TALK

A Newsletter for Underground Storage Tank Owners (UST) / Operators
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CORROSION AND UST SYSTEMS – IT’S NOT JUST ABOUT ANODES ANY MORE

Years ago, in what seemed like a simpler time, everyone thought that corrosion of metallic components in underground tank systems could be controlled by cathodic protection systems. For steel tanks and piping, CP systems are still essential for controlling corrosion between the steel tank or pipe and the soil. But today, new fuel formulations may be contributing to internal corrosion – corrosion that occurs inside the tank. How can this be?

Internal corrosion is a very complex subject, and we cannot begin to cover it in a single newsletter article. But there is growing evidence that new fuel formulations may be unintentionally contributing to corrosion of the components inside the tank system.



The vast majority of gasoline sold in Vermont is known as E10 gasoline: 10% ethanol, and 90% conventional gas. When ethanol comes into contact with oxygen, it can become acetic acid. This is the same chemical reaction that turns wine into vinegar. Have you ever

Keep water out of your system, and remove whatever water might be present!

gotten a whiff of vinegar when opening a sump? If so, you can be

sure that ethanol has turned into acetic acid inside that sump. Ethanol can leak from a tiny opening, such as a threaded connection that lacks enough pipe dope. Often it escapes as a vapor, which is why we frequently find sumps with a strong vinegar odor but no gasoline in the sump. Most metallic components have little resistance to the corrosive effects of acid, which can lead to failure of manifold units, line leak detectors, electrical conduit, and just about any other metal item inside the sump.

Diesel fuel should not contain any ethanol, but a recent study done by Batelle Labs found small amounts of ethanol in almost every diesel tank they sampled. Ethanol probably gets into diesel fuel by being transported in a truck compartment that was previously used for gasoline. More research is needed, but this is believed to be the primary way acetic acid affects diesel systems.

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Diesel fuel poses another new challenge: microbes grow in the fuel itself. Low-sulfur diesel fuel used to contain as much as 500 parts per million (ppm) of sulfur. But all diesel fuel sold in the US today must be ultra low sulfur diesel (ULSD), which contains no more than 15 ppm of sulfur. The change to ULSD has led to cleaner air, but it appears that sulfur may have had anti-microbial properties, which prevented microbes from growing in diesel storage systems. Today, microbes are often found growing inside diesel tanks, which can clog filters and cause other problems. Many microbes also produce acidic waste products, which can contribute to internal corrosion. It appears that biodiesel blends may provide an even better growing environment for microbes.

So, what can a tank owner do about this growing problem? First, **keep water out of your system, and remove whatever water might be present!** Microbes feed on the hydrocarbon molecules in fuel, but they need water to survive. In years past the common industry guidance was to pump water from the bottom of any tank when it accumulated to an inch or more. But a quarter inch of water is more than enough for a population of microbes to live happily inside a tank, so tank owners must be very diligent about removing all traces of water from the tank. Many tanks are slightly tipped in one direction; if your fill pipe is at the “uphill” end of the tank, you could have water in the far end even though your gauge stick shows no water. In order to be sure there is no water in a tank, both ends of the tank should be checked. This might be impractical if there is no access to the far end of the tank. Remember, any water removed from the tank must be managed as hazardous waste.

It is also imperative to seal all leaks and seeps in your system. The only way ethanol can turn into acetic acid inside a sump is if the ethanol leaks into the sump. We must be more diligent than ever about sealing even the tiniest vapor leaks. Make sure your pipe dope and gaskets are alcohol compatible, don't scrimp when applying pipe dope, and tighten all fittings to factory specifications. Some vendors are selling test kits that they claim can measure the presence of microbes. These may

be useful, but we have no experience with them in Vermont. Similarly, some vendors sell additives that they claim can be used to “polish” diesel fuel – that is, bring low quality diesel fuel back up to ASTM specifications. Again, these additives might be helpful, but we have not seen them used in Vermont, and we have not heard any reports on their use from other states.

New fuel formulations are contributing to new headaches for tank owners. It is critical to be more diligent than ever to protect your tank system from internal corrosion.



Acetic Acid Corrosion



Water In Sump



More corrosion from acetic acid

SITES MANAGEMENT SECTION (SMS) CORNER!!

Unfortunately, many UST facilities are also hazardous sites, due to releases of petroleum products at some point in the history of the property. Many of these sites undergo periodic groundwater and/or soil sampling and analysis as part of the remediation. One of the analyses sometimes conducted on soil and groundwater is for **total petroleum hydrocarbons (TPH)**.

What's the deal with sampling for total petroleum hydrocarbons (TPH)?

To cut a long story short, the SMS discourages the analysis for TPH.

Here's why:

TPH analysis does not provide compound specific results – the analysis only provides a total amount of several hundred chemical compounds. Since this one number does not indicate which compounds are present, a positive TPH result will almost always lead to an SMS request to resample for specific compounds. Once your site is being managed under the Sites Section, it must be determined which contaminants are present at what concentrations, in order to determine if the compound has exceeded standards.

For example, a TPH analysis conducted on a sample collected at the bottom of a tank pit without any accompanying compound specific data is not useful to assess what contaminants may be present in subsurface soils. TPH analysis should not be used for analysis of groundwater analysis.

There may be rare situations when TPH is acceptable, so you should **always** consult a SMS Project Manager **before** agreeing to allow your consultant to collect samples for TPH analysis.

Questions? Contact the SMS! A full list of all SMS staff can be found here: <http://dec.vermont.gov/waste-management/contacts>.

Compliance Review – 2016

Every year we are required by EPA to produce a summary of our UST inspection and compliance work. We post this info on our website so the public can see how the UST sector is performing. We are happy to report a 92% compliance rate!

http://dec.vermont.gov/sites/dec/files/wmp/UST/EPA.WEB_Post_FY2016.pdf

Every year we randomly select 100 facilities for inspection; this enables us to determine a statistically valid compliance rate for the entire sector (~920 facilities). We believe the high rate of compliance is due to a combination of: high inspection rate (at least once every three years); improved education through the self-certification process; and inspections with every “new” tank owner soon after beginning operation to get them started correctly!

Despite the high compliance rate, we have still found facilities that were seriously out-of-compliance at the time of inspection. In 2016 we settled five formal enforcement cases with penalties, and have another six pending. Three of the five settled cases were brought due to failure to conduct leak detection; five of the pending cases feature this violation as well. Failure to conduct leak detection (and keep records) is considered very serious because the violation can result in an un-detected release that could threaten human health and/or the environment.



We really appreciate the compliance efforts our tank owners/operators are making!

REVISED ABOVEGROUND

STORAGE TANK RULES

You know everything about the Underground Storage Tank (UST) Rules since you have been reading these newsletters cover-to-cover for years now! But what about aboveground tanks (ASTs)?

The Agency has had rules in place for ASTs for a number of years (current rules have been in place since 2014). These rules are currently being revised as a result of legislation passed in 2016.

There are two major differences between the two versions.

First, the new rule requires tank inspections by qualified personnel every three years (similar to USTs). In addition, inspections will be required for new installations (both after installation is complete and after first delivery) and when supplier changes. This is especially needed for basement ASTs, since the tank system is not visible to the delivery driver. In addition, the inspection section contains criteria for when a tank system is marked “do not fill”. Tank system problems that could lead to a release are identified, and the information about the system (including owner/address) is reported to the Agency for posting on the web.

Second, the revised rule contains installation criteria for new and substantially altered systems. The criteria are guidelines in the current rule; adopting the criteria in rule makes the criteria a requirement, and therefore enforceable.

Keep in mind that any ASTs installed for motor fuels storage, and heating oil ASTs at public buildings, are subject to permitting from the Fire Safety Division, Department of Public Safety.



WHAT IS THE DIFFERENCE BETWEEN

A/B OPERATOR CERTIFICATION

AND SELF-CERTIFICATION?

A/B Operator - Tank owners are required to have a designated A/B operator for each of their facilities. The A/B operator has to get trained by a third-party (i.e. Eclipse, Practical American Safety Solutions (PASS), State of Maine’s TankSmart, State of New Hampshire, International Council Code (ICC), or State of Vermont suction systems only, and receive certification the training was successfully completed.

Certification is for TWO YEARS and then the person has to take the test again. Except for A/B operator certificates issued by the Vermont Tank Program, a copy of the Certificate issued to the person is required to be sent to the Tank Program by email, fax or US post office. If the designated A/B operator for a facility quits or retires, a new A/B operator must take the training, receive certification, and submit the information to the Tank Program.

Self-Certification - This is an annual requirement and is where the A/B operator or his/her designated person conducts an inspection of the facility, then report the compliance results on the state’s self-certification webpage (<https://anrweb.vt.gov/DEC/USTSelfCert/login.aspx>) By performing this annual inspection, tank owners may find compliance problems and repair them before they lead to leaks or releases. Self-Certification is due by 12/31 of EVERY YEAR.

The annual self-certification cannot be complete if there is not a valid A/B operator! If the A/B operator’s certification has expired the annual self-certification cannot be completed until such time as the A/B operator’s new certification has been received by the Tank Program and the database updated.



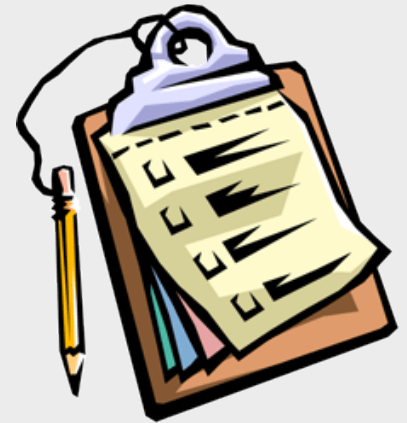
Vermont's UST Rules being revised

We have begun the process of revising Vermont's UST Rules. The rules that are currently in place were developed six years ago. So, it is time for an update, but the biggest thing that prompted this revision is the recently revised federal UST regulations. Vermont's UST Rules already contain many of the new federal requirements, but there are a few mandatory items in the new federal regulations that are not in Vermont's current UST Rules, so we have to update our state rules.

The most significant changes are the new requirements to test spill buckets, sumps, and overflow prevention devices at least once every three years. States that do not have federal approval must implement these new requirements in the fall of 2018, but states whose UST Programs have received federal approval have a "reasonable" period after the federal deadline in which to implement the new requirements. In Vermont, we expect the deadline to be September 1 2019. By that date (or another date, if the 9/1/2019 date is rejected) all spill buckets and sumps will have to be tested either hydrostatically (by filling them with water and monitoring to see if the level drops), or by vacuum testing (by sealing the sump or spill bucket very carefully then applying a slight vacuum and monitoring with a vacuum gauge). Overflow prevention devices will also have to be checked and tested at least once every three years. We realize these tests will be difficult to implement, and that at first some percentage of sumps and spill buckets will be found to be leaking (which, of course, is the reason for the new requirement in the first place).

We are working closely with industry representatives, trade associations, and federal officials to develop new regulations that meet the federal requirements but that also will be achievable and not prohibitively expensive. We expect the public comment period for the proposed new rules to occur this summer, and we will send a post card to all UST permittees announcing the public comment period, and providing instructions on how to get a copy of the proposed new rules.

Inspection season will be coming up soon. Here is what our inspectors look for when at your facility:



- 1) Review weekly leak detection records
- 2) Review A/B operator's completed monthly checklists
- 3) If monitoring is being performed electronically, the inspector will check sensors are located in the correct position and may trip each sensor.
- 4) Check for vapors in sumps
- 5) Verify presence of line leak detector for each pressurized line
- 6) Verify presence and condition of drop tubes
- 7) Inspect spill buckets for debris and liquid
- 8) Inspect dispenser area for evidence of spills and releases
- 9) Verify if dispenser sump is present and its condition
- 10) Open dispenser and inspect for leaks
- 11) Verify shear valves are braced
- 12) Verify operational permit is present and required signage is displayed

To find out if your facility is slated for an inspection this year go to:

<http://dec.vermont.gov/sites/dec/files/wmp/UST/2017.Inspections.Dashboard..pdf>



Name

Address

City, State, Zip

1/1/2018 DEADLINE FOR 49 VERMONT FACILITIES

Spring is coming and with it comes construction season for tanks. This year is going to be busy. Why? Forty-nine facilities still have unlined single wall tanks – 124 tanks to be exact. These tanks are on a legislative deadline of 1/1/2018 to be permanently closed. So far, the owners of 3 facilities with 11 single-walled tanks are ready to begin tank removal as soon as the frost is out of the ground. We have heard Vermont tank contractors are rapidly getting booked. The Tank Program is concerned that there may not be enough contractors to do the number of tank replacements that we are expecting this year. What does this mean for those of you with double walled tanks and piping that were thinking of upgrading all or part of your systems this year? You may want to think about postponing until next year!

After January 1 2018 there will still be 36 permitted single walled tanks in service in Vermont. They are remaining because within the last 10 years those tanks have been fiberglass lined. By being lined they gained up to 15 years more life of service. The owners of those tanks are required to have the tank's lining inspected ten years after the lining date. If the lining company passes the lining with no repair

the tank is allowed to remain in service for another 5 years. Once the lining is 15 years old the single walled tank has reached its expiration date and the tank owner is required to remove it. The first of these lined tanks is up for its 10 year inspection in December 2018.

\$\$ UST Loans \$\$



As most of you know part of the funding received for the Vermont Petroleum Cleanup Fund each year is available to make loans to tank owners to replace, remove or upgrade tank systems. Owners with no more than 4 facilities can obtain a loan up to \$150,000 with zero interest repayable over 10 years. Owners with 5 or more facilities can borrow the same amount but with 2% interest. A number of owners with single walled tanks have applied and loans have been processed, however, we are expecting more applications than we have funding for. Loan funding for upgrade work to existing double wall tanks is being postponed until 2018. A loan may be considered for existing double walled tanks if there is a known threat to the environment.

