



Disclaimer

This information has been developed by an OSHA Compliance Assistance Specialist and is intended to assist employers, workers, and others as they strive to improve workplace health and safety. While we attempt to thoroughly address specific topics, it is not possible to include discussion of everything necessary to ensure a healthy and safe working environment in a presentation of this nature. Thus, this information must be understood as a tool for addressing workplace hazards, rather than an exhaustive statement of an employer's legal obligations, which are defined by statute, regulations, and standards. Likewise, to the extent that this information references practices or procedures that may enhance health or safety, but which are not required by a statute, regulation, or standard, it cannot, and does not, create additional legal obligations. Finally, over time, OSHA may modify rules and interpretations in light of new technology, information, or circumstances; to keep apprised of such developments, or to review information on a wide range of occupational safety and health topics, you can visit OSHA's website at www.osha.gov.

OSHA Update

- 1. Statistical Information
- 2. OSHA Enforcement / Emphasis (Top 10, NEP, LEP, Unified Agenda)
- 3. Confined Spaces in Construction
- 4. Additional Resources

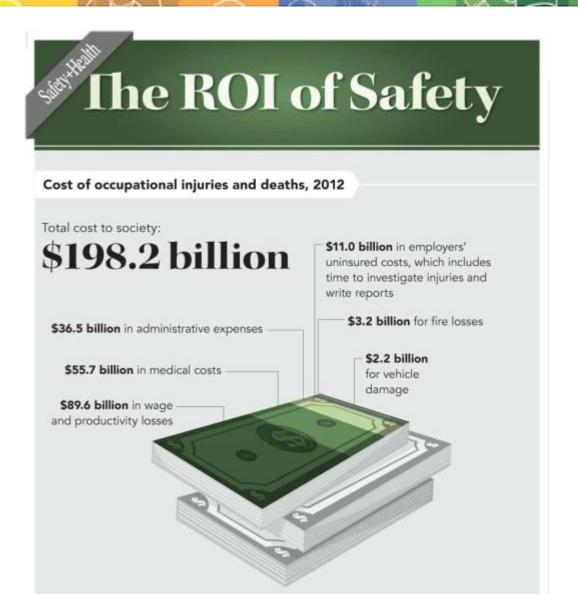
OSHA's Continuing Mission

- More than 4,000 Americans die from workplace injuries every year.
- Perhaps as many as 50,000 workers die from illnesses in which workplace exposures were a contributing factor.
- More than 3 million workers suffer a serious non fatal injury or illness annually.

OSHA We Can Help

Workplace injuries and fatalities cost our economy \$198.2 billion a year.

National Safety Council "Injury Facts" 2014



OSHA°

We Can Help

Safety Pays

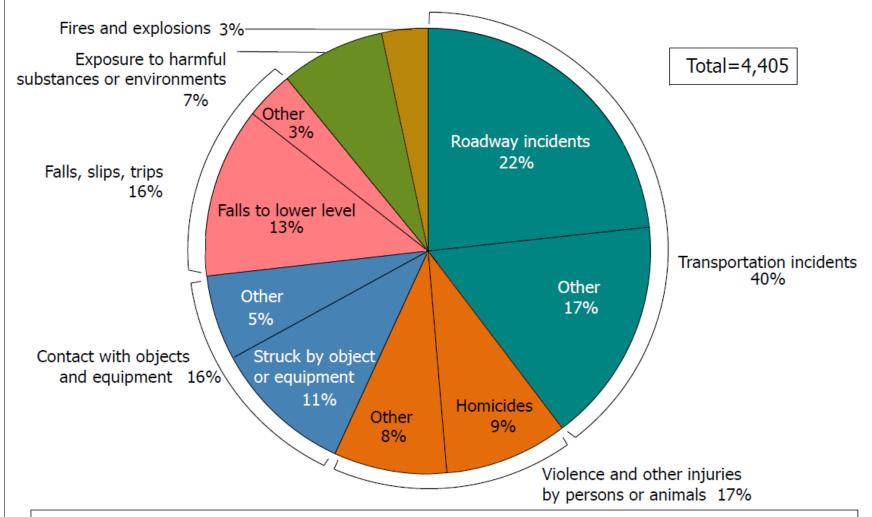
Investing in preventing hazards saves lives, prevents injuries and saves you money

OSHA's Safety Pays Program helps show the impact of injuries and illnesses





Fatal occupational injuries, by major event, 2013*



More fatal work injuries resulted from transportation incidents than from any other event in the 2013 preliminary counts. Roadway incidents alone accounted for nearly one out of every four fatal work injuries.

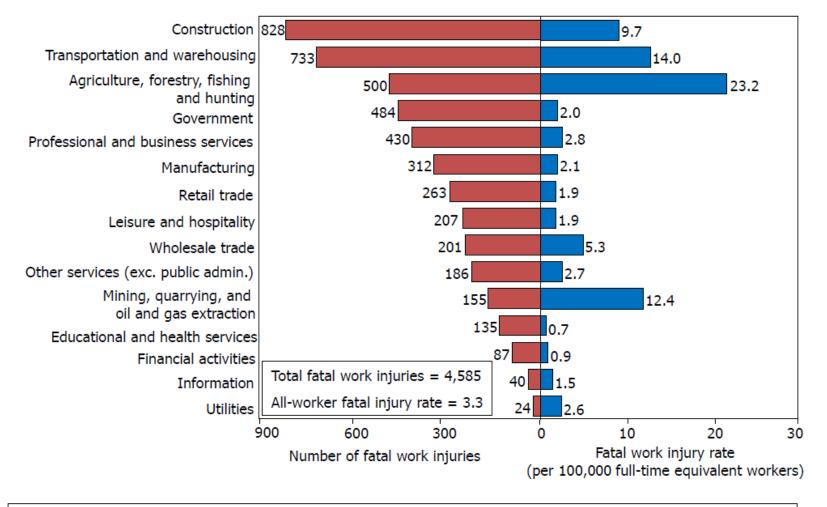
Note: Transportation counts presented in this release are expected to rise when updated 2013 data are released in spring 2015 because key source documentation detailing specific transportation-related incidents has not yet been received. Percentages may not add to 100 due to rounding.

Source: U.S. Bureau of Labor Statistics, U.S. Department of Labor, 2014.

^{*}Data for 2013 are preliminary.



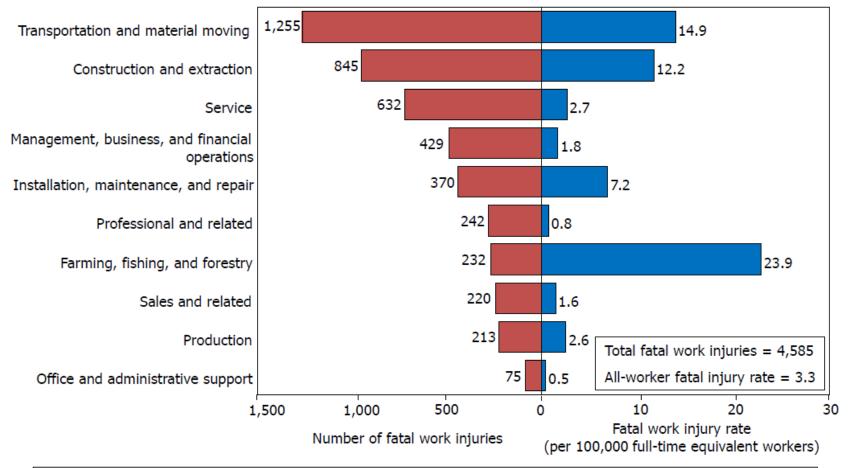
Number and rate of fatal occupational injuries, by industry sector, 2013



Private construction had the highest count of fatal injuries in 2013, but the agriculture, forestry, fishing and hunting sector had the highest fatal work injury rate.



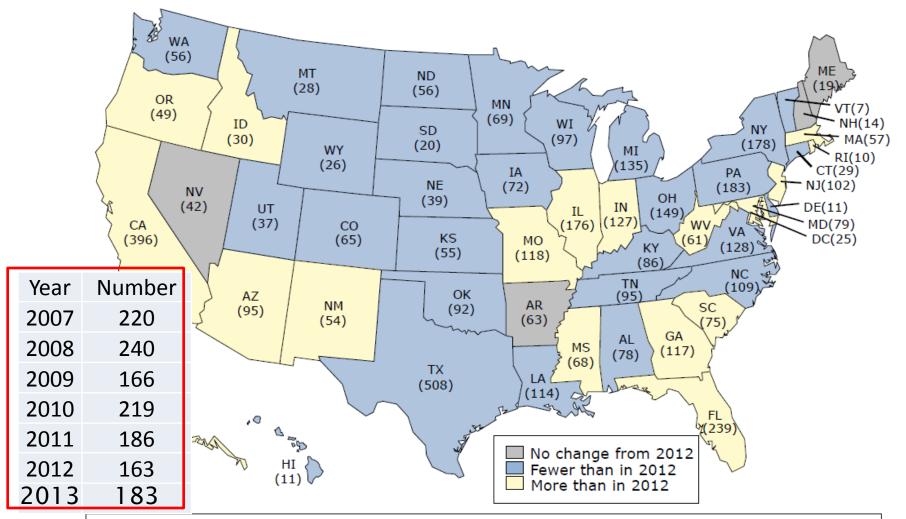
Number and rate of fatal occupational injuries to civilian workers, by major occupation group, 2013



Although transportation and material moving occupations had the highest number of fatal work injuries in 2013, the major occupational group with the highest fatal work injury rate was farming, fishing, and forestry.



Number of fatal work injuries, by state, 2013



Eighteen states and the District of Columbia had counts showing more fatal injuries in 2013 than in 2012. Twenty-eight states had fewer fatal workplace injuries in 2013 compared to 2012. Four states saw no change between the two years.

OSHA Enforcement/Emphasis

- Top 10 Cited Hazards
- National Emphasis Program (NEP)
- Local Emphasis Program (LEP)



OSHA's 2014 TOP TEN Most Frequently Cited Violations

- 1. Fall protection (C)
- 2. Hazard communication
- 3. Scaffolding (C)
- 4. Respiratory protection
- 5. Powered industrial trucks

C = Construction standard

- 6.Lockout/tagout
- 7. Ladders (C)
- 8. Electrical: wiring
- 9. Machine guarding
- 10. Electrical: systems design



National Emphasis Programs

COMBUSTIBLE DUST: OSHA Instruction CPL 03-00-008 National Emphasis Program on Combustible Dust (Reissued)

FEDERAL AGENCIES: OSHA Notice 14-01 (FAP 01) Federal Agency Targeting Inspection Program for 2014 (FEDTARG14)

HAZARDOUS MACHINERY: OSHA Instruction CPL 03-00-003 National Emphasis Program on Amputations

HEXAVALENT CHROMIUM: OSHA Instruction CPL 02-02-076 National Emphasis Program - Hexavalent

Chromium

ISOCYANATES: OSHA Instruction CPL 03-00-017 National Emphasis Program - Occupational Exposure to

Isocyanates

LEAD: OSHA Instruction CPL 03-00-009 National Emphasis Program on Lead

PRIMARY METAL INDUSTRIES: OSHA Instruction CPL 03-00-018 National Emphasis Program - Primary Metal

Industries

PROCESS SAFETY MANAGEMENT: <u>CPL 03-00-014</u> - PSM Covered Chemical Facilities National Emphasis Program <u>OSHA Instruction CPL 03-00-010</u> - Petroleum Refinery Process Safety Management National Emphasis Program

SHIPBREAKING: OSHA Instruction CPL 03-00-012 National Emphasis Program on Shipbreaking

SILICA: OSHA Instruction CPL 03-00-007 National Emphasis Program on Crystalline Silica

TRENCHING & EXCAVATION: OSHA Instruction CPL 02-00-069 Special Emphasis Program on Trenching and

Excavation

- Regional Emphasis Program for the Oil and Gas Service Industry {2015-01 (CPL 04)}
- Regional Emphasis Program for High Level Noise {2015-2 (CPL 04)}
- Regional Emphasis Program for Fall Hazards in the Construction Industry. {2015-03 (CPL 04)}
- Regional Emphasis Program- Silica (2015-04 (CPL 04))
- Regional Emphasis Program for Tree Trimming and Clearing Operations {2015-05 {(CPL 04)}
- Local Emphasis Program for Programmed Maritime Inspections {2015-06 (CPL 04)}
- Local Emphasis Program for Health Hazards in Metal Fabrication Except Structural {2015-07 (CPL 04)}
- Local Emphasis Program for the Health Care Industry {2015-10 (CPL 04)}
- Local Emphasis Program for Logging in West Virginia {2015-12 (CPL 04)}
- Local Emphasis Program for Ship/Boat Building and Repair {2015-20 (CPL 04)}



OSHA Confined Space Awareness

Isabel DeOliveira
Occupational Safety and Health Administration
November 2015



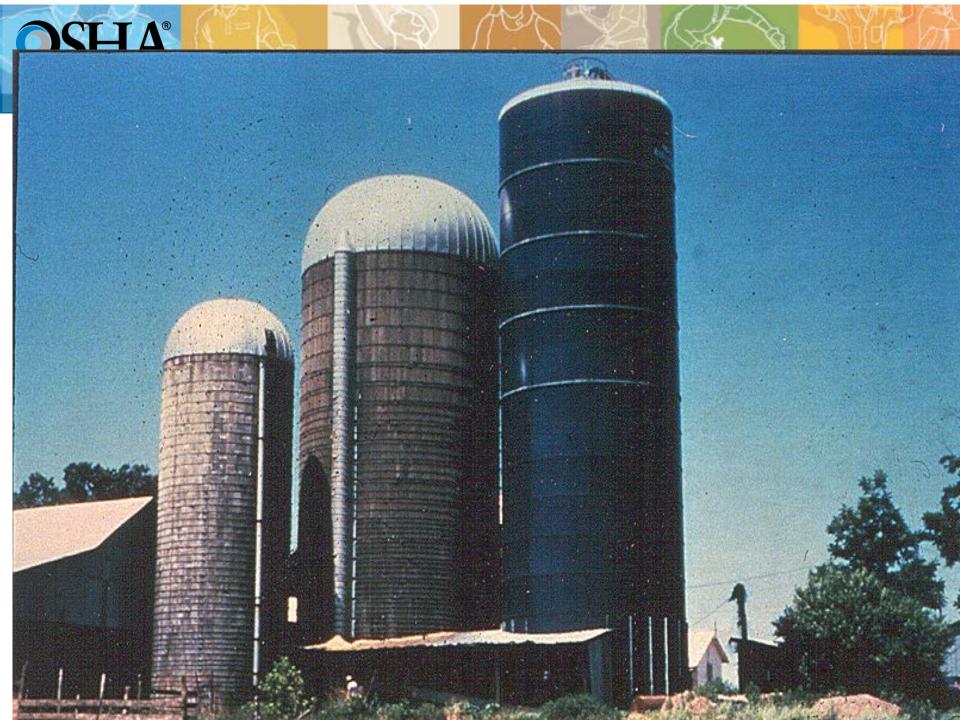


Objectives

Review OSHA's 1910 and 1926 Confined Space standards

Examples of common hazards

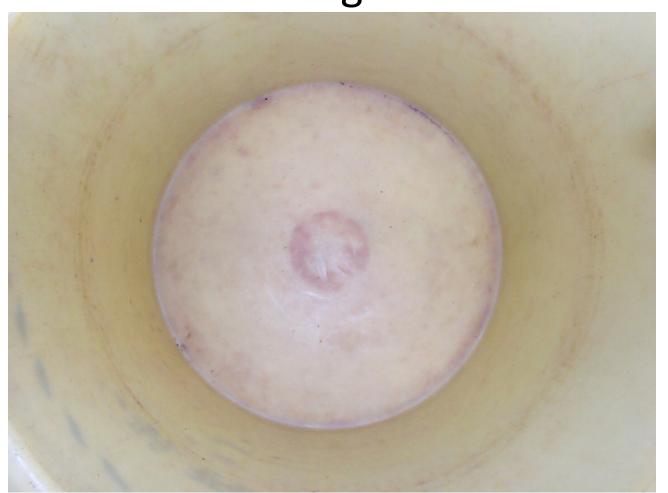
Obtain information about OSHA resources and compliance assistance







CSs may be a matter of perspective, as in this mixing tank.





Looking out of the entry port











Is it still a CS?





What about now?







Confined Space Basics

What is a confined space?

Where are confined spaces usually found?



A Confined Space Is....

- Large enough to enter and perform work
- Has limited or restricted means of entry and exit
- Is not designed for continuous human occupancy



Examples of GI Confined Spaces:

- Tanks
- Boilers
- Furnaces
- Silos
- Hoppers

- Vaults
- Pipes
- Ducts
- Bins
- Pits



A Permit Required Confined Space (PRCS) Is....

- Large enough to enter and perform work
- Has limited or restricted means of entry and exit
- Is not designed for continuous human occupancy
- AND contains one or more of the following....



PRCS Contains one or more of the following:

- Contains or has the potential to contain a hazardous atmosphere
 - Greater than 10% LEL
 - Equal to or > LFL for combustible dusts
 - Oxygen deficient or enriched <19.5% or >23.5%
 - Exposure above dose or PEL published in subpart G or Z (if it impairs ability to self rescue or worse)
 - Any IDLH atmosphere



PRCS Contains one or more of the following: (Continued)

- Contains a material that can engulf an entrant
 - Surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, construction, or crushing



PRCS Contains one or more of the following: (Continued)

- Has an internal configuration that can trap or asphyxiate an entrant
 - Inwardly converging walls or by a floor which slopes downward and tapers to a smaller crosssection



PRCS Contains one or more of the following: (Continued)

- Contains any other recognized serious safety or health hazard
 - Unguarded machinery
 - Electrical hazards
 - Stored energy
 - Thermal
 - Noise
 - Radiation



Non-Permit Confined Space

 A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.



Non-Permit Space Examples

- Vented Telecommunications Vault
- Return Air Plenum



Reasons Why People Enter Confined Spaces

- Inspection
- Repair
- Maintenance
- Construction
- Rescue
- Unauthorized



General Reasons Why Workers Die in Confined Spaces

- They do not recognize hazards (lack of or inadequate training)
- They trust their senses (instead of a calibrated instrument)
- They underestimate the danger ("I've done it this way a thousand times before and nothing has ever happened")
- They become complacent
- They assume everything's safe
- They try to rescue a co-worker



Confined Space Fatal Accidents

NIOSH F.A.C.E. Study (12/83-12/89)

- 35% "Supervisor" or higher
- 64% Did not need to enter to do work
- 66% Water/wastewater/sewer/construction
- 78% Oxygen deficiency or IDLH toxic
- 95% No confined space training
- 100% No (or inadequate) powered ventilation
- 100% No air monitoring
- 60% Were would-be rescuers



Confined Space Fatalities

- Manure Pit Simple Asphyxiations
 - Five family members (15 to 65 yrs old) die entering manure waste pit. 1 entrant and 4 would-be rescuers
- Water Main Valve Pit Simple Asphyxiations
 - Two city workers asphyxiated trying to shut down a 24 inch water main in a 10 ft. deep pit.
- Metal Plating Vat Chemical Asphyxiations
 - Five electroplating company workers die from chemical asphyxia. 1 entrant and 4 would-be rescuers. Muriatic acid + zinc cyanide = HCN



Confined Space Hazards

Click on an area for more specific information.

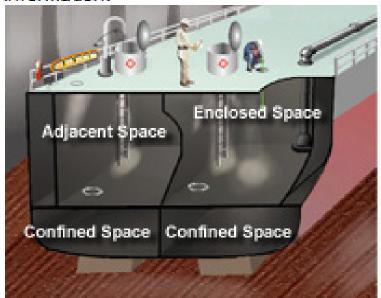


Figure 1: Confined or Enclosed Spaces: <u>Adjacent Space</u>, <u>Enclosed Space</u>, and Confined Space.



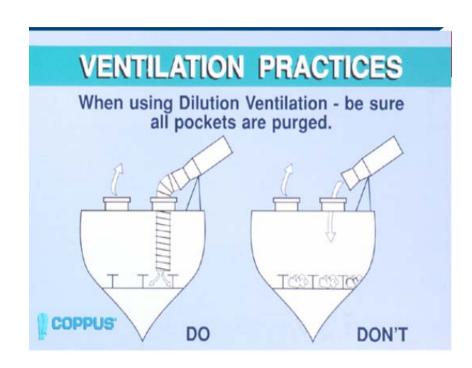
NON-ATMOSPHERIC CONFINED SPACE HAZARDS

- Agitators
- Grinding
- Steam
- Falling/Tripping
- Moving Parts
- Electrical
- Radiation

- Thermal
- Mechanical Equipment
- Lighting
- Rodents/Snakes/Spiders
- Weather
- Slipping Hazards
- Noise



Hazardous Atmospheres





Primary Constituents of Normal Air

<u>Constituen</u> t	Chemical <u>Formula</u>	Molecular Weight	Percent by Volume
Nitrogen	N_2	28	78.1
Oxygen	O_2	32	20.9
Argon	Ar	40	0.9

Water vapor content varies, but is usually the third largest constituent by volume in air.



Oxygen-Deficient Atmospheres

O ₂ Content	Effects and Symptoms
15-19%	Decreased ability to work strenuously. May impair coordination and induce early symptoms in persons with coronary, pulmonary, or circulatory problems.
12-14%	Respiration increases in exertion, pulse up, impaired coordination, perception, and judgment.
10-12%	Respiration further increases in rate and depth, poor judgment, lips blue.
8-10%	Mental failure, fainting, unconsciousness, ashen face, blueness of lips, nausea, and vomiting.
	8 min., 100% fatal; 6 min., 50% fatal; 4-5 min., recovery with treatment.
6-8%	Coma in 40 sec., convulsions, respiration ceases, death.
4-6%	

NOTE: Exposure to atmospheres containing 12% or less oxygen will bring about unconsciousness without warning and so quickly that individuals cannot help or protect themselves.

(Source: Compressed Gas Association Bulletin SB-2)



How an Oxygen-Deficient Atmosphere Can Occur in a Confined Space

1. CONSUMPTION

3. ABSORPTION/ADSORPTION

a) Bacterial Action

- a) Walls of vessel
- b) Chemical Rxn (rusting iron)
- b) Stored material (wet activated carbon)
- c) Respiration (16% O2 in respired air)
 - c) Curing concrete

d) Combustion

2. DISPLACEMENT

- a) Simple asphyxiants (methane)
- b) Inerting agents (CO2, N2)
- c) Accidental release(N2)
- d) Vacuum



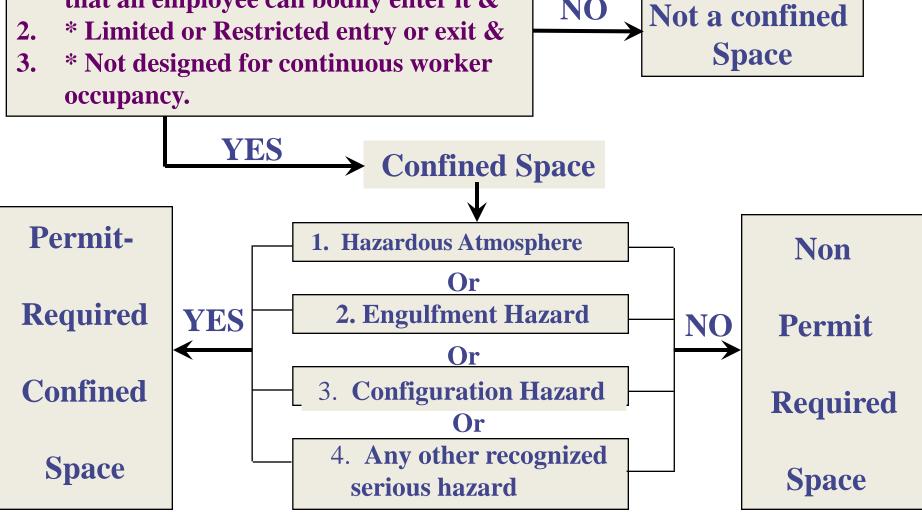
1910.146(g) Training

- The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.
- Training shall be provided to each affected employee:
 - ✓ Before the employee is first assigned duties under this section;
 - ✓ Before there is a change in assigned duties;
 - ✓ Whenever there is a change in permit space operations that presents
 a hazard about which an employee has not previously been trained;
 - ✓ Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by paragraph (d)(3) of this section or that there are inadequacies in the employee's knowledge or use of these procedures.



REVIEW: DETERMINING IF A CONFINED SPACE IS A PRCS

1. * Space large enough and so configured that an employee can bodily enter it &





Confined Spaces in Construction

Subpart AA



What's New?

- General Industry Standard published 1993
- United Steelworkers settlement 1994
- Consultation with ACCSH and stakeholder meetings
- Proposal 2007
- Comment period & hearing
- Final Rule published May 4, 2015; effective August 3, 2015***



Subpart AA Scope

- Subpart P still covers work in excavations
 - If there is a confined space within an excavation, such as a sewer pipe, and a worker enters the pipe to perform work, that is covered by Subpart AA
- Subpart S still covers underground construction
 - Work done in an underground space that does not involve altering the *structure* of the space is covered by Subpart AA (such as equipment installs)



Overview of Differences

- GI Standard, Plus
- A competent person must conduct worksite evaluation
- Employers using "alternate procedures" for permit space entry must prevent physical hazard exposures through elimination or isolation through methods such as LOTO
- Permits may be suspended instead of cancelled, provided the space is returned to permit conditions prior to re-entry



Overview of Differences, cont'd

- Continuous monitoring of atmospheric and engulfment hazards
- Employers relying on local emergency services for rescue must arrange for responders to notify in advance if responders will be unavailable
- Specific information exchange requirements for multi-employer work sites

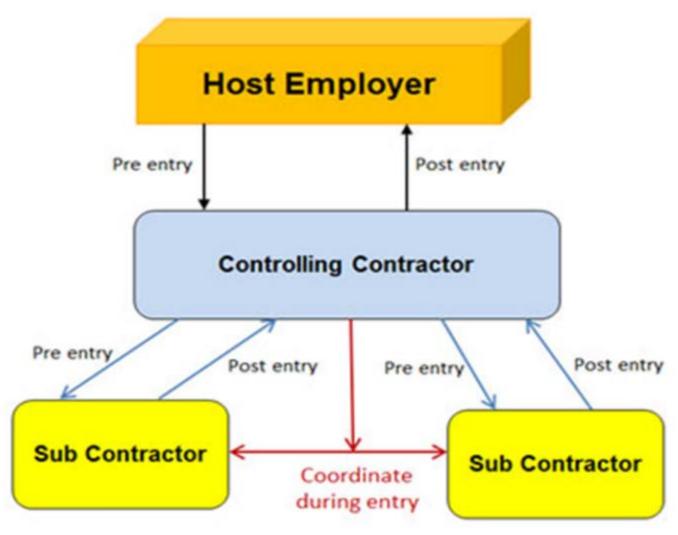


Examples of Construction Confined Spaces:

- Manholes
- Pits
- Residential Crawl Spaces
- Sewers
- Trenches



Information Exchange





What must employers do?

- First, employers must determine whether confined spaces exist at the work site.
 - Under the construction rule, a competent person a person capable of identifying existing and probable hazards who has the authority to take corrective measures – must identify all confined spaces. 1203(a)
 - The competent person must also identify all permit spaces – those workers will enter, and those they will not. All permit spaces must be posted/identified in some way. 1203(b)



What must employers do? cont'd

- Next, an employer who has determined that workers will perform work in permit spaces must develop a permit space program 1203(d)
- If workers will not perform work in permit spaces, the employer must ensure that the workers are prevented from entering the permit spaces 1203(c)







Training

- What must training cover?
 - The hazards in the permit space and methods used to isolate, control, or otherwise protect employees from the hazards 1207(a)
 - Dangers of unauthorized rescue 1207(a)
 - Proficiency in the duties required by this standard and any new or revised procedures, as necessary 1207(c)
- How do we know the training occurred?
 - Employers must maintain training records that contain the employee's name, the trainer's name, and the dates of training, for as long as the employee is employed by that employer. The records must be available to employees and their representatives as well 1207(d)



Questions?





Role of Compliance Assistance in OSHA Strategic Plan

 Supporting outreach to all workplaces, particularly high-risk industries

Protecting Workers' Rights







Find it in OSHA

Q

What's New

Occupational Safety & Health Administration

Worker Rights Anti-Retaliation Regulations - Employers - Data & Statistics - Enforcement - Training -

A to Z Index

Publications Hazards En Español

Contact Us

About OSHA



Confined Spaces

2015 National Safety Stand-Down

FAQs

Protecting Nail Salon Workers

Filing a Complaint

Reporting Fatalities & Severe Injuries

Confined Spaces

Web page

News Release

IN FOCUS



4,585 workers died on the job in 2013

ck and killed by part of oil 4/10/2015 MS: Worker killer construction site.

Fatality Reports

"No one should have to sacrifice their life for their livelihood, because a nation built on the dignity of work must provide safe working conditions for its people."

- Secretary of Labor Thomas E. Perez

NEWSLETTER

OSHA QuickTakes

HOW TO...

K III H

- File a complaint
- Get a FREE OSHA poster
- · Get information on reporting severe workrelated injuries, illnesses and fatalities to OSHA
- Get information on recordkeeping & reporting requirements
- Get help for employers
- Get the latest industry/hazards alerts
- Find out if OSHA has inspected a workplace
- Find information on construction hazards
- · Get help for clinicians

Confined Spaces











Standard

Compliance Assistance Materials

Federal Register Notices

Case Studies

Additional Information

Back to Construction Industry

"This rule will save lives of construction workers. Unlike most general industry worksites, construction sites are continually evolving, with the number and characteristics of confined spaces changing as work progresses. This rule emphasizes training, continuous worksite evaluation and communication requirements to further protect workers' safety and health."

- Assistant Secretary of Labor for Occupational Safety and Health, Dr. David Michaels

Confined spaces - such as manholes, crawl spaces, and tanks - are not designed for continuous occupancy and are difficult to exit in the event of an emergency. People working in confined spaces face life-threatening hazards including toxic substances, electrocutions, explosions, and asphyxiation.

This webpage contains information on the new regulation, compliance assistance documents, and other resources OSHA has to help employers and workers understand the rule. OSHA will continue to publish new guidance products in the coming months, and will post them here. Please check the website often for updates.

Construction workers often perform tasks in confined spaces - work areas that (1) are large enough for an employee to enter, (2) have limited means of entry or exit, and (3) are not designed for continuous occupancy. These spaces can present physical and atmospheric hazards that can be prevented if addressed prior to entering the space to perform work. This page is a starting point for finding information about these spaces, the hazards they may present, and ways to safely work in them.

Standard

- Confined Spaces in Construction (PDF*). Final Rule, (May 4, 2015).
- UPDATED Reader friendly version (PDF*) of the upcoming 29 CFR 1926, Subpart AA standard.

Compliance Assistance Materials

 Protecting Construction Workers in Confined Spaces: Small Entity Compliance Guide (PDF*). OSHA Publication 3825, (September 2015). This standard will be effective on August 3, 2015.

Highlights

- NEW Temporary Enforcement Policy for Residential Construction Work in Confined Spaces, OSHA Memo, (October 1, 2015).
- Protecting Construction Workers in Confined Spaces: Small Entity Compliance Guide (PDF*).
 OSHA Publication 3825, (September 2015).
- <u>Temporary Enforcement Policy for Construction</u> Work in Confined Spaces. OSHA Memo, (July 2015).

Related Topics

- Construction, OSHA eTool, Also available in Spanish.
- Confined Spaces. OSHA Safety and Health Topics Page.



Contined Spaces



n

Standards/Enforcement

Hazards and Solutions

Construction

Additional Information

Safety and Health Topics*

Visit the Confined Spaces - Final Rule Page for information on the new final rule.

What are confined spaces?

Many workplaces contain areas that are considered "confined spaces" because while they are not necessarily designed for people, they are large enough for workers to enter and perform certain jobs. A confined space also has limited or restricted means for entry or exit and is not designed for continuous occupancy. Confined spaces include, but are not limited to, tanks, vessels, silos, storage bins, hoppers, vaults, pits, manholes, tunnels, equipment housings, ductwork, pipelines, etc.

OSHA uses the term "permit-required confined space" (permit space) to describe a confined space that has one or more of the following characteristics: contains or has the potential to contain a hazardous atmosphere; contains material that has the potential to engulf an entrant; has walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant; or contains any other recognized safety or health hazard, such as unguarded machinery, exposed live wires, or heat stress.



Ventilation hoses provide air and exhaust toxic vapors during confined space entry. A guardrail would also be necessary to protect workers from potential falls.

How do I find out about employer responsibilities and workers' rights?

Workers have a right to a safe workplace. The law requires employers to provide their employees with safe and healthful workplaces. The OSHA law also prohibits employers from retaliating against employees for exercising their rights under the law (including the right to raise a health and safety concern or report an injury). For more information see www.whistleblowers.gov or Workers' rights under the OSH Act.

OSHA can help answer questions or concerns from employers and workers. To reach your regional or area OSHA office, go to the OSHA Offices by State webpage or call 1-800-321-OSHA (6742).

Small businesses may contact OSHA's free On-site Consultation services funded by OSHA to help determine whether there are hazards at their worksites. To contact free consultation services, go to OSHA's On-site Consultation webpage or call 1-800-321-OSHA (6742) and press number 4.

Highlights

- Calibrating and Testing Direct-Reading Portable
 Gas Monitors. OSHA Safety and Health
 Information Bulletin (SHIB), (September 30,
 2013). Provides workers and employers guidance
 on calibrating and testing direct-reading portable
 gas monitors (hereafter, "DRPGMs" or
 "instruments").
- Loss of Start-Up Oxygen in CSE SR-100 Self- Contained Self-Rescuers (PDF*). OSHA Alert, (April 2012). Alerts employers and workers using the CSE Corporation's SR-100 Self-Contained Self-Rescuer (SCSR) to potential failure problems with these respirators.
- Permit-Required Confined Spaces in General Industry (PDF*). OSHA QuickCard™. Explains what workers should do before entering a confined space, such as an underground vaults, tanks, storage bins, silos or manholes.
- <u>Shipyard Employment</u>. OSHA eTool. Confined and enclosed space operations have a greater likelihood of causing fatalities, severe injuries, and illnesses than any other type of shipyard work.
 - Confined or Enclosed Spaces and Other <u>Dangerous Atmospheres</u>. Helps workers identify and control the hazards that cause the most serious confined space-related injuries.



OSHA Newsletter

Sign up for the latest news



Visit us on the web at: www.osha.gov





Starting January 1, 2015

all employers must report:

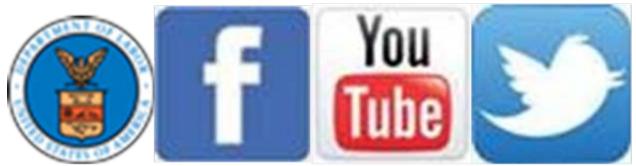
- all work-related fatalities within 8 hours
- all work-related inpatient hospitalizations, amputations or losses of an eye within 24 hours

http://www.osha.gov/report_online/index.html



Social Media

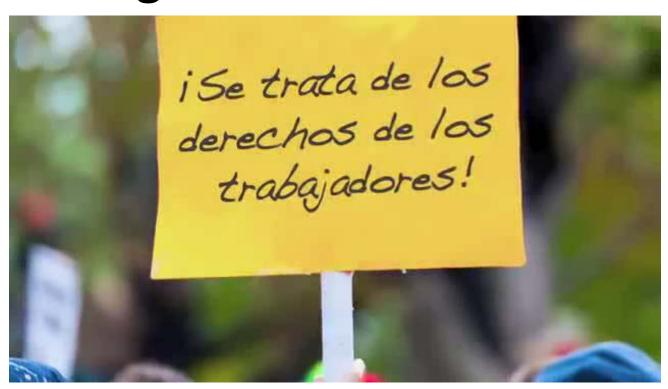
- http://www.dol.gov/
- https://www.facebook.com/departmentofl abor
- https://www.youtube.com/user/USDepart mentofLabor
- https://twitter.com/usdol





https://www.youtube.com/user/USDepartmentofLabor

Workers' Safety and Health Rights on the Job





OSHA.GOV

Key search words this month:



lead stnd 1910_{SIC} . GHS
forklift Confined space recordkeeping confined space stnd1910.134 sheestos. Stnd1926 hazard communication stnd1910.178

This word cloud visually ranks the most popular search terms used by visitors to OSHA's website this month. The larger the type, the more often this term was sought. Most frequently clicked links on OSHA's home page this month:

- Laws and Regulations
 - A-Z Index
- Establishment Search
 - Training
- Publications |
 - Filing a Complaint
 - Fatality Reports
 - Workers' Rights
 - OSHA Poster
- Safety and Health Topics



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