

OVERVIEW: CONFINED SPACES IN CONSTRUCTION

HOW DO I COMPLY?



Construction Work in Confined Spaces

When does it take effect?

• August 3, 2015 - Subpart AA of 29 CFR 1926.1201 – 1926.1213

What is its purpose?

• Prevent Injuries by eliminating & isolating hazards

Construction is Different from General Industry Confined Spaces...

• If workers are engaged in both construction and general industry work in confined spaces, then OSHA requirements are met if construction standard used (but not necessarily vice versa).



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What it Does Not Cover

- Deletes 29 CFR1926.21(b)
 - Enclosed Spaces definition.
- Subpart P Trenching and Excavation
 - Although these spaces may meet the criteria & definition of a confined space they are covered by other subparts of the construction standard
- Subpart S Underground Construction, Cofferdams, Caissons, Compressed Air
- Subpart V Power Transmission and Distribution

Enclosed spaces unless hazardous atmosphere then subpart AA applies



Terms to Know

What is a confined space?

A confined space has:

- Limited means of entry and/or exit
- Is large enough for a worker to enter*, and
- Is not intended for regular/continuous occupancy.
 - Examples include sewers, pits, crawl spaces, attics, boilers, etc.
- A **permit space** is a confined space that may have any additional hazard such as engulfment, electrical, atmospheric, etc.



CONSTRUCTION







Boilers

Terms to Know

- Host employer is the employer that owns or manages the property where the construction work is taking place
- **Controlling Contractor** is the employer that has overall responsibility for construction at the worksite.
- Entry Employer is any employer who decides that an employee it directs will enter a permit space.
- Entry rescue is when the rescue service enters a permit space to rescue employees.
- **Competent person** is capable of identifying hazards in workplace and authority to correct them immediately.
- **Engulfment** is the hazard of suffocation or being crushed by liquid or "flowing" solid material: Dirt, sand, gravel, cement, asphalt, grain
- **Early-warning system** is an alert that engulfment hazard may be developing: Remote sensor alarms, lookout persons





"Can anyone work in a permit space?" No.

- Only workers who have been assigned and <u>trained</u> to work in a permit space may do so.
- Before workers can enter a permit space, the employer must issue a permit that specifies what safety measures must be taken and who is allowed to enter the space.

"How do I know whether to follow the General Industry or Construction confined space rule?"

 If you are performing construction work - such as building a new structure or upgrading an old one - then you must follow the construction confined space rule.



"I've been following the General Industry Confined Space rule. What is new or different about the Construction rule?"

• There are 5 key differences between the General Industry rule and the Construction rule.

The Construction rule:

1. Contains more detailed provisions requiring coordinated activities when there are *multiple employers* at the worksite. This will ensure that hazards are not introduced into a confined space by workers performing tasks outside the space. An example would be a generator running near the entrance of a confined space, causing a buildup of carbon monoxide within the space.





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The Construction rule:

2. Requires a *competent person* to evaluate the work site and identify confined spaces (including those that need to be designated as *permit* spaces).





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The Construction rule:

3. Requires continuous atmospheric monitoring whenever possible.



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The Construction rule:

4. Requires continuous monitoring of *engulfment* hazards. For example, when workers are performing construction work in a storm sewer, an upstream storm could cause flash flooding. An electronic sensor or observer posted upstream from the work site could be used to alert workers in the space at the first sign of the hazard.



"I've been following the General Industry Confined Space rule. What is new or different about the Construction rule?"

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The Construction rule:

5. Allows for the temporary *suspension* of a permit in the event of changes from the entry conditions list on the permit or an unexpected event requiring evacuation of the space. The space must be returned to the entry conditions listed on the permit before re-entry.



"In addition, OSHA has added provisions to the new Construction rule that clarify existing requirements in the General Industry standard."

The Construction rule:

- Requires that employers who direct workers to enter a space without using a complete permit system prevent workers' exposure to physical hazards through elimination of the hazard or isolation methods such as lockout/tagout.
- Requires that employers who are relying on local emergency services for emergency services to arrange for responders to give the employer <u>advance notice</u> if they will be unable to respond for a period of time (in case they are responding to another emergency, attending department-wide training, etc.).
- Requires employers to provide training in a language and vocabulary that the worker <u>understands</u>.





"How does the new final Construction rule differ from the rules that previously applied to construction work performed in confined spaces?"

- The new final rule requires employers to determine:
 - What kinds of spaces their workers will be working in
 - What Hazards could be there
 - How hazards should be made safe
 - What training workers should receive
 - How to rescue workers if anything goes wrong



"Are employers required to have a written confined space program?"

• Yes, if workers will enter *permit* spaces.

"Who is affected by the new rules?"

• All employees whose workers may be exposed to confined space hazards while performing construction work.

"Do I need to do anything if there are permit spaces at the worksite, but my employees will not need to enter those spaces?"

• Yes, you must take effective steps to prevent your employees from entering those spaces.



"If I hire a contractor (or subcontractor) who will be performing work in a confined space, what are my responsibilities?"

- The rule makes the *controlling contractor*, rather than the *host employer*, the primary point of contact for information about permit spaces at the work site.
- The *host employer* must provide information it has about permit spaces at the work site to the *controlling contractor*, who then passes it on to the employers whose employees will enter the spaces (*entry employers*).
- Likewise, *entry employers* must give the *controlling contractor* information about their entry program and hazards they encounter in the space. The *controlling contractor* then passes that information on to other *entry employers* and back to the *host employer*.



Sharing Information at the Site

What's Your Role?

- Controlling Contractor vs. Host employer
- Controlling Contractor
 - Share known and discovered hazards with all Entry Employers
- Entry employers
 - Share their entry program and hazards encountered
- Controlling Contractor is responsible
 - Share hazards of confined space with all entry employers
 - Ensure employers outside a space do not create hazards
 - Ensure multiple entry employers do not create hazards for others



Sharing Information at the Site



The above diagram shows the information flow and coordination between these employers



FAQ

"What standard should I follow if my workers are performing both construction AND general industry work in confined spaces?"

 An employer whose workers are engaged in both construction and general industry work in confined spaces will meet OSHA requirements if that employer meets the requirements of 29 CFR 1926 Subpart AA – Confined Spaces in Construction.





"Twenty-seven states and territories have their own OSHAapproved safety and health plans; will those states be required to adopt the new standard?"

 Yes. Twenty two states or territories currently operate their own OSHAapproved State Plans (covering private sector and local government employees), and five additional states and one territory (Connecticut, Illinois, New Jersey, New York and the Virgin Islands) operate plans that cover state and local government employees only. Many State Plans adopt OSHA's standards identically, but some State Plans may have different or more stringent requirements.



How to Confirm the Confined Space is Safe: Test the Space Before Entry

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- Test the atmosphere before entry
- Monitor oxygen content, toxicity, & flammability hazards
- Test all areas at different heights



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Then Record Test Information

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- Date, location, and name of the confined space
- Purpose of entry
- Duration of entry time
- Authorized entrants, attendants, supervisors
- Air testing results
- Emergency services phone numbers
- Signature of the tester

DEPARTMENT OF LABOR									
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Occupational Safety & Health Administration We Can Help									
Home	Workers	Regulations	Enforcemen	t D	ata & Statistics	Training	Publications	Newsroom	Small Business
Regulations (Standards - 29 CFR) - Table of Contents									
• Part Number: • Part Title: • Subpart: • Subpart Title: • Standard Number: • Title: • GPO Source:			1910 Occupatio J General E <u>1910.146</u> Confined <u>e-CFR</u>	nal Sa nviron <u>App [</u> Space	afety and Health Imental Controls <u>)</u> Pre-Entry Check				
Appendix D to §1910.146 Sample Permits									
Confined Space Entry Permit									
Date and Time Issued:				Date	and Time Expi	res:			
Job Supervisor: Equipment to be worked on: Work to be performed:									
Stand-by personnel:									
1. Atmospheric Checks: Time Oxygen * Explosive * L.F.L. Toxic PPM									
2. Tester's signature:									
3. Sou P	 Source isolation (No Entry): N/A Yes No Pumps or lines blinded, () () () 								
d	isconnect	ed, or blocks	ed ()	()	()				

UNITED STATES



Confined Space Permit

CONSTRUCTION

CONFINED SPACE ENTRY PERMIT						1A. NAME OF EMERGENCY CONTACT 1B. TELEPHONE NUMBER								
2. SPECIFIC LOCATION OF SPACE						3. DESCRIPTION OF SPACE								
4. PURPOSE OF ENTRY							5. ENTRY		A. DATE			B. TIME		
							6. EX	π	A. DATE				B. TIME	
7A. NAME OF SUPERVISOR IN CHARGE OF WORK 7B. TELEPHONE N					HONE N	UMBER	ł	8. NA)	E OF ENTRANT(8)					
9. NAJ	ME OF	ATTENDANT		10. NAME O	FCONFINE	SPACE	TESTER				11. WELDING		G OR "HOT WORK" REQUIRED	
		Lists	pecific t	ests made. En	12. CON try is prohibit	FINED Si ted If read	PACE 1 ling out	TEST D. side sta	ATA Indard per	missible e	entry le	vel(PEL).	_	
	A.S	UBSTANCE TESTED		B. PERMISSIBLE LEVEL			C. READING		ING	D. DAT		D. DATE	E. TIME	
OXYG	EN (%)	>1	9.5	<22.0									
% OF	LOWE	R EXPLOSIVE LIMIT	10%											
CARB	ON MC	NOXIDE		35 ppm										
13A. N	NAME (OF INSTRUMENT(S)	13B. TYPE(8) OF INSTRUMENTS		3	13C. IDENTIFICATION NUMBER(8)			(8)	13D. WHEN LAST CALIBRATED				
				14. SPECIAL	REQUIREM	ENTS (E	xplain e	ach "N	o" answer	In Item 1	ð)			
YES	NO		ITEN				YES	NO	ITEM					
		A LOCKOUT - DE-ENERGIZE	E (Emplo	iyee retains ke	39)		-		I. FIRE EXTINGUISHER					
		B. SPACE PURGED					-		J. LIGHTING					
C. VENTILATION						-		K. EMERGENCY TRIPOD						
		D. AREA SECURED					+		L PROTECTIVE CLOTHING					
	-	E DESUSCITATORINUALAT	00				-		N RESPIRATOR					
		G ESCAPE HARNESS	UN				+		N. RESPIRATOR					
H LIFELINE						+		P.						
15. 01	THER	PECIAL REQUIREMENTS (Us	teach a	nd status)										
16A. 8	16A. SPECIFIC PROTECTIVE CLOTHING AND EQUIPMENT REQUIRED									168.	RESPI	RATOR		
									PAPR		SUPPLIED AIR			
17.00	DMMUR	NICATION PROCEDURES DUP	UNG EN	TRY										
18. AC	ODITIO	NAL COMMENTS/REMARKS												
19. RE	ESERV	ED FOR REGIONAL S&EM DIV	1SION/E	RANCH										
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ENTRANT SIGN AND DATE HERE 21 LORDFEY THAT ALL OF THE ABOVE INFORMATION IS CORRECT AND THE REACT ENTRANT AND ATTENDANT ARE FULLY COL

21. I CERTIFY THAT ALL OF THE ABOVE INFORMATION IS CORRECT AND THE SPACE ENTRANT AND ATTENDANT ARE FULLY COMPETENT TO PERFORM WORK DESCRIBED IN THE ABOVE CONFINED SPACE.

SUPERVISOR SIGN HERE	
GENERAL SERVICES ADMINISTRATION	GSA FORM 3625 (10-91)



Covering Hazardous Conditions

- 1. Flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL);
- Oxygen Deficient <19.5% or Enriched Atmosphere >23.5%
- 3. Hazardous Airborne Chemical Concentration
- 4. Temperature Extremes
- 5. Engulfment Hazards
- 6. Noise, Slick/Wet Surfaces, Falling Objects, Trip Hazards
- 7. Mechanical Hazards



Health Effects at Various Carbon Monoxide Gas Levels

CO ppm **Resulting Condition / Health Effects** 35 No noticeable effects, This is OSHA PEL for an 8-hr TWA 200 Possible mild frontal headache in 2 to 3 hours 400 Frontal headache and nausea in 1 to 2 hours Headache, dizziness and nausea in 45 minutes. 800 Collapse and possibly death in 2 hours. 1,600 Headache, dizziness and nausea in 20 minutes. Collapse and possibly death in 2 hours 3,200 Headache and dizziness in 5 to 10 minutes. Unconsciousness and danger of death 30 minutes. 6,400 Headache and dizziness in 1 to 2 minutes. Unconsciousness and danger of death 10 to 15 minutes. 12,800 Immediate effect unconsciousness. Danger of death in 1-3 min.



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Health Effects at Various Oxygen Deficient Atmosphere Levels

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02	Resulting Condition / Health Effects
19.5 %	Minimum acceptable oxygen level.
15 - 19%	Decreased ability to work strenuously. Impair coordination. Early symptoms.
12-14%	Respiration increases. Poor judgment. Reduced physical and intellectual performance without awareness.
10-12%	Respiration labored. Lips blue. Nausea and vomiting.
8-10%	Mental failure. Fainting, Nausea, Unconsciousness, Vomiting.
6-8%	4-5 minutes - possible recovery, 6 minutes - 50% fatal, and 8 minutes - fatal.
4-6%	Coma almost instantaneously. Dead



Photoionization detectors can detect volatile organic compounds (VOCs)

- CONSTRUCTION
- Common types of PID lamps are 9.8, 10.6 or 11.7 electron volts (eV).
- The 10.6 eV lamp can detect a wide range of VOCs.
- Most PID equipped instruments include a built-in library of correction factors.
- PIDs are usually calibrated using isobutylene gas.
- Correction factors may change as the lamp ages and the signal strength declines.
- Temperature and humidity can adversely affect a PID.



Calibrate Testing Monitors

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Calibration is the Key to Accurate Readings.

- Replace gas sensors
- Follow the manufacturer's guidelines:
 - Bump test or calibration check each day.
 - Use certified test gas, within its expiration date.
 - Keep calibration records.



Source OSHA



Calibration: The Key to Accurate Readings

CONSTRUCTION

Instrument inaccuracy due to improper or irregular maintenance and calibration can lead to exposure to hazardous levels of toxic gases or to an oxygendeficient atmosphere.

- Follow the manufacturer's guidelines for proper calibration
- Only use a certified traceable test gas, and do so before its expiration date.
- Train Operators on the proper methods of calibration.

For more information, go to OSHA's Confined Spaces Website:

- <u>https://www.osha.gov/SLTC/confinedspaces/index.html</u>
- <u>Permit-Required Confined Spaces in General Industry</u> (PDF^{*}).
- Calibrating and Testing Direct-Reading Portable Gas Monitors.
- <u>http://www.safetyequipment.org/userfiles/file/calibration_statement-2010-</u> <u>mar4.pdf</u>
- OSHA's FactSheet:Procedures for Atmospheric Testing in Confined Spaces



Contacting OSHA w/Questions

CONSTRUCTION



Protect Yourself Permit-Required Confined Spaces

A confined space has limited openings for entry or exit, is large enough for entering and working, and is not designed for continuous worker occupancy. Confined spaces include underground vaults, tanks, storage bins, manholes, pits, silos, underground utility vaults and pipelines.

Permit-required confined spaces are confined spaces that: • May contain a hazardous or potentially hazardous atmosphere.

- May contain a material which can engulf an entrant.
- May contain walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant.
- May contain other serious physical hazards such as unguarded machines or exposed live wires.
- Must be identified by the employer who must inform exposed employees of the existence and location of such spaces and their hazards.

What to Do

- Do not enter permit-required confined spaces without being trained and without having a permit to enter.
- Review, understand and follow employer's procedures before entering permit-required confined spaces and know how and when to exit.
- Before entry, identify any physical hazards.
- Before and during entry, test and monitor for oxygen content, flammability, toxicity or explosive hazards as necessary.
- Use employer's fall protection, rescue, air monitoring, ventilation, lighting and communication equipment according to entry procedures.
- Maintain contact at all times with a trained attendant either visually, via phone, or by two-way radio. This monitoring system enables the attendant and entry supervisor to order you to evacuate and to alert appropriately trained rescue personnel to rescue entrants when needed.

For more complete information: DSHAA Cocupational Safety and Health Administration U.S. Department of Labor www.osha.gov (800) 321-05HA Directorate of Construction Room N3468, OSHA, U.S. Department of Labor, 200 Constitution Avenue NW Washington, DC 20210 Tel (202)-693-2020 Fax (202)-693-1689

www.osha.gov

