What Are The Environmental Regulatory Requirements/Programs Related To Aboveground Storage Tanks That I Have To Comply With?

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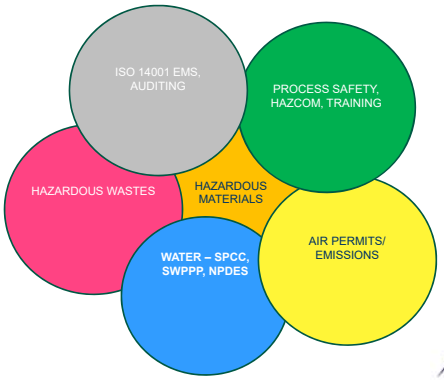
Outline for Today's Discussion

- AST Regulations/Laws/Codes
- Typical AST Requirements to Audit
- Case Studies
- Lessons Learned /Open Discussion

AST Regulations/Laws/Codes

AST Regulations/Laws/Codes



AST Regulations/Laws/Codes

- Community Awareness – EPCRA / HMBP
- Spill Response - SPCC/ ERP/ FRP (OPA 90)
- Offsite Impacts – SWPPP & Air Permitting, CalARP, RCRA Subpart BB, RMP/CalARP
- Onsite Environmental Conditions - Hazardous Waste Management
- Overall Design - Fire and Building Codes / NFPA Standards

Typical AST Requirements to Audit

Typical AST Requirements to Audit

- Permits
- Compliance Documents
- Labelling
- Inspections/Testing
- Tank Design
- Tank Closures

Permits

- Air
- Water
- Hazardous Waste
- Tiered Permitting
- Hazardous Materials Calif APSA
- Building Permits

Compliance Documents

- SPCC/ERP/FRP (OPA 90)
  - Inventory
  - Specific Materials
  - Inspection/Testing Requirements
- SWPPP
  - Outdoor storage/ treatment/ loading/ unloading
- EPCRA/HMBP and CalARP/RMP
  - Inventory
- RCRA Subpart BB – monitoring volatiles

Labeling

- NFPA
- Hazard Communication (HAZCOM)
- Hazardous Waste Regulations

Inspection/Testing Requirements

- SPCC
  - Monthly Inspections
  - 5-, 10-, 20-year Tank Integrity Testing (depending on the size and design) – see STI table
- SWPPP
  - Monthly/Quarterly wet season and dry season observations
- Hazardous Waste
  - Daily hazardous waste tank inspections per 22 CCR 66265.195
  - Initial tank integrity test and 5-year re-test of tank

Inspection/Testing Requirements

- CalARP/RMP
  - Process Hazard Analysis
  - 3-Year Compliance Audit
- RCRA Subpart BB – only applicable to Large Quantity Generators (LQGs)
  - Inventory
  - Inspections/Monitoring Volatile Emissions (monthly, quarterly, semi-annual, annual)
  - Recordkeeping/Reporting of Emissions

Inspection/Testing Requirements

- Steel Tank Institute (STI) Table of Inspection Schedules depend on design:
  - Category 1 Secondary Containment with Release Detection Method (CRDM)
  - Category 2 Secondary Containment
  - Category 3 No Safeguards

Inspection/Testing Requirements

Inspection Schedule

P – Periodic Owner's Inspection
I – Formal Internal Inspection
E – Formal External Inspection
L – Leak Test

More Risk

	Size, Gallons	Category 1	Category 2	Category 3
Shop built tank	0 - 1100	P	P	P, E&L(10)
	1101 - 5,000	P	P, E&L(10)	[P, E&L(5), I(10)] or [P, E(5) and L(2)]
	5,001 - 30,000	P, E(20)	[P, E(10)and I(20)] or [P, E(5) and L(10)]	[P, E&L(5), I(10)] or [P, E(5) and L(1)]
	30,001 - 50,000	P, E(20)	P, E&L(5), I(15)	P, E&L(5), I(10)
Field Erect Tank		P, E(5), I(20)	P, E(5), I(20)	P, E(5), I(20)
Portable Containers		P *	P	P **

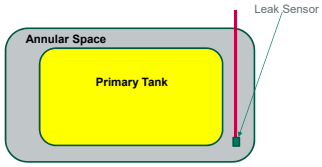
More Risk

Inspection/Testing Requirements

- Typical Tank Test Methods
  - Pressure Test
    - Metal tanks only
  - Ultrasonic Thickness Test
    - Metal tanks only
  - Hydrostatic Test
    - Metal and Plastic tanks
  - Internal Visual Inspection

Inspection/Testing

- Methods for testing double-walled tanks
  - Pressure test
  - Hydrostatic Test
  - External UT and visual



Inspection/Testing

- SPCC Oil Tank Testing

Tank was relatively new. Pressure test (1-2 inches water column) in the annular space showed a failure in the secondary containment wall. Used hydrogen gas and a H2 gas sniffer to find the exact location of the leak for repairs.

Inspection/Testing

- (1) tank configuration (i.e., horizontal, vertical), material of construction, and gross capacity (in gallons);
- (2) design standard(s), if available, according to which the tank and ancillary equipment were or will be constructed and all of the following information:
  - (A) material of construction;
  - (B) material thickness and the method used to determine the thickness;
  - (C) description of tank system piping (material, diameter);
  - (D) description of any internal and external pumps; and
  - (E) sketch or drawing of tank including dimensions.
- (3) documented age of the tank system (if tank was previously used), if available, (otherwise, an estimate of the age);
- (4) description and evaluation of any leak detection equipment;
- (5) description and evaluation of any corrosion protection equipment, devices, or material;
- (6) description and evaluation of any spill prevention or overfill equipment;
- (7) description and evaluation of secondary containment for the tank system (secondary containment must meet minimum standards as specified in 22 CCR 66265.192 (j)(1) through (j)(3) of this section) including applicable secondary containment for ancillary equipment as required in 22 CCR 66265.193(f);
- (8) hazardous characteristics of the waste(s) that have been or will be handled;
- (9) prior to placing a new tank system or component in use, an independent, qualified installation inspector or an independent, qualified, professional engineer, registered in California, either of whom is trained and experienced in the proper installation of tank systems, shall inspect the system or component for the presence of any of the following items and document in writing the results of the inspection:
  - (A) weld cracks or breaks;
  - (B) scrapes of protective coatings;
  - (C) corrosion;
  - (D) any structural damage or inadequate construction or installation such as cracks, punctures, damaged fittings. All discrepancies shall be documented in the assessment and remedied before the tank system is placed in use.
- (10) all new tanks and ancillary equipment shall be tested for tightness prior to being placed in use. The results of the test(s) shall be documented in this assessment. Tank system integrity or leak test requirements must be in compliance with all local requirements. Prior to conducting a tank system integrity test or leak test, contact local agency staff for local requirements.
- (11) estimated remaining service life of the tank system based on findings of 22 CCR 66265.192 (k)(1) through (k)(10).

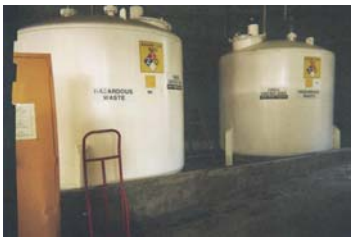
Inspection/Testing

- Hazardous Waste Tank Testing

Fiberglass tank with a crack in it. We (I) had to climb into the tank and inspect the repairs done by a contractor and certify the tank was tight. We also had it filled with water and performed a 24-hour hydrostatic test after the repairs.

Inspection/Testing

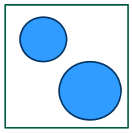
- Hazardous Waste Tank Testing



Two identical looking tanks, same age and design. Tank on the right failed the ultrasonic thickness testing at a level 75% full (paint was the only barrier at this small point).

Tank Design

- Secondary Containment
  - Minimum 100% of largest tank
  - Some States – 150% of tank
    - 110% in regulations? No
      - In local codes? Yes
  - Freeboard for 25-year, 24-hour storm event – if outdoors
  - Sprinkler water – if indoors
  - Multiple tanks – 150% of largest tank or 10% of the aggregate volume, whichever is larger



Tank Design

- Compatibility of Tank Materials with Contents
- Grounding/bonding for loading/unloading
- Distance between tanks – Cal/OSHA (8 CCR) and NFPA

Tank Design

- Fire Code /NFPA Standards
  - Flame arrestors
  - Grounding/bonding for loading/unloading - flammables
  - Indoor Storage
    - Occupancy ratings of rooms
    - Maximum quantities allowed
  - Electrical ratings of electrical equipment nearby – explosion proof, e.g., Class 1 Div. 2 – flammable liquids or gases
  - Secondary containment – sprinkler water

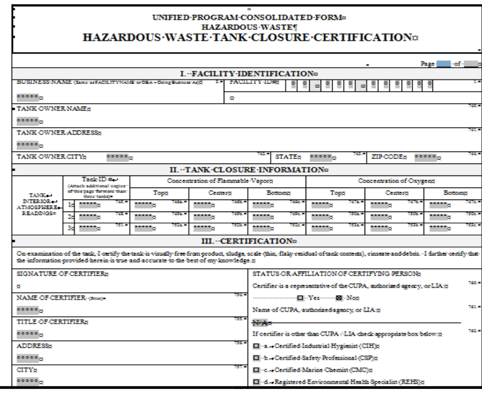
Tank Closure

- Documentation
  - Closure Plan, Closure Report, Offsite Disposal/Recycle
  - Some CUPAs require managing cleaned empty tanks as hazardous waste regardless of the cleaning method, the LEL readings, etc.
- Financial assurance – similar to USTs
  - Tiered permit tanks

Tank Closure

- Certification – see example on next page
  - Required for any tank that formerly had a hazardous material (not just hazardous wastes) – 22 CCR 67383.3.
- Subsurface Soil or Groundwater Samples
  - Tiered Permit Tank Closure often requires subsurface sampling
- Obtain CUPA Approval for Closure

Tank Closure – HWF Form 1249



UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS WASTE
HAZARDOUS WASTE TANK CLOSURE CERTIFICATION

Page ___ of ___

I. FACILITY IDENTIFICATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) | FACILITY ID#

TANK OWNER NAME

TANK OWNER ADDRESS

TANK OWNER CITY | STATE | ZIP CODE

II. TANK CLOSURE INFORMATION

TANK INTERIOR ATMOSPHERE READINGS	Tank ID # (Attach additional copies of this page for more than three tanks)	Concentration of Flammable Vapor			Concentration of Oxygen		
		Top	Center	Bottom	Top	Center	Bottom
1							
2							
3							

III. CERTIFICATION

On examination of the tank, I certify the tank is visually free from product, sludge, scale (thin, flaky residual of tank contents), rinseate and debris. I further certify that the information provided herein is true and accurate to the best of my knowledge.

SIGNATURE OF CERTIFIER
NAME OF CERTIFIER (Print)
TITLE OF CERTIFIER
ADDRESS
CITY

STATUS OR AFFILIATION OF CERTIFYING PERSON
Certifier is a representative of the CUPA, authorized agency, or LIA:
☐ Yes ☒ No
Name of CUPA, authorized agency, or LIA:
N/A
If certifier is other than CUPA / LIA check appropriate box below:
☐ a. Certified Industrial Hygienist (CIH)
☐ b. Certified Safety Professional (CSP)
☐ c. Certified Marine Chemist (CMC)
☐ d. Registered Environmental Health Specialist (REHS)

Lessons Learned for Auditors

Lessons Learned

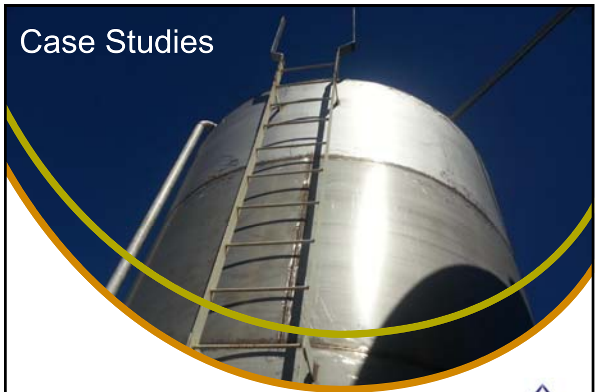
- Audit Limitations
  - Budgeted Time
  - Deep dive for specific topics?
  - Number of tanks onsite? 1, 10, 100, etc.

- Common Audit Findings
  - Missing tank testing reports
  - Incomplete inspection records (daily, monthly, etc.)
  - Labelling
  - Fire Code Requirements – flame arrestors, sprinkler volume
  - Inadequate Secondary Containment
  - Missing RCRA Subpart BB/CC Program or Documentation

Lessons Learned

- During Audit
  - Be aware of the tank regulations and codes that could apply.
  - Observe tanks in the field
  - Take pictures, lots of pictures.
    - Review pictures later.
- Other Lessons Learned?
  - Unique issues?
  - Look at Case Studies/Examples

Case Studies



Case Studies – HazWaste Tank Accumulation

- DTSC fact sheet - Empty as much as possible every 90 days using practices commonly employed to remove materials from that type of tank or container and they should be ok.
- Continuously Used Tanks and Containers.
  - For tanks and containers that are continuously used or reused for the accumulation of hazardous waste, compliance with the 90-day (or 180/270-days) accumulation time limit requires that the tank or container be emptied as completely as possible at least once every 90 days (or 180/270-days), using practices commonly employed to remove materials from that type of tank or container.
- For example, drain tanks through the lowest level valve and pump, if feasible, to remove all drainable and pumpable material.

Case Studies – HazWaste Tank Labeling

How do we prove it to an inspector we keep hazardous waste for no longer than 90 days in a tank?

Are there tools to help us manage this requirement?

- Label to right
- Manifest records
- Others?

Case Studies

- Adequate Containment?

Case Studies

- Adequate Containment?

Secondary containment was below tank; however, if the tank leaked, it was very likely it would flow out onto the ground outside the secondary containment due to the proximity of the berm walls to the tank walls.

Case Studies

- Issues with this tank?
  - No seismic restraints or tie-downs
  - No traffic bollards
  - Typically single-walled – no secondary containment
  - Hoses and bottom valves are weak points
  - Drips observed below hoses/fuel valves
  - Incorrect labeling – flammable vs. combustible
- Why are they common?
  - Economics
    - No pump necessary – gravity feed
    - Little or no design needed
    - Fuel companies will rent or sell these to you

Case Studies

- Corrosion / Paint Protection
- Common Issue – Not remedied but may be observed daily
- Is it acted upon? Is it noted in inspection logs?

Case Studies

- Signs of Overfilling?
- This tank has an analog level gauge

Case Studies

- Common Diesel Weep Conditions
- Diesel deteriorates most gaskets and passes by some screwed connections

Case Studies

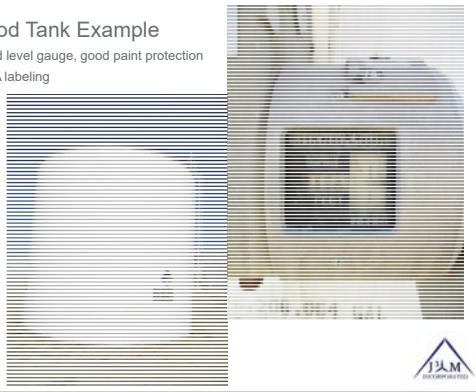
- Leaks Not Repaired
- Is it acted upon? Is it noted in inspection logs?
- Long-Term Leak – Potential Significant Remediation and Replacement Costs

Case Studies

- Good Tank Example
- Liquid level gauge, double-walled, good paint protection
- Could use better labeling and an annular space monitoring port

Case Studies

- Good Tank Example
- Liquid level gauge, good paint protection
- NFPA labeling



Case Studies

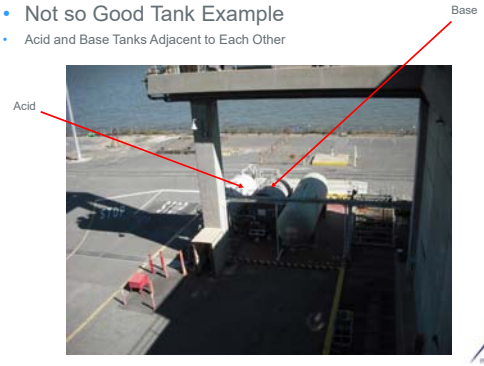
- Good Tank Example
- Liquid level gauge, good paint protection
- NFPA labeling

Case Studies

- Good Tank Example
  - Well labeled + fuel gauge

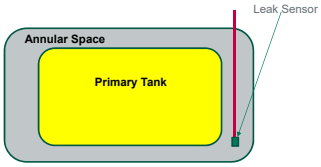
Case Studies

- Not so Good Tank Example
  - Acid and Base Tanks Adjacent to Each Other



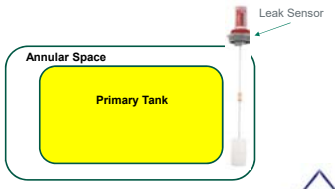
Case Studies

- Common Issues / Unknown Releases
  - Missing or non-documented inspections
    - Daily inspections for hazardous waste tanks and pipes (without secondary containment)
    - Periodic (i.e., monthly) SPCC Plan inspections
  - Missing maintenance
    - Periodic maintenance of annular space leak monitors for double-walled tanks
    - False negative – client had diesel in the annular space, believed tank was tight



Case Studies

- Simple Leak Detector
  - No electronic wiring necessary



Case Studies

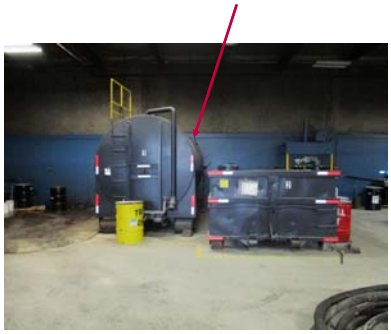
- Is this a UST or AST?

- Depends on whether you can see/inspect the bottom of the tank. May classify it as a AST in a belowgrade vault.

The tank may be considered a UST. Per HSC Section 25281, a UST is defined as anyone or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground. Title 23 CCR further defines a UST as being "substantially beneath the surface of the ground" and at least 10 percent of the underground tank system volume (including the volume of any connected piping) is below the ground surface or enclosed below earthen materials. Since more than 10 percent of the total volume stored is below "common surrounding soil level" (grade-level), then the system is considered to be a UST system. [APSA FAQ, Oct 14, 2011]

Case Studies

- Is this a Tank or Portable Container?



A container is any portable device in which material can be stored, handled, treated, transported, recycled, or disposed of. [Title 22 CCR 66260.10]. Containers range from small lab bottles to trucks and rail cars. Most common are 55 gallon drums.

Case Studies

- Is this a tank?
  - Closed-loop hydraulic oil system.
  - Under the SPCC Plan regulations, this is a piece of oil-filled equipment that serves an oil process.

Case Studies

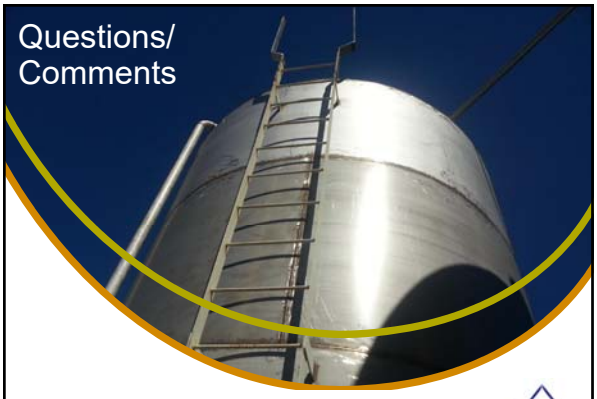
- Can a 55-gallon drum of hazardous waste be classified as a tank?
- Yes when the container is not managed as portable:
  - It is hard-piped to the waste generating unit.
  - Container is not periodically replaced.

A tank is a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

Case Studies

- Seismic Design Criteria for Hazardous Waste Tanks
  - Adequate?
  - Inadequate PE Certs?

Questions/ Comments



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