Impact of 2015 EPA UST Regulations on Secondary Containment Testing & Related Inspections

Oneida UST Boot Camp 2019

Mark Lindsey
Regional VP Southern Cal./Southwest
OUTLINE

• Background
  • Types of Secondary Containment
  • Reasons for Testing
  • Revised 2015 EPA Regulations
  • Related Testing/Inspection Requirements

• Test Methods
  • STP sump and UDC Tests
  • Spill Container Testing

• Tanknology Experience and Results
  • Failure Rates of various equipment

• Various Types of Repair Processes
  • Icon Repair Boots
  • Bravo Fiberglass repairs
  • STS ProTec
  • Sump Lid Retrofits
TYPES OF SECONDARY CONTAINMENT

UNDER-DISPENSER CONTAINMENT

DOUBLE-WALL PIPING

DOUBLE-WALL TANK (FRP)

STP SUMP

DOUBLE-WALL TANK (STEEL)

Spill Container

ILLUSTRATION COURTESY OF EBW
REASONS FOR TESTING

- Regulatory Requirement
  - Comply with the Regulations
- Environmental Protection
  - Prevent contamination of groundwater
- Risk Management
  - Avoid costly remediation
- Good Business Practice
  - Provide inspection of new installations and within warranty period

Tanknology performs a lot of Secondary Containment Testing in areas where it is not yet required by regulations.
“NEW” 2015 EPA Regulations

**Deadline: October 13, 2018***

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Requirements</th>
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<tbody>
<tr>
<td>Every 30 Days</td>
<td>• Walkthrough Inspection</td>
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<tr>
<td>Annual</td>
<td>• Walkthrough Inspection&lt;br&gt;• Test Release Detection Equipment</td>
</tr>
<tr>
<td>Every 3 Years</td>
<td>• Test Spill Containers&lt;br&gt;• Test Containment Sumps used for piping interstitial monitoring&lt;br&gt;• Inspect Overfill Prevention Equipment</td>
</tr>
<tr>
<td>Within 30 Days</td>
<td>• Test after any repairs are made to containment systems</td>
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*Depending on State Approval Program
• States/Territories with EPA Approved Programs: State rules to be updated over next few years – target date to be determined state-by-state but around 10/13/2018.
• States/Territories with Programs Not Yet Approved by EPA plus Indian Country: Federal rules will apply by 10/13/2018.
Walkthrough Inspections

- Option 1: **Every 30 days** check your spill prevention equipment and release detection equipment. **Annually**, check your containment sumps and any hand held release detection equipment. When conducting the walkthrough inspection, check the following:
  - **Spill prevention equipment**
    - Check for damage
    - Remove any liquid or debris
    - Check for and remove any obstructions in the fill pipe
    - Check the fill cap to make sure it is securely on the fill pipe
    - Double walled spill prevention equipment with interstitial monitoring check for a leak in the interstitial area
  - **Release detection equipment**
    - Ensure it is operating with no alarms or other unusual operating conditions present
    - Ensure records of release detection testing are reviewed and current
  - **Containment sumps**
    - Check for damage, leaks into the containment area, or releases to the environment
    - Remove any liquid or debris
    - Double walled containment sumps with interstitial monitoring check for a leak in the interstitial area
  - **Hand held release detection equipment** (for example tank gauge sticks or groundwater bailers)
    - Check for operability and serviceability

- Option 2: Conduct walkthrough inspections according to a standard code of practice developed by a nationally recognized association or independent testing laboratory. The code of practice must check equipment comparable to option 1 above. *(PEI RP900)* Sample forms can be found at www.pei.org/RP900

- Option 3: Conduct walkthrough inspections according to requirements developed by your implementing agency. These requirements must be comparable to the requirements described in option 1 above.
Does an “OLD CAR” look like one of these?
Does an “OLD CAR” look like one of these?
Overfill Prevention Equipment Inspections

- Inspect for proper operation at least **once every three years**. Overfill prevention equipment installed after October 13, 2015 must be inspected for proper operation at installation and then once every three years.

- When inspecting, owners and operators must at a minimum ensure the overfill prevention equipment is set to activate at the correct level in the tank (the level depends on the type of overfill device) and will activate when regulated substances reach that level.

- Overfill prevention equipment must be inspected according to one of the following:
  - Requirements developed by the **manufacturer** (owners and operators may only use this option if the manufacturer has developed inspection requirements)
  - A code of practice developed by a nationally recognized association or independent testing laboratory (**PEI RP1200**)
  - Requirements determined by the **implementing agency** to be no less protective than those developed by the manufacturer or in the code of practice

- Owners and operators must maintain records of overfill prevention equipment inspections for at least three years.
Spill Prevention Equipment And Containment Sump Testing

• Option 1: Monitor double-wall sumps and spill containers every 30 days. If owners and operators discontinue this periodic monitoring, they have 30 days to conduct the test described in option 2 below.

• Option 2: Spill prevention equipment and containment sumps used for interstitial monitoring of piping are **tested at least once every three years**. The test must determine the equipment is liquid tight by using either vacuum, pressure, or liquid testing according to one of the following:

  • Owners and operators must maintain records of spill prevention equipment and containment sump testing for at least three years. For spill prevention equipment and containment sumps used for interstitial monitoring of piping not tested every three years, owners and operators must maintain documentation showing the equipment is double walled and the integrity of both walls is periodically monitored for as long as the equipment is periodically monitored.

  • **Spill prevention equipment** and containment sumps used for interstitial monitoring of piping installed after October 13, 2015 must be tested for liquid tightness at installation and then **once every three years**.
Test electronic and mechanical components of release detection equipment for proper operation at least **annually** using one of the following options:

- Manufacturer's instructions
- A code of practice developed by a nationally recognized association or independent testing laboratory (PEI RP1200)
- Requirements developed by the implementing agency

When testing, check the following:

- **Automatic tank gauge and other controllers**
  - Test the alarm; Verify the system configuration; Test the battery backup
- **Probes and sensors**
  - Inspect for residual buildup; Ensure any floats move freely; Ensure any shafts are not damaged; Ensure the cables are free of kinks and breaks; Test the alarm operability and communication with the controller
- **Automatic line leak detector**
  - Ensure the device activates (alarms, restricts flow, or shuts off flow) within an hour when simulating a release equivalent to 3 gph at 10 psi
- **Vacuum pumps and pressure gauges** –
  - Ensure there is proper communication with sensors and the controller
- **Hand-held electronic sampling equipment associated with groundwater and vapor monitoring**
  - Ensure the device operates properly

Maintain records of release detection equipment testing for at least three years. The record must include each component tested, whether each component passed the test or needed to have action taken, and any action taken to correct an issue.
Test Procedures and Specifications

- PEI RP-1200 contains many test procedures developed as an industry “consensus”.
- Tanknology maintains an extensive list of procedures from various manufacturers and regulatory agencies.
Waterdog
TEST METHODS - SUMPS

• Hydrostatic Testing
  • Fill to level required by Authority Having Jurisdiction (AHJ). Standard is 4” above highest penetration or seam.

• Manual Testing
  • 1-Hour “Lake” Test with manual measurement
  • 24-Hour Test with manual measurement
  • Follow manufacturer’s procedures

• Electronic level measurement
  • VPLT System
  • Incon TS-STSS
  • Other systems?

• Vacuum Testing
  • Good for “new” sumps/UDCs
  • Sherlock System; others?
1-HR SUMP TEST

- 1-Hour Hydrostatic Test
  - Fill sump with water
  - Mark level with paint or measure
  - Visual check in 1 hour
  - Any drop results in failure, or
  - Less than 1/8” drop = Pass*.
  - Or consult AHJ or manufacturer procedures for threshold.

*This test method is described by PEI RP-1200 (6.5)
VPLT SYSTEM FOR SUMPS

- Fill sump with water (test fluid)
  - Adjust level per MFG or customer or regulatory requirement
- Short Test Time
  - 10 minutes for Spill Containers
  - 15 minutes for UDC
  - 30 minutes for STP sumps
- Measures Level Change
  - 1/10,000” resolution
  - Compare to MFG protocols which specify level change
  - Or follow S.CA standard
  - < 0.002” for 2 tests
Incon TS-STS Sump Test

- Fill sump with water (test fluid)
- Adjust level per MFG or customer or regulatory requirement
- Two 15 minute tests
- Follow S.CA standard
- < 0.002” for 2 tests
Spill Container Test Methods

- Vacuum Testing
  - Tanknology’s Vacuum Spill Container Test
  - Other Tests: Sherlock Tester
- Manual “Lake” Test
  - PEI RP1200
  - CA SWRCB guidelines
  - Manufacturer’s guidelines
- Electronic or “Accelerated” Level Test
  - Tanknology’s VPLT Sump Test System
  - Incon TS-STS Sump Test System
The test apparatus is placed securely into the spill container.

Vacuum is pulled using a venturi device to 30” w.c.

A valve is closed once the vacuum is established.

The vacuum is monitored for exactly 1 minute by watching the gauge.

If 26” w.c. or more is remaining then spill container passes.

This test method was essentially “adopted” by PEI RP-1200 (6.3)
“Lake Testing” Spill Buckets

- The bucket is filled with water up to the top ring. (The fill cap is put on securely or a cherne ball installed in the riser.)
- The drain valve is plugged if there is one to plug.
- The water level is marked or measured.
- The test is conducted for **one hour**.
- If there is **any measurable drop** in water level **the bucket fails** (in some areas).
- Or, if the level has dropped less than 1/8”, the test passes*.

*This test method is described by PEI RP-1200 (6.2)
Double-Walled Spill Buckets

• The latest technology is the double walled spill containment system.
• They may be inspected monthly, or tested every 3 years.
• They are tested per manufacturer specifications, which is often a vacuum test on the interstitial space.
• Typical specs:
  • 30” w.c. for 1 minute.
    • 26” w.c. or higher to pass.
  • Or 15” w.c. for 1 minute.
    • 12” w.c. or higher to pass*.

*This test method is described by PEI RP-1200 (6.4)
## Secondary Containment Test Specifications

<table>
<thead>
<tr>
<th>Test</th>
<th>Duration</th>
<th>Test Pressure</th>
<th>P/F Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank Annular - Vacuum</td>
<td>1 hr, 20k or less tank</td>
<td>10&quot; hg</td>
<td>2” loss, int dry before and after test</td>
</tr>
<tr>
<td>Tank Annular - Vacuum</td>
<td>2 hr, &gt;20k tank</td>
<td>10&quot; hg</td>
<td>2” loss, int dry before and after test</td>
</tr>
<tr>
<td>Line Annular - Pressure</td>
<td>1 hr</td>
<td>5 psi</td>
<td>0 loss</td>
</tr>
<tr>
<td>STP Sump - Hydro</td>
<td>1 hr</td>
<td>4&quot; above highest penetration or sidewall seam</td>
<td>less than 1/8” over hour</td>
</tr>
<tr>
<td>UDC Sump - Hydro</td>
<td>1 hr</td>
<td>4&quot; above highest penetration or sidewall seam</td>
<td>less than 1/8” over hour</td>
</tr>
<tr>
<td>Spill Bucket - SW Vac</td>
<td>1 min</td>
<td>30” wc</td>
<td>no greater than 4&quot; wc vaccum decay - bucket must be dry</td>
</tr>
<tr>
<td>Spill Bucket - SW Hydro</td>
<td>1 hr</td>
<td>within 1.5&quot; of top of the bucket</td>
<td>less than 1/8” over hour</td>
</tr>
<tr>
<td>Spill Bucket - DW Vac</td>
<td>5 min</td>
<td>15” wc</td>
<td>no greater than 3&quot; wc vaccum decay - int must be dry</td>
</tr>
</tbody>
</table>
For Further Reference


Musts For USTs
What Have We Learned?

15 Years of Testing Experience
Typical Pass/Fail Rates for “Existing” sites

- FAILURE RATES (of existing tests*)
  - ~30% for UDC sumps
  - ~25% for STP Sumps
  - ~25% for Spill Containers
  - Actual failure rates may be higher
    - Tanknology conducted onsite troubleshooting and repairs to “pass” many systems
    - Many sites had preliminary surveys and repairs by maintenance & construction contractors

*Some existing sumps are visual failure and need repair prior to test.
*Tests of “new” installations have much higher passing rates.
What Kind of Problems Occur?

• Groundwater enters sumps through leaks
• Sumps fill with water when it rains
• Costly pump-outs
• ATG and sump sensors in alarm
• Leak Detection equipment not functional
• Pumps, piping, and monitoring equipment suffers corrosion and deterioration
• NOV’s and fines
Effects of Water in Sumps
Causes of Leaks and Water Intrusion

- Cracks and penetrations
- Torn, ripped, or missing entry boots
- Dislocation of mounting donuts
- Degradation of nitrile rubber and other seals
- Sump bung adapter (floor)
- Seam of collar & sump riser
- Non watertight or poor fitting lids
- Missing gaskets
- Manhole covers allow water to penetrate
Why Tight Sumps Are Important

- Avoid cost of water pump-outs
- Detect any leak of product into the sump
  - Prevent product release into ground
  - Prevent contamination of environment
  - Avoid cost of environmental clean-ups
- Allow for inspections and functionality testing
- Prevent compliance violations and/or fines
- Extend life of pumps, piping, and monitoring equipment
What do we see while testing?

- Component issues
- Installation issues
- Aging parts
- Unknowns
Component-Conduit issues
Installation Issues - Bad angles
Installation issues
Sump Repair-Initial Survey

- Conduct site survey to identify necessary repairs
- Check groundwater level to see if same as in sump
- May require water removal
- Take necessary measurements
- Perform testing as necessary to identify leaks
- Determine which repair fittings are required
Repair & Replacement Options

- Tanknology can provide a variety of repair options based on the customer needs and technician experience in each region, the type of equipment installed, and the local regulations.
- Icon Split Boots are commonly utilized in most regions.
- Bravo fiberglass fittings are used in most regions as well.
- Additional training and certification may be required for implementation of certain types of repairs.
- Many other types of repairs can be implemented.
  - STS ProTec
  - Retrofit Water Tight Sump Covers/Lids
Sump Repair Process
Sump Preparation

- Barricade the area.
- Air monitoring.
- Pump water for disposal

Initial Cleanup
Sump Preparation

- Ready to make repairs
- Power wash
- Clean & Dry
Icon Split Repair Boots are commonly used in most regions.

The following slides show an overview of the types of problems that have been identified and resolved by Tanknology.
Piping Entry Boot and Test Boot

Note: Current Icon Repair Boots are Red in Color
Split Boot Repair

Note: Current Icon Repair
Boots are Red in Color
Conduit Entry Split Boot Repair

Note: Current Icon Repair Boots are Red in Color
Proper fitting installation.
Clean excess epoxy off with acetone leaving clean beads that can be inspected.
FRP RETROFIT FITTINGS
What is STS ProTec

- It’s a solution for corrosion that is caused by today’s ethanol blended fuels
- It treats corrosion
- It prevents corrosion
- It’s a processed based solution to remove and prevent surface oxidation and the loss of metal
- It prevents environmental losses
- It’s cost effective
STS ProTec The Process

- **Step 1 – Documentation, Cleaning and Liquid Removal**

Cleaning includes a site specific combo of the following tasks: Power wash, degreasing, liquid removal, media blasting, blast with compressed air, brushing & scraping.
STS-ProTec The Process

• Step 2 (Optional) – Passivation of the Corrosion

Additional Cost adds 12 hours of conversion time.

Passivation is the process of treating or coating a metal in order to reduce or stop the chemical reactivity of its surface. In our case create a passive oxide coating by removing ferrous components with the use of an acidic solution.
STS ProTec - The Process

- Step 3 – Application of polyamide epoxy with corrosion Inhibitors and documentation
STS ProTec - The Process

- Step 4 – Application of the High Build Epoxy and documentation
Why STS ProTec

• The solution is affordable
• Re-application is not required which reduces cost
• 5 Year Limited Warranty
• Other products may cause contamination to ground water
• The high build epoxy has been used in the petrochemical industries for decades on pipelines and AST’s. It is also STI approved.
Sump Lid Problems-Retrofit Cover

- Support Ring & compression gasket
- Water-tight Retrofitted Cover
Sump Lid Problems-Shield Retrofit Lid

Manufactured by Environmental Containment Products (was Environmental Protection Products – EPP)
Thank You!

Mark Lindsey
Mlindsey@Tanknology.com
800-666-2176