

The Safe Tank Alliance


Safety in Numbers!



Adding Value Through Partnerships!



What is the American Petroleum Institute?

- API is the Primary Trade Association for the U.S. Oil and Gas Industry
 - 250 API Staff in Washington DC
 - 21 State Petroleum Councils
 - Small one/two persons in State Capitols
 - >400 Member Companies including:
 - ExxonMobil, Chevron, Shell, BP, etc.
 - Cover all aspects of Industry Operations from production to consumption
- 




What is the STI/SPFA?

- 
- Steel Tank Institute and Steel Plate Fabricators Association merged in 2004 based in Chicago
 - 180 Members
 - Represents fabricators of shop-fabricated tanks, field erected tanks and pressure vessels in the oil, water, chemical, and energy industries
 - Liaison to code & regulatory community
 - Safety & Health Committee
 - Standards development, education, etc.
 - Learn more at www.steeltank.com web site
- 



What is the NFPA?

- Membership organization – 82,000 members
 - Founded in 1896; located in Quincy, MA
 - World's leading advocate for fire and life safety
 - Promote fire and life safety through codes and standards, research and public education
 - ANSI consensus standards developing organization – over 300 codes and standards
 - More information at www.nfpa.org
- 



OSHA's Alliance Programs

- Established in 2002 under OSHA's John Henshaw
 - Henshaw Vision for OSHA to Work Cooperatively w Industry on Common Goals
 - Provides Associations a Mechanism to Work with OSHA to advance Workplace Safety, (w/o enforcement involvement)
 - Focus on Education, Outreach & Advancing the Dialogue on Workplace Safety
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What is the Safe Tank Alliance?


- API, NFPA and STI Alliance signing 2008





The Safe Tank Alliance

Alliance Goals:

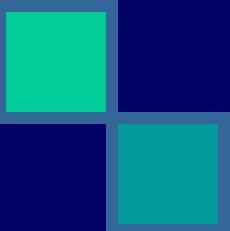

- Promote Safe Work Practices related to the Operation and Maintenance of ASTs
 - Education, Outreach & Communication Activities
 - Promote the National Dialog on Workplace Safety
- 

Scope:

- Tank Operations including:
 - Safe Tank Entry and Cleaning Operations
 - Maintenance Activities
 - Rescue Operations




Why Product Storage Tanks?

- 
- > 700,000 ASTs currently in service in U.S.
 - Aging Infrastructure
 - Increasing Maintenance Activities
 - More Opportunities for Accidents
 - Specialty Contractors
 - Small contractors
 - Training and resources
 - Tank accidents continue to occur!
- 



Delaware City July 17, 2001




- Sulfuric Acid Tank Release - (hot work accident)
 - 100,000 gallons of spent sulfuric acid released into Delaware river
 - One Fatality (Welding Contractor)
 - New State Legislation – Jeffery Davis Law
 - > \$45 million in fines, settlements, etc.
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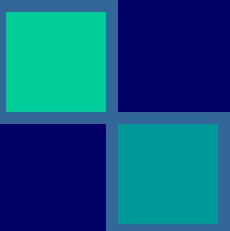

Raleigh, MS – June 2006



- Welding Accident - while connecting two 400 barrel production oil tanks
 - Welding Arc Ignition of Flammable Vapors
 - Three Fatalities (Oil Field Service Contractors)
 - Welder survived – found hanging by his harness
 - CSB Investigation published (www.csb.gov)
 - Lack of Hazard Recognition
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2008 Tank Mishaps

- 
- July - Romulus, MI man severely burned after lighting a match next to a 300 gallon tank that subsequently exploded
 - June - 2008 Two Newark, NJ men die after scaffold collapses while painting 60' fuel tank
 - June - 2008 Atlanta man dies while MIG welding inside cargo tank that formerly contained diesel
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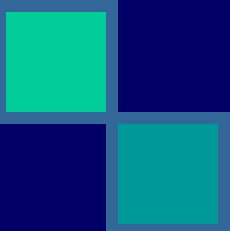



2008 Tank Mishaps

- June - Hispanic welder in Atlanta dies while making repair weld on diesel tank located on the bed of a pick-up truck
 - June - Welders at 2 separate biodiesel production facilities die during repair operations in Alberta and Princess Anne, MD
 - September - Roof of biodiesel tank blows off when product poured onto exposed heating element ignites an internal tank fire
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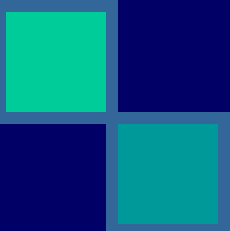



2008 Tank Mishaps

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- April - CT man using acetylene torch to cut off drum head causes explosion & burned
 - April - Scottish welder dies while repairing top of oil tank vehicle inside warehouse. Roof collapses as result of explosion.
 - January - Two men injured from biodiesel production facility explosion when motor ignites methanol vapors escaping open manhole
 - January - South African tank painters die while lining inside of fuel tank
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Most recent mishap

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- October 7, 2008
 - 1 killed, 3 injured
 - Honolulu, HI
 - 9500 gallon used oil tank
 - Welder killed
 - Tack welding a metal footbridge
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Benefits of the Alliance

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- Recognized as leaders in safety
 - Leverage resources to reach more workers
 - Build safety network with others committed to a common goal
 - Enhance industry reputation
 - *Reduce Workplace Accidents!*
- 



Consistent & Supportive of existing API AST Programs

- Tank Entry Supervisor (TES) Certification Program
 - API Tank Standards Program
 - RP 653 – Inspector Certification
 - RP 2015, 2016 – Tank Entry & Cleaning
 - RP 2350 – Overfill Protection
 - Annual API Tank Conference
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STI/SPFA AST Programs

- STI Tank Standards Program
 - SP 001 – AST Inspection and Certification
 - SP 031 – AST Repair
- Major participant in development of regulations, fire codes, and tank fabrication standards for shop-fabricated flammable liquid storage in tanks (UL, NFPA, API)
- STI AST fabrication standards & research

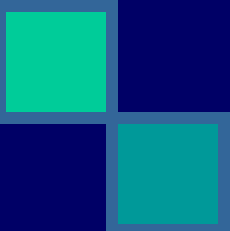



NFPA AST Standards Development Activities

- NFPA 30, *Flammable and Combustible Liquids Code*, 2008 edition
 - NFPA 326, *Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning or Repair*, 2005 edition
 - Revision in process – Fall 2009
 - Proposal meeting concluded
 - Review Report on Proposals when published
- 



Successes of Safe Tank Alliance

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- Create Safe Tank Alliance Website
 - Central clearing house on educational products and services
 - Safe Tank Entry (Confined Space) Module
 - Participate in Industry Events
 - API Fall Tank Conference – OSHA Speakers
 - Safe Tank Workshop – NFPA Training Program
 - Develop Educational Fact Sheets
 - Fall Protection, Confined Spaces; Hot Work;
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Safe Tank Seminar - April 2005

- Hosted by Chevron
- 80 + participants (OSHA & Industry)
- Build relationships, Technology & Lessons Learned Sharing



Chevron Refinery Tour



Fact Sheets:

- Focus on Prevention
- Plain Language
- Geared to Operators
- Widely Available for Free

Fall Prevention for Aboveground Storage Tanks



What is Fall Prevention?

Fall prevention means keeping accidents from happening. Using equipment like guardrails, stair rails, travel restraint systems, safety nets, arrest systems (harnesses), self-retracting lifelines/lanyards and ladder safety devices help keep us from falling and avoid a hard landing if we do fall. This fact sheet encourages prevention. Fall protection should be used where required by policy or by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) regulations.

Fall Prevention Priorities

- Try to do a job from ground level
- Use passive controls such as handrails
- Use fall protection equipment to help avoid hard landings

Fall Hazards In and Around Tanks

- Holes in walking or working surfaces
- Poorly secured ladders
- Faulty scaffolds
- Untidy or congested work areas
- Obstructed walkways
- Improper use of equipment or procedures
- At ground level around the tank
- On tank stairs, ladders, platforms, rooftops, scaffolds or girders
- Slippery floors and obstacles inside the tank

The Bottom Line

- Understand the hazards for specific tasks
- Minimize risk by real-time hazard review
- Think, look and correct before starting work
- Follow procedures and get necessary permits
- Use good judgment
- If in doubt, ask someone with experience

Fact Sheets

- More In-depth than Fall Protection
- Brochure Format
- Complex Issue
- Broadly Distributed and widely available

Safe Tank Entry

When Entering Aboveground Storage Tanks
(in service)*



What constitutes a confined space?

A "confined space" is a space that: (1) is large enough and so configured that an employee can bodily enter and perform assigned work; and (2) Has limited or restricted means for entry or exit; and (3) Is not designed for continuous employee occupancy.

A "Permit-required confined space" (PRCS) means a confined space that has one or more of the following characteristics: (1) Contains or has a potential to contain a hazardous atmosphere; (2) Contains a material that has the potential for engulfing an entrant; (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) Contains any other recognized serious safety or health hazard.

What constitutes an entry?

- Entry starts "as soon as any part of the entrant's body breaks the plane of an opening into the PRCS."

Where are tank entry regulations and guidance?

- In the USA, 29 CFR 1910.146 contains mandatory standards regarding PRCS.
- Industry standards API Std. 2015 and RP 2016 along with NFPA Std. 326 provide both general and specific explanations and guidance for preparing and working safely in tanks.
- ANSI Z117 addresses general confined space entry. OSHA provides a number of publications on confined space entry.

*For information about Confined Space Entry while tanks are being constructed, refer to 29CFR 1926 for the construction history.

What are PRCS Roles/Duties?

Duties include but are not limited to:

- Entry Supervisor – the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a PRCS where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by 29 CFR 1910.146.
- Authorized Entrant - an employee who is authorized by the employer to enter a permit space.
- Attendant – an individual stationed outside one or more PRCS who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.
- Rescue Service - the personnel designated to rescue employees from a PRCS.

What are the Characteristics of Petroleum Storage Tanks?

Typically, aboveground petroleum storage tanks are "confined spaces" with limited entry through "manways" – relatively small openings in the side or top of the tank. The following potential hazards trigger PRCS characterization:

- Top entry can present falling hazards.
- The internal structure of tanks can be complex, which may not be apparent from the outside.
- Some tanks have internal floating roofs, which can move and trap workers.
- Tripping hazards may likely be present.
- The petroleum products typically stored in these tanks pose both a flammability and toxicity hazard that must be recognized.

Hazards & Solutions Page



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Storage Tanks in the Petrochemical Industry Hazards and Solutions

Hazards encountered in confined spaces may include fire or explosion, asphyxiation, toxicity, drowning in liquids and injury or death if mechanical equipment within the confined space is inadvertently turned on while someone is still inside.

These hazards can be a result of the presence of hazardous gases, vapors, fumes, dusts or the creation of an oxygen-deficient or oxygen-rich atmosphere. The following references discuss exposure for employees who participate in a variety of activities involved with entry into petrochemical ground storage tanks.

- [Preplanning](#)
- [Removing Recoverable Product From Tanks \(Decommissioning\)](#)
- [Tank Isolation](#)
- [Vapor and Gas Freeing the Tank \(Degassing\)](#)
- [Atmospheric Testing](#)
- [Cleaning the Tank](#)
- [Working Inside and Around the Tank](#)
- [Returning the Tank to Service](#)
- [Recommissioning](#)

Preplanning

Tank cleaning operations preplanning should include items such as:

- Engineering and Operations Preplanning

Safety and Health Topics

Storage Tanks in the Petrochemical Industry

- [Standards](#)
- [Hazards and Solutions](#)
- [Safety and Health Programs](#)
- [Additional Information](#)
- [Credits](#)

Content Reviewed
04/05/2006

Accessibility Assistance


Contact the OSHA Directorate of Cooperative and State Programs at 202-693-2300 for assistance accessing OSHA PDF and PPT materials.



Safe Practices Brochures

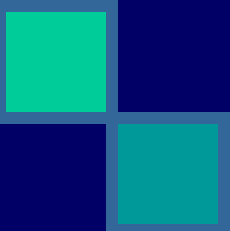



Recognize
Evaluate
And
Control
Hazards
For
Confined Space
Safety

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- Hot work brochure also
 - Bi-lingual versions (translate to Spanish)
 - Free distribution
 - Posted on OSHA, API, STI and NFPA web sites
 - In final review

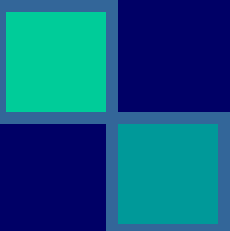


Future Alliance Activities

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- Re-signed for two more years (2008-2010)
 - Safe Tank Seminar - Spring 2009 at Chevron's Richmond Technology Center, CA
 - More Fact Sheets (hot work, work space testing, etc) – Spanish versions?
 - Explore more web based educational tools
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Safe Tank Alliance

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- http://www.osha.gov/dcsp/alliances/api_nfpa/api_nfpa.html
 - Alliance Home page – 41,196 visits
10/1/07 through 9/30/08
 - Safe Tank Alliance page – 2,636 visits
 - Information also available on members' sites
 - Opportunities for input to Alliance activities
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