

# UTAH TANK NEWS

Winter 2009

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## *Petroleum Brownfield Projects in Utah* by Dale T. Urban

Utah communities have an opportunity to access Petroleum Brownfield grant monies to identify eligible sites, and to perform environmental site assessments at underutilized properties with suspected or known petroleum contamination.



These investigations are intended to move sites toward redevelopment and sustainable reuse. Abandoned gas stations or other underutilized properties, with either real or perceived environmental contamination, are a common site in almost every city and every town throughout the United States. Redevelopment and reuse of these petroleum-contaminated properties can be complicated due to liability issues, site assessment costs, and potential cleanup costs.

The goal of Utah's Petroleum Brownfield's Program is to assist communities with information and opportunities to redevelop these under utilized contaminated properties. Utah's Department of Environmental Quality (DEQ) has developed strategic partnerships with multiple stakeholders, creating strategies that maximize resources for site assessments, subsurface investigations, and even cleanup activities. These efforts

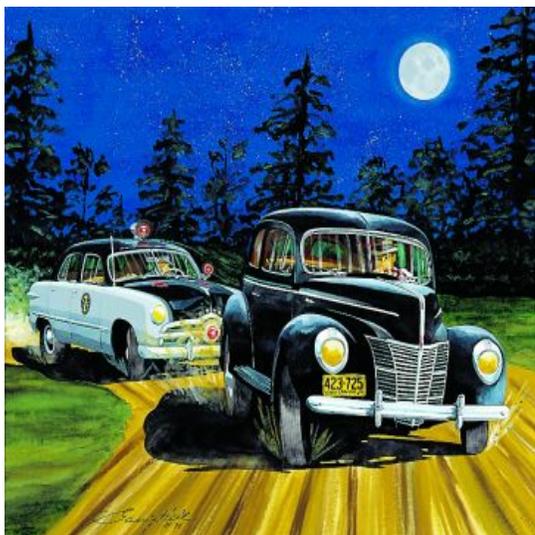


enable site redevelopment of the land into beneficial and sustainable reuse, such as residential and affordable housing, city parks, access roads, and commercial businesses. For more information on this exciting opportunity, and to determine if your community is eligible for funding, please visit our web page at <http://www.undergroundtanks.utah.gov/ustfields.htm>.



## ***Tanks Under the Ethanol Influence*** by Mike Pecorelli

Have you ever been watching one of those old movies about the days of prohibition when the bootlegger is illegally transporting some homemade moonshine and is being pursued by the local police and runs out of gasoline? It seems the bootlegger always has enough of a head start to get out of their car, go to their trunk, pull out a brown jug of moonshine and pour it into the gas tank. Then, of course, they make a quick getaway before the pursuing police actually catch-up! So, you may be wondering by now what all this has to do with underground storage tanks?



Funny how life has come full circle since the “Good Ole Days.” The moonshine the bootlegger was transporting, and running his car on in an emergency was mostly ethanol. We now use ethanol as an alternative fuel for some vehicles. There are some good lessons we can learn from the bootleggers. One was the way they stored their moonshine in a ceramic bottle or a mason jar. Ethanol does not readily react with ceramic and glass. Unfortunately the cork on the jug or the gasket on the Mason jar would need replacing after being used, some from wear and some from being degraded by the moonshine.

Some stations now carry gasoline mixed with ethanol in various amounts, usually designated like E10 (10% ethanol mixed into the gasoline) or E85 (85% ethanol mixed into the gasoline). The decision whether or not to start carrying an ethanol mixed fuel should not be a snap decision, but an educated one. Storing a product like ethanol is not like adding a new grade of gasoline to your system; ethanol’s chemical properties are different than gasoline.

**Electrical Conductivity** ~ Gasoline is not generally a good conductor. Ethanol is a good electrical conductor because of its ability to bond with water and uptake contaminants from the fueling system. The addition of ethanol can increase the rate at which corrosion occurs, especially on aluminum and some alloys like brass, which is made from copper and zinc.

Good magicians make things disappear, but great magicians also need to make things reappear in order to bring about closure and to thrill an audience. Ethanol is a great magician; it can corrode parts of your fueling system and make them “magically disappear.” The metal that has disappeared from your system is not gone forever. Unfortunately, the reappearance of the missing metal from your tank system will not bring about cheers and applause. It will be found in plugged filters in your dispensers and can potentially damage the fuel systems of the automobiles fueled from the tank system.

**Other Compatibility Problems** ~ If you have a fiberglass tank system you may think a sigh of relief is appropriate. That may or may not be correct. Some of the older fiberglass systems may develop leaks if used to store significant amounts of ethanol blended fuel depending upon how they were manufactured. Do not confuse the purchase and/or install date with the manufactured date. Also, some of the seals and non-metal parts in your fueling system and pumps may also be adversely affected by ethanol. This could lead to leaks and equipment failure if the non-metal materials are not compatible with ethanol.



*~ continued on page 3*

## *Tanks Under the Ethanol Influence ~ continued from page 2*

**Ethanol Likes Water** ~ In medieval times, people were reputed as not being very fond of taking baths. It may have been they just didn't like water. Gasoline also does not like to mix with water. A small amount of water can be dissolved in unblended gasoline (about 0.2%) before it will drop out of the gasoline as a liquid on the bottom of the tank. The liquid, mostly water, dropping out of the gasoline mixture is called phase separation. Phase separation in dealing with a fuel mixture is where a single fuel mixture is no longer one mixed liquid but has become two separated liquids. Water is the key ingredient to phase separation in gasoline.

On the other hand, ethanol is like a good bird dog, it loves water. Ethanol will mix and bond with water and generally prefers to mix with water over gasoline. In E10 fuel, the additional ethanol allows about 0.5% water to become dissolved in the ethanol blended fuel. While the amount of 0.5% seems small, that is 2 ½ times more than just gasoline alone. The difference now is the phase separated liquid contains ethanol, water and some gasoline components that have dropped to the bottom of the tank. The phase separation in an ethanol blended gasoline reduces the fuel's octane rating and the ability of an engine to burn the fuel.

As phase separation continues in the storage tank of an ethanol blended fuel, the volume of the separated liquid at the bottom of the tank increases while the remaining upper gasoline layer is declining in its octane rating. Most cars are not designed to run on either part of the phase separated fuel. If a car has filled-up with phase separated fuel, it could be stalled at the dispensers. Phase separation is not as common in an E85 fuel because of the larger amounts of water required to cause the phase separation, but it is possible.

**A Good Solvent** ~ As a kid I enjoyed taking my dad's carburetor cleaner and squirting it on Styrofoam packing peanuts. I could dissolve a small box full of the Styrofoam peanuts into a pile of goo in less than a minute. Dad never seemed to share my enthusiasm or entertainment with using his carburetor cleaner as a solvent for Styrofoam peanuts for my amusement. Just like the carburetor cleaner was a good solvent for the Styrofoam peanuts, ethanol is a good solvent for petroleum-based sediment, particulates and lacquers found in used petroleum fueling systems.

If a fueling system has been used for petroleum in the past and is being considered for storing and dispensing ethanol it should be cleaned and inspected by a properly insured and reputable company. In the case of an Underground Storage Tank (UST) in Utah, it will require a State Certified Tank Installer. The inspection should identify any existing or potential corrosion problems with the tank that could result in a leak. Proper in-line filters are very important to remove any of the particulates the ethanol may have picked-up from the fueling system. *~ continued on page 4*



## *Tanks Under the Ethanol Influence ~ continued from page 3*

**Final Parting Comments and Other Considerations** ~ The decision to sell ethanol containing products should be thoroughly researched before you make a decision. You may want to consider the cost and peace of mind that comes with installing a new tank and system designed for storing the ethanol blended fuel. Because of the differences in gasoline and ethanol, questions on the reliability of tank, line and leak detectors and tests must be resolved by third party verification. This process is still being developed. The differences in ethanol and gasoline makes using the proper indicator paste a must for tanks storing ethanol blended fuels when dipping tanks. The use of proper in-line filters for water and particulates is very important. If your filters are plugging quickly you could have serious problems with the fuel in your system. Last, but not least, in Utah, you are required to notify the UST Branch before changing or installing a system for ethanol and biodiesel in an UST.



## **~ UST INSTALLER AND TECHNICIAN WORKSHOP ~**

Installers, technicians, environmental and operational managers, and install companies are invited to attend the *UST Installer and Technician Workshop* hosted by the Utah's DEQ, UST Section. Some of the topics of discussion will include: secondary containment requirements, spill bucket testing, sump testing, ABC registration requirements, UL 971 piping, alternative fuels, and vapor recovery.

**Date:** Wednesday, March 11, 2009    **Location:** DERR Building  
Room 101

**Time:** 8:30 a.m. to noon    168 North 1950 West  
Salt Lake City, Utah

Please RSVP by contacting Bruce Hagans at (801) 536-4174 or [BHAGANS@utah.gov](mailto:BHAGANS@utah.gov) or Gary Harris at (801) 536-4160 or [GAHARRIS@utah.gov](mailto:GAHARRIS@utah.gov).

## Extension of Stage I Vapor Recovery Requirements

On September 3, 2008, the Utah Air Quality Board approved changes to R307-328 (Gasoline Transfer and Storage) that extended Stage I Vapor Recovery requirements to all counties in the State of Utah. R307-328 requires gasoline transport vehicles, and the bulk plants and service stations which receive gasoline from them, to capture vapors released during transfer operations at all facilities where throughput exceeds 10,000 gallons in any one calendar month. Stage I requirements have been required in Salt Lake and Davis counties since the 1980's, and in Utah and Weber counties since 1999. This extension of Stage I technology to the entire state is needed to combat the increase of volatile organic compounds that are being released to the atmosphere during gasoline transfer operations. These compounds are key elements in the formation of ground level ozone, as well as known Hazardous Air Pollutants (HAPS).

Implementation of this rule change will be phased in over a three-year period to allow dispensing facilities time to plan equipment purchases and to schedule necessary modifications with qualified installers. The three-year phase in schedule requires dispensing facilities in Box Elder, Cache, Tooele, and Washington counties to be in compliance with this rule by April 30, 2009. Facilities located in Emery, Iron, Juab, Millard, Sevier, Summit, and Uintah counties must be in compliance by April 30, 2010. All facilities in the state must be in compliance not later than April 30, 2011.

If the implementation schedule results in a scheduling and/or financial hardship for an individual facility, that facility may request an extension from the Executive Secretary of the Utah Air Quality Board. However, a request for an extension must be documented and contain valid reasons why that facility will not be able to meet the phase-in schedule. The request must also give a proposed implementation schedule that shows compliance to the rule no later than April 30, 2011. The entire rule may be found at <http://www.rules.utah.gov/publicat/code/r307/r307-328.htm>.

### **DON'T LOSE YOUR TANK TAGS**

*Owner/operators may be assessed a fee of \$25.00 to replace a lost tank tag. The current year's tag must be attached to the fill pipe of each tank. Without a current tag in place, the delivery of product is prohibited.*



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## Certification Corner

### Groundwater and Soil Sampler Certification Courses

Environmental Contractors, Inc. (ECI)  
(801) 491-3455 by appointment only

Utah Environmental Training (UET)  
(801) 687-2286

Class schedule link (pdf):

<http://www.undergroundtanks.utah.gov/docs/informacion%202008.pdf>

### UST Consultant Certification Program

UST release management, abatement, investigation, or corrective action must be performed by a Certified UST Consultant. Consultants must renew their certification every 2 years. The renewal courses begin at 9:00 a.m. and finish at 1:00 p.m. For more information, contact Michelle Horning at (801) 536-4128 or at [mhorning@utah.gov](mailto:mhorning@utah.gov).

#### Initial Exam and Renewal Course Schedule

Thursday, March 12, 2009

Thursday, June 11, 2009

Thursday, September 10, 2009

Thursday, December 10, 2009

Exams and courses take place at the DERR offices at 168 North 1950 West in Salt Lake