Corrosion in USTs

PA Storage Tank Advisory Committee
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Sump Corrosion in Gasoline

Slide courtesy of Mahesh Albuquerque, Colorado Division of Oil and Public Safety
Corrosion in Diesel Since 2007
EPA Research on Diesel Corrosion

Videos

Sampling
- Vapor
- Fuel
- Water bottom

Background information
83% of USTs had moderate or severe corrosion

Note: EPA asked for sites with corrosion, so sample is biased. But less than 25 percent of the sample population was aware of corrosion before investigation.

Red = steel        Brown = Fiberglass   (Total Population = 24 fiberglass, 18 steel)
Notice to owners about corrosion in USTs

Notice Of Corrosion Risks In Underground Storage Tanks Storing Diesel Fuel
US Environmental Protection Agency, Office Of Underground Storage Tanks
July 2016

EPA recommends that owners of underground storage tank (UST) systems storing diesel fuel check inside their tanks for corrosion, which research suggests is now appearing in most tank systems storing diesel fuel.

Summary
Observations from EPA’s 2016 research, which examined 42 operational UST systems storing diesel fuel across the country, show a significant prevalence of corrosion of metal components inside these tanks. The preliminary results categorized 42% or 43% of UST systems with corrosion problems than actually observed problems. Owners reporting corrosion sometimes find small or large, which may look like coffee grounds, clogging that fuel filters. EPA recommends all owners of UST systems storing diesel fuel conduct a visual inspection by checking in their filters experience UST system components even if they have not seen any problems in the filter. Owners of UST systems with corrosion may be established before owners experience any problems in the fuel filter. An owner becomes aware of a severe corrosion issue. Remember that this initial diagnosis of all UST equipment visible from the surface may not show severe corrosion in the UST system.

Owners should also contact UST owners of the tanks to further evaluate the extent of corrosion inside tanks. These companies can remove and check the equipment for evidence of corrosion; they may also sometimes use a specialized design video camera to conduct a thorough visual inspection inside the UST system. If observations show corrosion, the company might remove more equipment and check to ensure all equipment is functioning properly. The company might suggest additional testing or the functionality of overfill protection equipment is to determine whether the equipment is functioning properly.

Since studies to date have not definitively confirmed the root cause of the corrosion, there is no widely accepted solution to the problem. However, there are actions tank owners can take now to minimize the corrosion and the associated risks while stakeholders look for a solution.

Recommendation
EPA recommends UST owners check for corrosion in their tank system storing diesel fuel. This applies to both systems with diesel tanks and systems with gasoline tanks. Owners reporting corrosion sometimes find small or large, which may look like coffee grounds, clogging the fuel filters. EPA recommends all owners of UST systems storing diesel fuel conduct a visual inspection by checking in their filters experience UST system components even if they have not seen any problems in the filter. Owners of UST systems with corrosion may be established before owners experience any problems in the fuel filter. An owner becomes aware of a severe corrosion issue. Remember that this initial diagnosis of all UST equipment visible from the surface may not show severe corrosion in the UST system.

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Research to date has not been able to pinpoint a causal factor, but it appears that the diesel fuel in USTs is likely to cause corrosion in addition to contributing to most applicable UST regulatory requirements. Owners are responsible for the costs of cleaning up releases to the environment when they occur, so it is important for owners to check their tanks for corrosion. Severe corrosion without a release to the environment could result in higher costs due to the need for increased maintenance or the premature replacement of equipment. Owners should check for corrosion in addition to contributing to most applicable UST regulatory requirements.

For More Information
See EPA’s corrosion in USTs storage diesel website or contact UST Implementing Agencies.
Corrosion Impacts UST Functionality

Release prevention equipment

Tank integrity
Fill pipes don’t always tell the story
How to act now and for the future

Immediate mitigation options for tank operators

• Baseline checks of UST system
• Ensure strong maintenance
  – Monitoring water and microbial activity
  – Removing water or cleaning
• Technologies available
  – Filming amines
  – Nitrogen blanketing
  – Enhanced filtration

Longer term projects for industry collaboration

• Research continues
  – CRC
  – Fuels Institute
  – ASTM
• Standards
  – Water levels?
  – Enhanced monitoring through distribution?
  – Others?
Additional Information

• EPA Office of Underground Storage Tanks Website
  https://www.epa.gov/ust

• EPA Office of Underground Storage Tanks Emerging Fuels Contact
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