



SCOR

SAFETY COMPLIANCE FOR OSHA REGULATIONS

A Cottingham & Butler Program

**Permit-Required
Confined Space Entry**



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AGENDA

Characteristics of Confined Spaces

- Permit vs Non-Permit Confined Spaces

Hazards Assessments

Permits

Training

Rescue

Contractors



CHARACTERISTICS OF A CONFINED SPACE

- Large enough to bodily enter
- Limited means of entry/exit
- Not designed for continuous occupancy



CHARACTERISTICS OF A PERMIT-REQUIRED CONFINED SPACE

Any one of the following conditions would make a confined space “permit required”

- Hazardous or potentially hazardous atmosphere
- Engulfment hazard
- Entrapment hazard
- Other serious safety hazard



ATMOSPHERIC HAZARDS

Oxygen deficiency

- < 19.5% oxygen

Oxygen enrichment

- Flammability hazard
- > 23.5% oxygen

Flammable atmosphere

- Lower explosive limit

- Toxic atmosphere
- “The dose makes the poison”
- Carbon monoxide
- Hydrogen sulfide
- Welding fumes

-
- Contains a material that has the potential to engulf a person.
 - Commonly caused by a victim “drowning” in finely divided, granular material such as grain, powders, dust, ash, sand, etc.

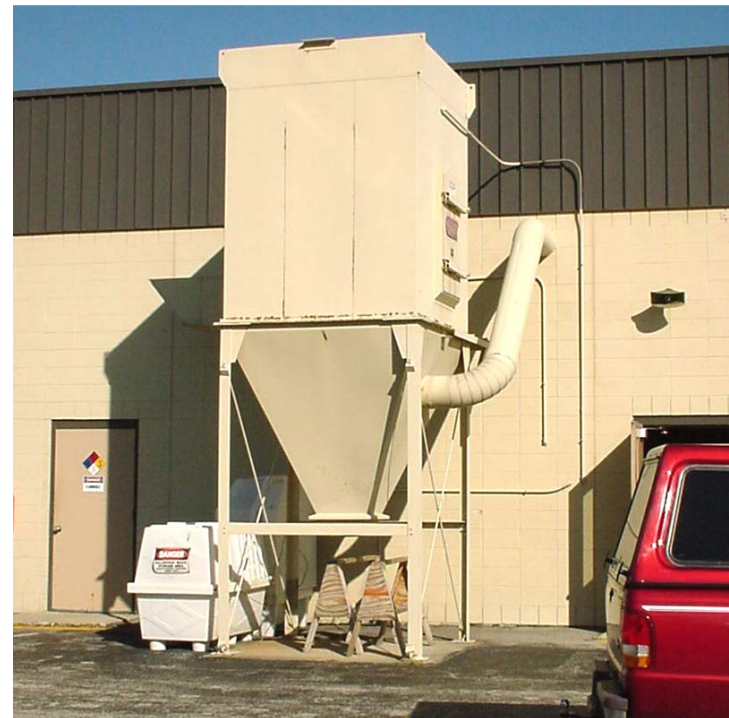


HAZARD IDENTIFICATION

The space is configured in a way that can trap a worker (for example, sides sloping towards the center)



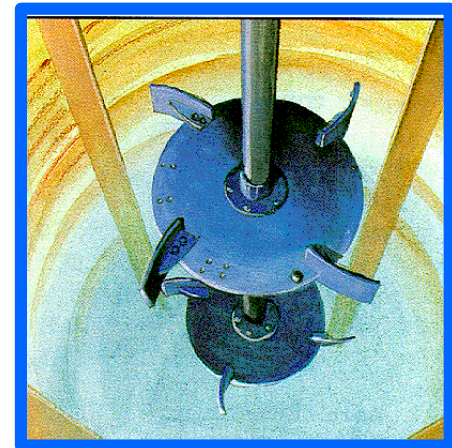
Gravel hopper



Sawdust Cyclone

Other recognized serious safety or health hazards.

- Augers
- Conveyors
- Heat
- Moving parts
- Falls
- Anything that would present a hazard to entrants



IDENTIFYING CONFINED SPACES

Evaluate spaces in your facility

- Hazard assessment form
 - Confined space?
 - Permit-required?
 - What specific hazards?

Inform employees

- Signage
- Awareness training



Confined Space Hazard Assessment

Food Company- Anytown, IA

Space ID: **Dust Collector**

Date of Survey: 21 March 2014

Location of Space: Roaster Raw area- north of silos

Description of Space: Vertical, rectangular vessel

Can be bodily entered?	Yes	☒	No	☐	Hazardous atmosphere?	Yes	☐	No	☒
Limited or restricted entry?	Yes	☒	No	☐	Potential for engulfment?	Yes	☐	No	☒
Not designated for continuous human occupancy?	Yes	☒	No	☐	Internal configuration hazard?	Yes	☐	No	☒
Does the space meet the definition of a confined space?	Yes	☒	No	☐	Other serious safety hazard?	Yes	☒	No	☐
					Is the Confined Space permit required?	Yes	☒	No	☐

Possible atmospheric hazards: NA

Possible engulfment/contents hazards: NA

Internal Configuration hazards: NA

Other serious safety hazards: Rotary valve at bottom (discharge end)
Combustible dust
Air pulse system

Reasons for entering and typical activities: Maint/ sanitation

Who usually enters space: Maint/ sanitation
Frequency of entry: Varies
Number of entry points: 1 (bottom)

Alternate procedures? Yes ☐ No ☒
Reclassification? Yes ☒ No ☐
External connection to space? Yes ☐ No ☒

Space can be reclassified as "non-permit required" when rotary valve and air pulse systems are properly locked out. Space cannot be reclassified if welding/hot work or hazardous chemical use is to take place in the space.

Survey completed by:

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CONFINED SPACE DYNAMICS

- Non-permit required confined spaces may become permit spaces.
- Non-entry spaces may become permit required or non-permit required.
- Work activities listed on the permit must be carefully reviewed by the Entry Supervisor.

ALTERNATE PROCEDURES

- Atmospheric hazard only
- Controlled by ventilation
- Must have written certification
- Allows you to eliminate
 - Attendant
 - Written permit
 - Rescue provisions

RECLASSIFICATION TO NON-PERMIT-REQUIRED CONFINED SPACE

- No actual or potential atmospheric hazards
- All other hazards are eliminated from outside the space
- Document hazard evaluation and elimination

PERMIT SYSTEM

Means of safety entry

- Checklist
- Information includes:
 - Participants
 - Emergency numbers
 - Isolation of space
 - Air monitors
 - PPE
 - Ventilation
 - Rescue equipment

CONFINED SPACE ENTRY PERMIT											
Location		Date and Time Started			Duration of Entry			Date and Time Finished			
Description:											
Purpose of Entry:											
Authorized Entrant Name:						Attendant Name:					
Nearest Phone						Emergency Rescue Number:					
Training Qualifications Checked ☐ Yes ☐ No						Pre-Entry ☐ Yes ☐ No					
						Briefing Completed?					
ISOLATION OF SPACE											
Electrical		Piping		Mechanical		Hydraulic		Pneumatic		Other	
☐ Lockout	☐ Tagout	☐ Lockout	☐ Tagout	☐ Lockout	☐ Tagout	☐ Lockout	☐ Tagout	☐ Lockout	☐ Tagout	☐ Lockout	☐ Tagout
☐ Dissipate Stored Energy	☐ Blank	☐ Block	☐ Disconnect	☐ Lock Pump	☐ Lock & Bleed	☐ Lock Pump	☐ Lock & Bleed	☐ Lock Pump	☐ Lock & Bleed	☐ Lock Pump	☐ Lock & Bleed
ATMOSPHERIC MONITORING											
Instrument:		Last Date Calibrated:				Calibration Due Date:					
<i>Note: Document the initial meter readings (prior to entry), every 15 minutes during the entry, and a final reading (after the entrant has left the space).</i>											
	Initial Reading	1 st Reading	2 nd Reading	3 rd Reading	4 th Reading	5 th Reading	6 th Reading	7 th Reading	8 th Reading	Final Reading	
O ₂ (%)											
H ₂ S (PPM)											
CO (PPM)											
% LEL											
HAZARDS IN SPACE											
Previous contents:						Other:					
Contents: ☐ Flammable ☐ Inert ☐ Corrosive ☐ Toxic Dust ☐ Liquid Gas ☐ Asbestos Solid						Configuration: ☐ Slippery surfaces ☐ Sharp surfaces ☐ Low overhead ☐ Vertical drop ☐ Temp - high or low ☐ Slope of interior					
						Nature of Work: ☐ Welding ☐ Chipping ☐ Spray cleaning ☐ Cutting ☐ Samping					
EQUIPMENT REQUIRED											
PPE: ☐ Coveralls ☐ Hardhat ☐ Safety glasses ☐ Leather gloves ☐ Ear plugs/muffs ☐ Goggles ☐ Welding hood ☐ Welding jacket ☐ Splash suit ☐ Chemical gloves ☐ Chemical boots ☐ Faceshield											
Lighting: ☐ Flashlights ☐ Handlights ☐ Lightsticks ☐ Cord lights ☐ Cord ☐ Portable lights ☐ Generator <i>All equipment should be explosion proof and equipped with GFCI</i>											
Ventilation: ☐ 10' sections of duct ☐ 20' sections of duct ☐ Saddlevent ☐ CFM required <i>All equipment should be explosion proof and equipped with GFCI</i>											
Entry Equipment: ☐ Body harness ☐ Retrieval device ☐ Tripod ☐ Anchor point ☐ Access ladder ☐ Personal alert device ☐ Emergency signal ☐ Communications											
Rescue Equipment: ☐ Body harness ☐ Retrieval device ☐ Tripod ☐ Anchor point ☐ Access ladder ☐ Personal alert device ☐ Emergency signal ☐ Communications ☐ SCBA ☐ Escape mask ☐ Rescue harness											
Entrant(s) signature:											
Attendant signature:											
Entry Supervisor signature:											

AIR MONITOR USAGE

Required prior to entering a permit space

Periodic monitoring

- Best practice: CONTINUOUS

4-gas meter

Calibration

- Per manufacturer recommendations

Stratification

Time delay

Zeroing the monitor in



PERMIT SYSTEM

When to use permits?

- Every time you enter a permit-required confined space

What is an entry?

- When any part of the body breaks the plane of the opening

Must keep permits for 12 months

Must do an annual review

- Review permits for issues and make corrective actions
 - ex: A new hazard encountered

ROLES

Minimum of 2 employees

3 different roles

- Entrant
- Attendant*
- Entry Supervisor*
 - *can be the same person

All employees participating must be trained

Training required before assignment and when there are changes in spaces, program, procedures

- Training is required annually

ENTRANT'S RESPONSIBILITIES

- Know the hazards
- Properly use safety equipment
- Know signs of exposure to hazards
- Keep in contact with attendant and alert him/her to any hazardous conditions
- Evacuate when ordered or alarm/prohibited condition exists



ATTENDANT'S RESPONSIBILITIES

Know the hazards and signs of exposure

Communicate with entrants, monitor behavior

Ensure only authorized workers enter

Protect entrants from external hazards

In an emergency: Contacting rescue team and not entering the space

Never leave the entrance or perform duties that interfere with responsibilities

ENTRY SUPERVISOR RESPONSIBILITIES

Ensures all hazards are controlled (entry conditions are acceptable) and signs entry permit.



RESCUE SERVICES

Non-entry rescue

- Must be used whenever entering a permit-required confined space
- Two exceptions
 - Use of equipment increases danger
 - Equipment would not be feasible
- Entrant must have a full body harness
- Other end attached to:
 - Fixed point
 - Mechanical device (winch)
 - Mechanical device is required if 5' deep



RESCUE SERVICES

Entry Rescue

- An entry rescue team must be identified
- If using an in-plant team:
 - Training
 - Annual simulated rescue
 - First-aid & CPR training
 - Must be authorized entrants
- If using a 3rd-party rescue team (fire department often)
 - Inform of hazards
 - Ensure capable and equipped
 - Allow access to spaces
 - Facility tour & agreement

CONTRACTORS

Inform contractor of:

- Spaces that are permit-required
- Known hazards and past experience
- Special pre-cautions implemented to protect employees in or near PRCs

Coordinate entry operations with contractor personnel

Debrief - hazards confronted or created

SUMMARY

- Confined spaces meet 3 criteria
- Confined spaces become permit-required when they present hazards to entrants
- Permit-required spaces can be reclassified under certain circumstances when reviewed by a competent person.
- Atmospheric hazards are statistically the most dangerous hazards encountered in confined spaces
- Employees must be fully trained before participating in an entry
- The permit is used as a checklist to verify safe entry conditions
- Attempted rescue is statistically the most dangerous act a person can performing a confined space

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