



Bureau of Environmental Cleanup & Brownfields

Frequent Mishaps and Solutions with Regulated Aboveground Storage Tanks in Pennsylvania

NISTM

4th Annual Pennsylvania
Storage Tank Conference
April 25, 2013

Overview

- Common regulated ASTs missed
- Performance and Design Standards
- Certified Tank Handling Activities
- Other Common AST “Blunders”

➤ Commonly missed ASTs

Tanks with >1,100-gallons in capacity and store motor fuel

Generator Tanks



➤ Commonly missed ASTs

Tanks with >1,100-gallons in capacity and store motor fuel

Non-commercial Fuel (not for resale)



➤ Commonly missed ASTs

Small WWTP Hazardous Chemical ASTs



Commonly missed ASTs

Common Regulated Substances Found at WWTPs and other locations

- aluminum sulfate (“alum”)
- sodium hypochlorite (bleach)
- ferric chloride/ferrous chloride
- sodium hydroxide
 - (caustic, caustic soda, NaOH)

***Regulated when stored in ASTs > 250-gallons in capacity**

Commonly missed ASTs

Asphalt ASTs

Regulated when:

- >250-gallons in capacity, (petroleum) liquid at 60° F and 14.7 psia, or contains hazardous substances (i.e. coal tar)
 - asphalt cutback
 - asphalt emulsions
 - sealers
 - road oils
 - coal tar-based ($\geq 1\%$ by weight) products

➤ Commonly missed ASTs

Asphalt Tanks

Common exemptions: non-stationary, non-liquid (most asphalt cement)



➤ Commonly missed ASTs

**Heating Oil Tanks >30,000-gallons in capacity
for consumptive use (2007 regulation change)**



Commonly missed ASTs

Solutions

- **Register the AST with the PADEP Division of Storage Tanks**
 - Tanks that do not require integrity inspections can be installed by PADEP-certified tank handler (AMMX or AMNX)
 - Petroleum and Hazardous substance ASTS < 5,000-gallons in capacity
 - Tanks that require integrity inspections should get inspected by PADEP-certified tank inspector (IAM or IAF)

Commonly missed ASTs

Solutions (continued)

- PADEP-certified tank installer or inspector must sign off on Storage Tanks Registration / Permitting Application Form to register AST.
- All deficiencies identified by inspector/installer must be corrected prior to issuing operating permit.
- All past annual storage registration fees must be paid by facility from installation date.
- Enforcement possible for operating unregistered, regulated AST without a permit.

Common Exempt ASTs

- Heating Oil tanks \leq 30,000 gallons
- Non-stationary tanks
- Motor Fuel tanks \leq 1,100 gallons
- Tanks regulated under Oil and Gas Act
- Most Waste/Used Oil Tanks
- Flow-through or process tank
- Pressure Vessel
- Tanks regulated under Surface Mining Regulations
- Equipment or machinery that contains regulated substances for operational purposes

➤ AST Performance and Design Std.

Tanks shall be designed and constructed and installed or modified in accordance with current codes of practice developed by Nationally-recognized associations such as:

- API
- ASME
- ASTM
- ANSI
- STI
- UL

➤ AST Performance and Design Stds.

Standards?



▶ AST Performance and Design Std.

Small AST Containments

Tanks shall be installed with secondary containment under tank bottom to provide monitoring capability to meet leak detection requirements and emergency containment to contain possible releases, such as overfills, leaks and spills. Emergency containment must be sufficiently impermeable to contain any potential release for a minimum of 72 hours and until the release can be fully recovered in an expeditious manner.

➤ AST Performance and Design Stds.

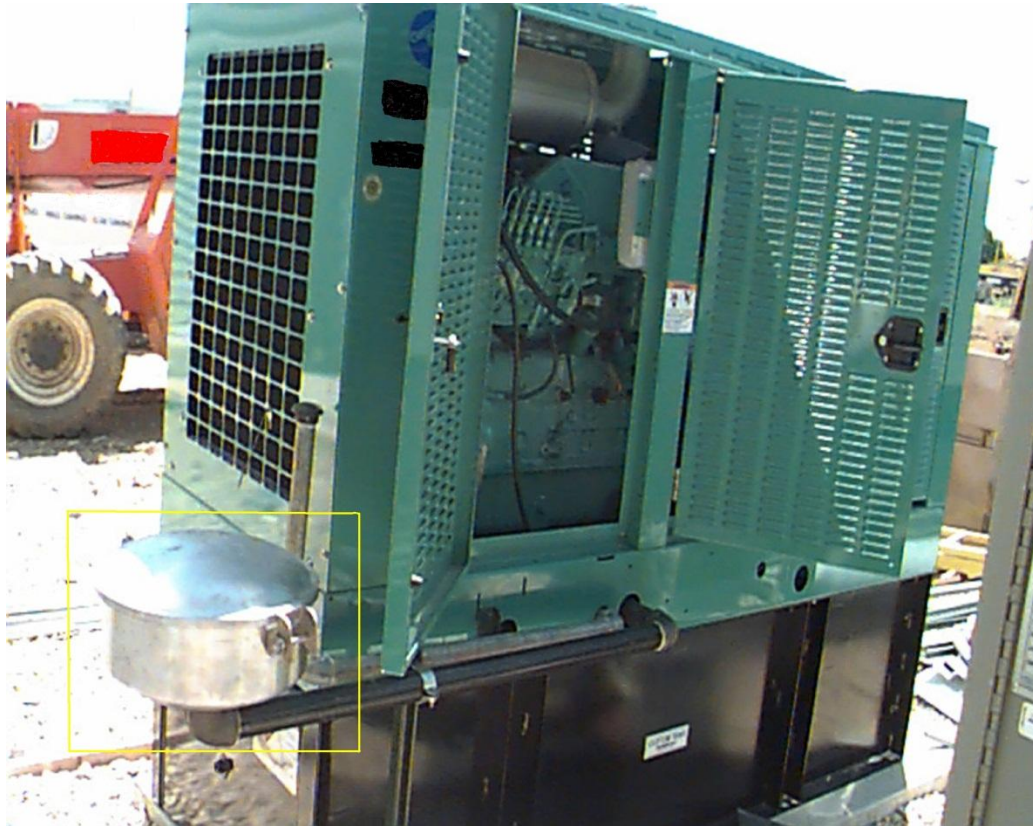
Double Walled Small ASTs (< 21,00-gallons) - may meet both emergency and secondary containment requirements when the tank system is operated with spill and overfill controls including the following:

- 1) Spill bucket or containment at the fill point
- 2) An overfill alarm or prevention device or monitoring gauge and shut down procedure
- 3) Block valves on product lines
- 4) Solenoid valve or anti-siphon device, if appropriate (see PEI RP 200)

➤ AST Performance and Design Std.

Small Double Walled ASTs

Spill Bucket at fill port



▶ AST Performance and Design Std.

Small Double Walled ASTs

Monitoring Gauge

OR Overfill Alarm



Overfill Prevention

OR Device

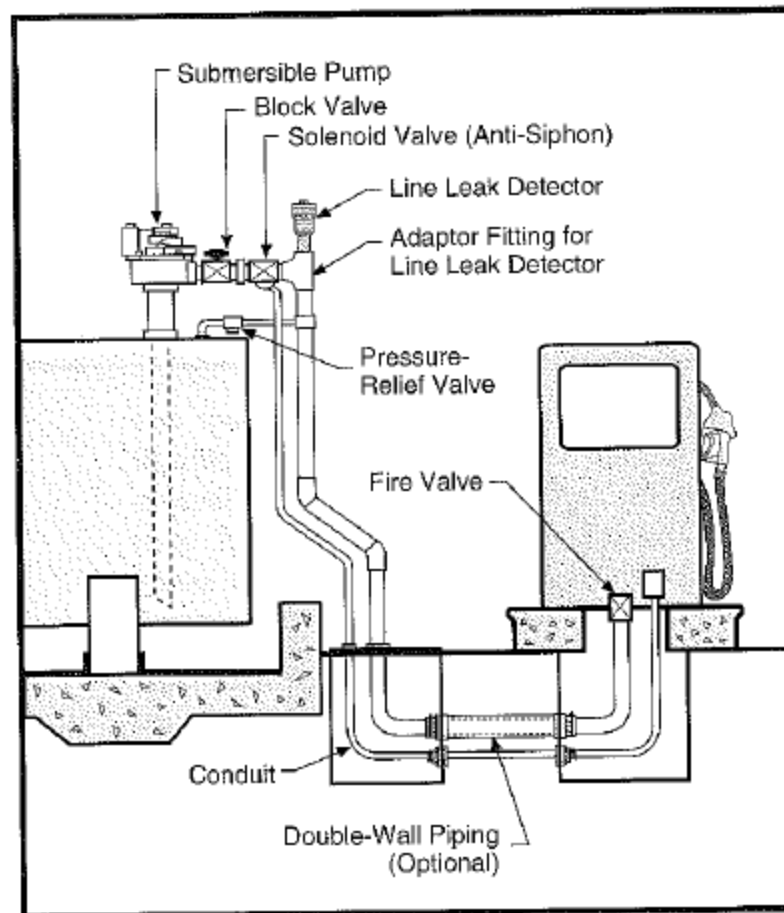


AND

SHUT DOWN PROCEDURE

➤ AST Performance and Design Stds.

Block valves on product lines and anti-siphon / solenoid valve (typical arrangement)



*Diagram from PEI RP200

▶ AST Performance and Design Stds

Large AST Containments

Secondary containment shall be provided on a new tank at installation, on an existing tank at reconstruction or relocation, or when the tank floor is replaced. (space for detection of a release)

- permeability must be less than 1.0×10^{-7} cm/sec
- must be designed to direct any release to a monitoring point to meet leak detection requirements.
- existing ASTs without secondary containment and no cathodic protection or internal lining must be leak tested at each in-service integrity inspection until the tank is upgraded.

▶ AST Performance and Design Stds

Large AST Containments

Emergency containment must be able to contain 110% of the capacity of the largest AST in the containment area.

AND

Permeability of new and replacement emergency containment must be 1.0×10^{-6} cm/sec.

Existing emergency containment structures must meet the requirements for new/replacement structures.

OR

Verification by a PE that the containment structure permeability, coupled with a monitoring program and response plan, is capable of detecting and recovering a release.



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

➤ AST Certified Tank Handling Activities

Let's stick with AST containment...



➤ AST Certified Tank Handling Activities

ACVL – Aboveground storage tank civil

- Installs containment structures, foundations, dike walls, vaults, CP systems
- Modification of containment structures
- Considered a minor modification, and therefore no AST inspection requirement for containment modifications.
- Painting, caulking or minor surface repair to an emergency containment structure is a maintenance activity and does not require use of certified individual.

▶ AST Certified Tank Handling Activities

AST Liners



▶ AST Certified Tank Handling Activities

TL – Storage Tank Liner

- Installation, repair or replacement of internal tank lining or coating is a major modification that requires a modification inspection by an IAF.
- Additionally, interior tank linings or coatings shall be inspected (IAF) at least every 10 years or as warranted or recommended by the manufacturer or design engineer.

➤ AST Certified Tank Handling Activities

AST Door Sheet – removal/replacement (AFMX)



▶ AST Non-certified Activities

- Tank painting, exterior coating, labeling
- Containment maintenance, surface coating, minor surface repair
- Like kind replacement of tank gauge
- Piping outside containment area
- AST cleaning not performed as part of a closure activity
- Replacement of threaded or flanged ancillary equipment located downstream of first isolation valve within emergency containment

➤ Common Blunders

We no longer have this AST. It's been gone for years...



Common Blunders



Uncertified Small AST Removals

Facility hires certified tank remover (AMR - shop built tanks) or AST inspector (IAM) to view location of former AST and verify no indication of a release.

- Submit to Department Storage Tanks Registration / Permitting Application Form for tank removal with signature of certified person.
- Department can pursue enforcement action towards facility and/or entity that removed regulated AST without proper certification

Common Blunders

Change of Substance in AST

- Regulated  Regulated (No Change in Status)
 - Notify Department within 30 days – submit one page Storage Tank Registration Amendment Form
- Regulated  Unregulated (Change in Status)
 - Small Tanks – submit amended Storage Tanks Registration / Permitting Application Form within 30 days
 - Large Tanks – Notification required 30 days prior to change in service (submit Notification Form to appropriate region)
 - Site Assessment – see “Closure Requirements for AST Systems”
 - submit amended Storage Tanks Registration / Permitting Application Form within 30 days

Common Blunders

Installation Permits?



Common Blunders

Site Specific Installation Permits (SSIPs) are required prior to construction, reconstruction or installation of one or more of the following:

1. New AST greater than 21,000-gallons in capacity at an existing AST facility
2. New large above ground storage tank facility
3. New highly hazardous substance tank system.
4. New field constructed UST system.



Bureau of Environmental Cleanup & Brownfields

Chad Clancy
Chief, AST Unit
Bureau of Env. Cleanup and Brownfields
Rachel Carson State Office Building
PO Box 8763
Harrisburg, PA 17105-8763
717.772.5830
cclancy@pa.gov