Confined Spaces and Permit Required Confined Spaces

LAKE COUNTY SAFETY COUNCIL

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Today's Presenter

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  - 25 Years Experience in Workplace Safety
  - Specializations
    - Lockout/Tagout
    - Electrical Safety / Arc Flash (NFPA70E)
    - Machine Guarding
    - Confined Space
    - Hazard Communication
    - Emergency Preparedness Planning
    - Fall Protection

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Introduction

- Worker Deaths in Confined Spaces
  - 45% Due to Asphyxiation
  - 41% Due to Poisoning
  - 14% Due to Drowning
  - **Approximately 60% of fatalities have involved would-be rescuers**
- OSHA further estimates that 63 fatalities and 13,000 lost workday cases and non-lost workday cases involving confined spaces entry occur annually.
- OSHA and NIOSH data indicates **atmospheric conditions were the leading cause of death** associated with confined space entry.

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Two Types of Confined Spaces

- Non-Permit Required Confined Spaces
  - NPRCS or Non-PRCS

- Permit Required Confined Spaces

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What is a Confined Space?

It is a Space made up of three items:

1. Is large enough to bodily enter and perform work, and
2. Has limited or restricted means for entry or exit, and
3. Is not designed for continuous employee occupancy

Must have all three to be a Confined Space!

IF it does, THEN we need to determine if it is a…

PERMIT REQUIRED CONFINED SPACE

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What is a Confined Space?

Bodily Entered

Confined Space

Not Designed to Occupy

Limited In/Out

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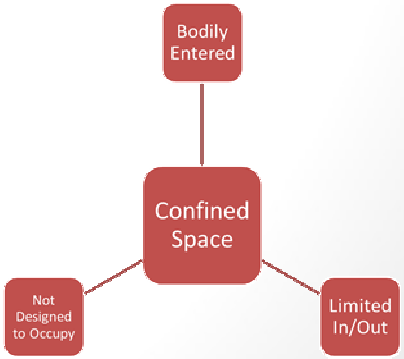
1. Bodily Entry

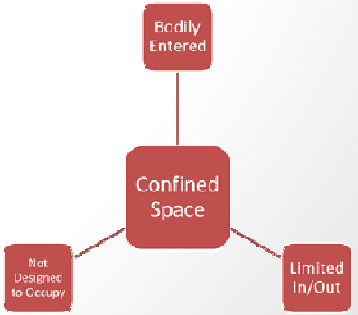
- Opening **and** Space is large enough to allow the employee to enable **full body entry** and perform work
- **Clarification:** Entry occurs when any part of the body of an entrant breaks the plane of an opening



2. Restricted Means of Entry/Exit

Subjective Part of the Standard:

- A space has limited or restricted means of entry or exit **if an entrant's ability to escape in an emergency would be hindered.**
- Ladders, and temporary, movable, spiral, or articulated stairs will usually be considered a limited or restricted means of egress.
- **If the space has pipes, conduits, ducts, or equipment or materials that an employee would be required to crawl over or under** or squeeze around in order to escape, then it has limited or restricted means of exit



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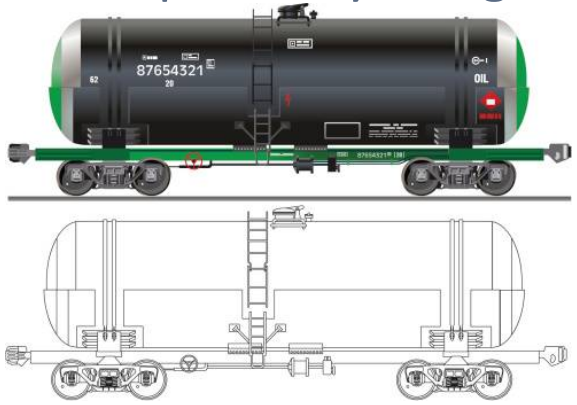
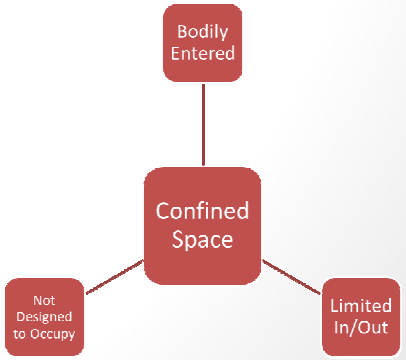
3. Continuous Human Occupancy

- Continuous human **occupancy means that the space could be occupied under operating conditions**, not that it always has to be (or would be) occupied.
- **a space that has been designed and constructed in accordance with recognized codes** and standards, such as provisions for structural adequacy, entry and exit, ventilation and lighting such that a human could continually occupy that space.
- Structures such as vessels, sewers and tank cars are designed and constructed to play a role in part of a process. Their primary purpose is to contain, transport, move or manipulate materials or equipment and they are not primarily designed for people to occupy them.





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Confined Space Examples

Septic Tank
Silo
Reaction Vessel
Sewage Digester
Vat
Boiler

Pumping Lift Station
Duct
Pipeline
Sewage Distribution
Utility Vault
Pit
Holding Tank

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Equipment Example

Is this a CONFINED SPACE?

- A Washer ~ 7’ x 7’ x 8’ high
- Door once closed, cannot be opened from the inside.

1. Is it large enough to bodily enter and perform work?

   AND

2. Has limited or restricted means for entry or exit?

   AND

3. Is it **not** designed for continuous employee occupancy?

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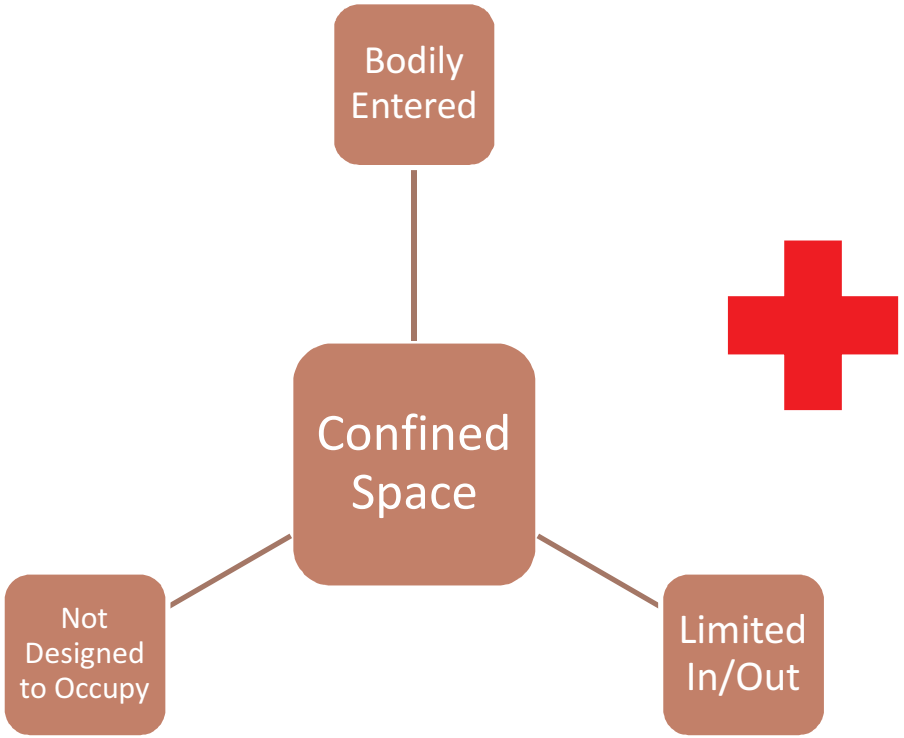
Permit Required Confined Spaces

Must be a CONFINED SPACE first, and then **also contain one or more of the following** characteristics:

1. Contains or has the 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 **entrapped** 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 hazard** or health hazard

What is a Permit Required Confined Space?



ANY ONE OF:

- Atmosphere
- Engulfment
- Entrapment
- Other Hazards

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Atmospheric Monitoring

Program Elements

- Provision for Gas Monitoring Instruments
- Monitoring Locations
- Understanding Stratification of Atmospheres

OSHA states Atmospheric **testing is required for two distinct purposes**:

- Evaluation of the hazards of the permit space; and Verification that acceptable entry conditions for entry into that space exist.
- Assurance that safe levels are maintained throughout entry

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Hazardous Atmospheres

- Flammable gas, vapor, or mist **in excess of 10% of LFL**
- Airborne **combustible dust that is at or above its LFL**;
  - approximated as a condition in which the **dust obscures vision at a distance of 5 feet** (1.52 m) or less.
- **Oxygen concentration below 19.5% or above 23.5%**;
- Atmospheric concentration of any substance for which a dose or a PEL is published in Subpart G or Subpart Z and which could result in employee exposure in excess of its dose or PEL;
- **Any other atmospheric condition that is immediately dangerous to life or health (IDLH)**

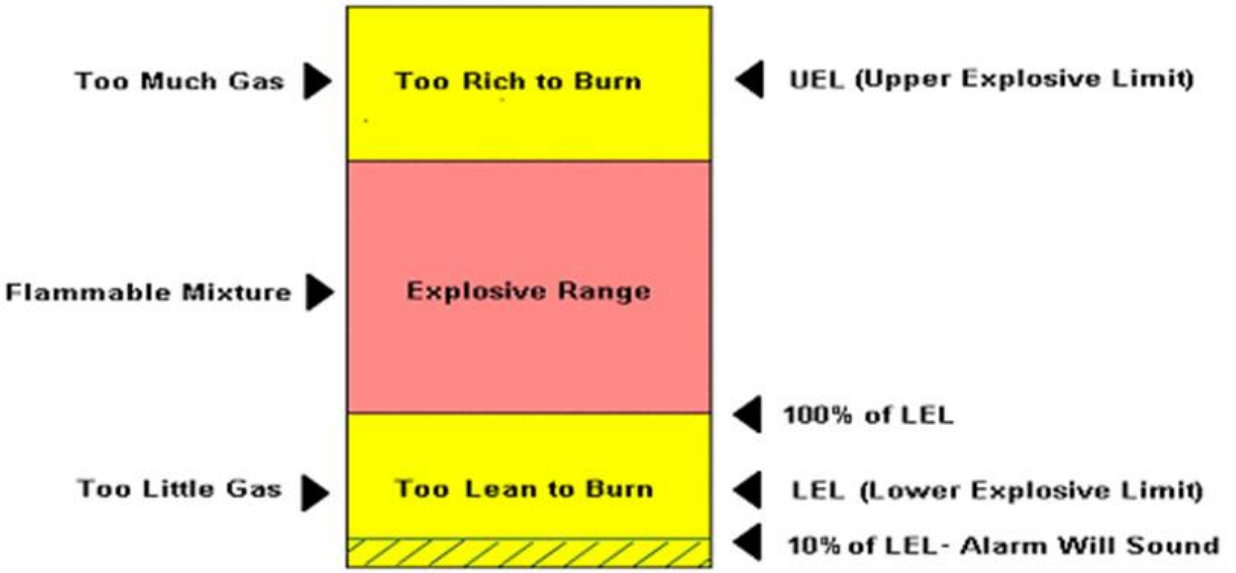
*An atmospheric concentration of any substance that is not capable of causing death, incapacitation, **impairment of ability to self-rescue**, injury, or acute illness due to its health effects is not covered by this provision.*

Flammable Atmoshperes

- **LEL/LFL (Lower Explosive/Flammable Limit)** Lower end of flammable range where air/vapor mixtures can ignite. Below this level, the mixture is too "lean" to burn
  - Acetone LFL is 2.6%
  - For PRCS we are concerned when it gets to 10% of the 2.6% LFL, or .26% concentration in air!!
- **UEL/UFL (Upper Explosive/Flammable Limit)** The maximum concentration of a gas or vapor that will burn in air. Above this level, the mixture is too "rich" to burn.
- **The range between the LEL and UEL is known as the flammable range** for that gas or vapor

Typical Flammable Gases

Toxic Gas	LEL	UEL
Methane	5%	15%
Propane	2.1%	10.1%
Hexane	1.1%	7.5%
Gasoline	1.4%	7.6%
Pentane	1.5%	7.8%



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Atmosphere Levels Explained

PEL: Permissible Exposure Limit for an 8 hour Time Weighted Average (TWA)

- Carbon Monoxide:
  - OSHA PEL is 50 ppm for 8 hour TWA
  - NIOSH REL is 35 ppm for 8 hour TWA
  - ACGIH* TLV is 25 ppm for 8 hour TWA

* ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit: A fifteen-minute TWA exposure which should not be exceeded at any time during a work day even if the eight-hour TWA is within limits. Exposures at the STEL should not be longer than fifteen minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL.

Typical Toxic Gases

OSHA Chemical Sampling Information

CDC Chemical Sampling Information

Toxic Gas	OSHA PEL	ACGIH TLV	NIOSH REL	STEL	Ceiling	IDLH
Ammonia	50	25	25	35		300
Carbon Monoxide	50	25	35		200	1500
Chlorine	1 c	0.5	0.5	1	1	10
Hydrogen Cyanide	10	4.7 c	4.7		4.7	50
Hydrogen Sulfide	20 c	1	10 c	50	20	100
Nitric Oxide	25	25	25			100
Sulfur Dioxide	5	0.25	2	0.25		100

IDLH

- IDLH: Immediately dangerous to life or health; **any condition that poses an immediate or delayed threat to life** or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape **unaided** from a permit space.
  - Blinding but non-toxic smoke could be considered IDLH under the OSHA definition if it would impair the ability to escape a "dangerous" but not life-threatening atmosphere.
  - NIOSH Publishes IDLH Values for several chemicals (ex. Acetone is 2,500 ppm, CO is 1,200ppm)

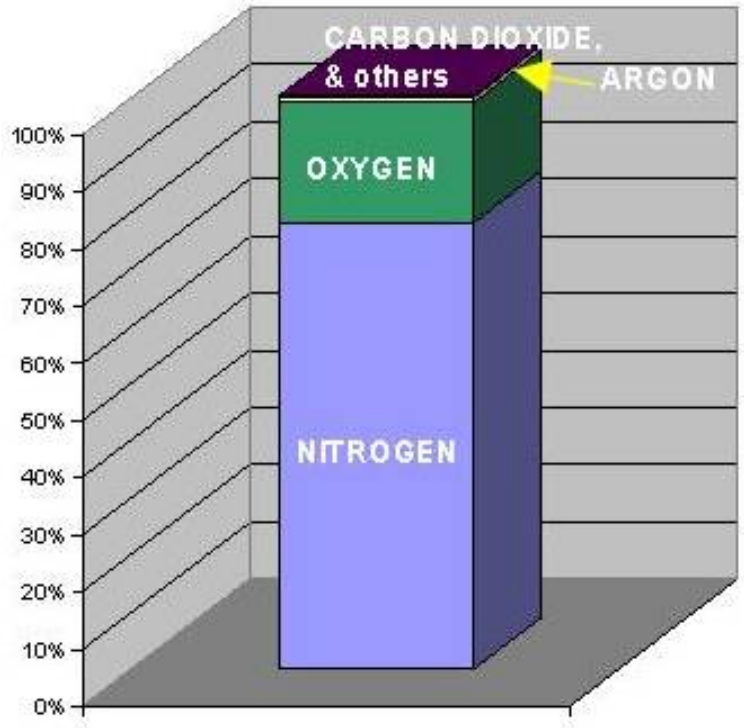
Potential Symptoms of Exposure

- Carbon Monoxide
  - **Potential symptoms:** Headaches; tachypnea; nausea; weakness, dizziness, confusion, halucinations;
- Hydrogen Sulfide
  - **Potential symptoms:** convulsions; irritated eyes, conjunctivitis pain; respiratory system irritation; dizziness; headaches; fatigue; GI disturbances
- Sulfur Dioxide
  - **Potential Symptoms:** Eye, nose, throat irritation; nosebleeds; choking, coughing, shortness of breath, chest pain, pulmonary edema; reflex bronchoconstriction; eye, skin burns; frostbite (on contact with liquid)

What is Air made up of?

Dry air is primarily made up of:

- Nitrogen (78.09%)
- Oxygen (20.95%)
- The remaining 1% is made up of argon (0.93%), carbon dioxide (0.03%) and other trace gases make up the rest



Components in Dry Air	Volume Ratio compared to Dry Air	Molecular Mass - *M* *(kg/kmol)*	Molecular Mass in Air
Oxygen	0.2095	32.00	6.704
Nitrogen	0.7809	28.02	21.88
Carbon Dioxide	0.0003	44.01	0.013
Hydrogen	0.0000005	2.02	0
Argon	0.00933	39.94	0.373
Neon	0.000018	20.18	0
Helium	0.000005	4.00	0
Krypton	0.000001	83.8	0
Xenon	$0.09\ 10^{-6}$	131.29	0
Total Molecular Mass of Air			28.97

MW of Air
= 28.97

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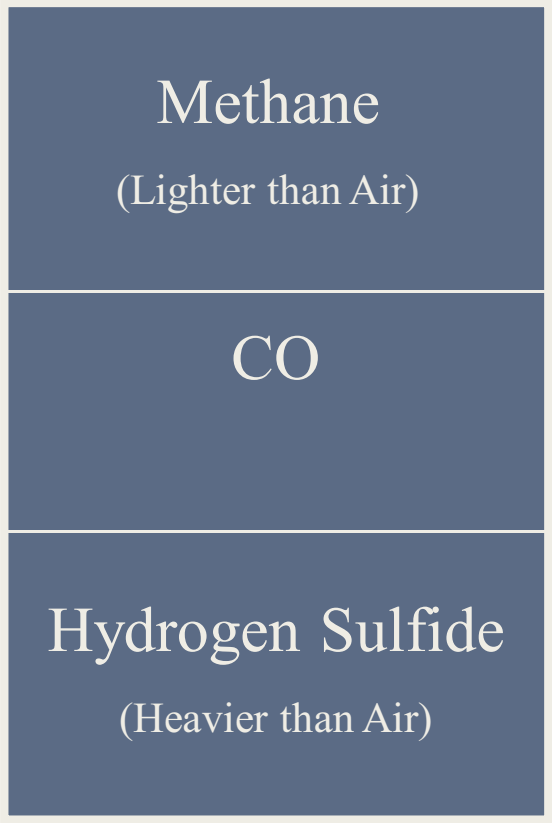
Stratification of Atmospheres

- **Each gas has it's own weight** or Vapor Density
- Air at different levels will be made of different vapors or chemicals
- **Monitor every 4 feet in direction of travel and to each side**
- Slow decent or travel to allow for monitoring



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Effects of Various Oxygen Levels

Oxygen by Volume	Resulting Condition/Effect
23.5% or Above	Oxygen Enriched, extreme fire hazard
20.9%	Oxygen concentration of Air
19.5%	Minimum "Safe Level" (OSHA, NIOSH)
16%	Disorientation, impaired judgment and breathing
14%	Faulty judgment, rapid fatigue
8%	Mental failure, fainting
6%	Difficulty breathing, death in minutes

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Oxygen Deficiency

Deficiency occurs via …

- **Consumption**
  - Welding or Cutting Torches
  - Decomposition of Organic Matter
  - Oxidation of Metals (Rusting)
- **Absorption**
  - The vessel itself or the product stored in the space
- **Displacement**
  - Intentional purging with inert gases
  - Unintentional purging by gases that do not support life (engine exhaust)

Air Monitoring

- **BE SURE MONITOR HAS BEEN PROPERLY CALIBRATED PRIOR TO USE!**
- Sample air quality by slightly removing lid or through hole in lid before completely opening the space
- Monitor with probe slowly vertically, every 4’ to bottom
- Measure in the following order: (OFT)
  - Oxygen, Flammability, Toxicity
- **Record results on the Confined Space Entry Permit Record Sheet**

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Testing Method

Atmospheric testing should be as follows:

- **Prior to every entry** when the space is vacant
- **After a 10 minute ventilation period** (if ventilation is necessary)
- **For PRCS continuous monitoring is the recommended practice**
- Measurement should be made for **at least the minimum response time of the test instrument** as specified by the manufacturer.

Any time a limit is exceeded, no matter what the reason, all personnel shall immediately exit the space, and no others shall enter until atmospheric conditions are returned to safe levels.

Physical Hazards

Engulfment

- Surrounding or capture of a person by a liquid or finely divided (flowable) solid surface
- Number two cause of death in confined spaces

Entrapment

- Inwardly converging walls, smaller cross section area

Mechanical Hazards

- Agitators, mixers, augers

Corrosive Hazards

- Acids and cleaning agents

Temperature Hazards

- Elevated temperatures inside space

Biological Hazards

- Molds, mildews, and spores

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Video: Entrapment/Engulfment

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Medical Monitoring

- **Heat Stress**
  - Body core temperature range 99.5-101.3
  - Confusion poor judgment, Loss of coordination, Chills
- **Heat Exhaustion**
  - Body core temperature range 101.3-105
  - Confusion poor judgment, Loss of coordination, Chills
  - Pale, Cool, Sweaty Skin
  - Rapid Shallow Breathing
  - Weak, Rapid Pulse
- **Heat Stroke**
  - Body core temperature +105
  - Loss of consciousness
  - Hot, Dry Skin
  - Rapid Pulse
  - Rapid Shallow Breathing

Ventilation

- **An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;**
- The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space;
- **The air supply for the forced air ventilation shall be from a clean source** and may not increase the hazards in the space.

Permit System

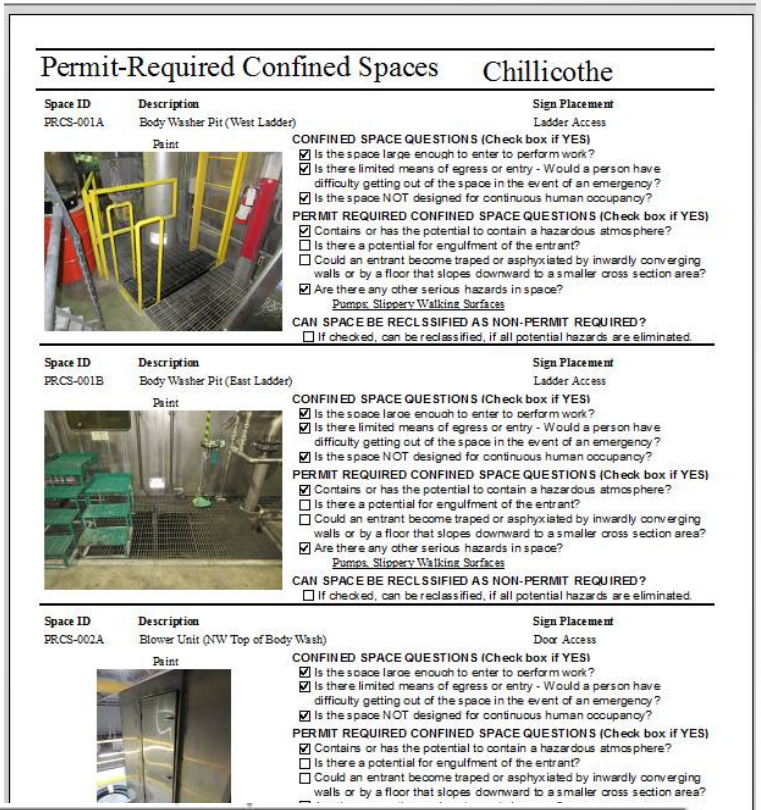
- **Establishes safe work parameters prior to and during entry into a PRCS**
- Must be filled out and signed by **Entry Supervisor** prior to entry
- **Retain for at least 1 year** to facilitate the review of the permit-required confined space program.
- **Any problems encountered during an entry operation shall be noted on the pertinent permit** so that appropriate revisions to the permit space program can be made.

Employer Responsibilities

- Must conduct a survey of their business site to **determine whether permit-required confined spaces** exist
- Must **Inform employees** of the existence, location and danger of these spaces by signs or other effective means.
- If employees are not to enter permit confined spaces, effective measures must be taken to prevent entry.
- If employees will enter permit spaces, then a written PRCS entry program must be developed

PRCS Inventory

- Documents all Permit-Required Confined Spaces and the associated attributes
- Can be used as a reference guide when determining entry provisions



Permit-Required Confined Spaces Chillicothe

Space ID	Description	Sign Placement
PRCS-001A	Body Washer Pit (West Ladder)	Ladder Access

Paint

CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Is the space large enough to enter to perform work?
- ☑ Is there limited means of egress or entry - Would a person have difficulty getting out of the space in the event of an emergency?
- ☑ Is the space NOT designed for continuous human occupancy?

PERMIT REQUIRED CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Contains or has the potential to contain a hazardous atmosphere?
- ☐ Is there a potential for engulfment of the entrant?
- ☐ Could an entrant become traped or asphyxiated by inwardly converging walls or by a floor that slopes downward to a smaller cross section area?
- ☑ Are there any other serious hazards in space?
  Pumps, Slippery Walking Surfaces

CAN SPACE BE RECLSSIFIED AS NON-PERMIT REQUIRED?
- ☐ If checked, can be reclassified, if all potential hazards are eliminated.

Space ID	Description	Sign Placement
PRCS-001B	Body Washer Pit (East Ladder)	Ladder Access

Paint

CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Is the space large enough to enter to perform work?
- ☑ Is there limited means of egress or entry - Would a person have difficulty getting out of the space in the event of an emergency?
- ☑ Is the space NOT designed for continuous human occupancy?

PERMIT REQUIRED CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Contains or has the potential to contain a hazardous atmosphere?
- ☐ Is there a potential for engulfment of the entrant?
- ☐ Could an entrant become traped or asphyxiated by inwardly converging walls or by a floor that slopes downward to a smaller cross section area?
- ☑ Are there any other serious hazards in space?
  Pumps, Slippery Walking Surfaces

CAN SPACE BE RECLSSIFIED AS NON-PERMIT REQUIRED?
- ☐ If checked, can be reclassified, if all potential hazards are eliminated.

Space ID	Description	Sign Placement
PRCS-002A	Blower Unit (NW Top of Body Wash)	Door Access

Paint

CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Is the space large enough to enter to perform work?
- ☑ Is there limited means of egress or entry - Would a person have difficulty getting out of the space in the event of an emergency?
- ☑ Is the space NOT designed for continuous human occupancy?

PERMIT REQUIRED CONFINED SPACE QUESTIONS (Check box if YES)
- ☑ Contains or has the potential to contain a hazardous atmosphere?
- ☐ Is there a potential for engulfment of the entrant?
- ☐ Could an entrant become traped or asphyxiated by inwardly converging walls or by a floor that slopes downward to a smaller cross section area?
- ☑ Are there any other serious hazards in space?
  Mechanical Components

CAN SPACE BE RECLSSIFIED AS NON-PERMIT REQUIRED?
- ☑ If checked, can be reclassified, if all potential hazards are eliminated.

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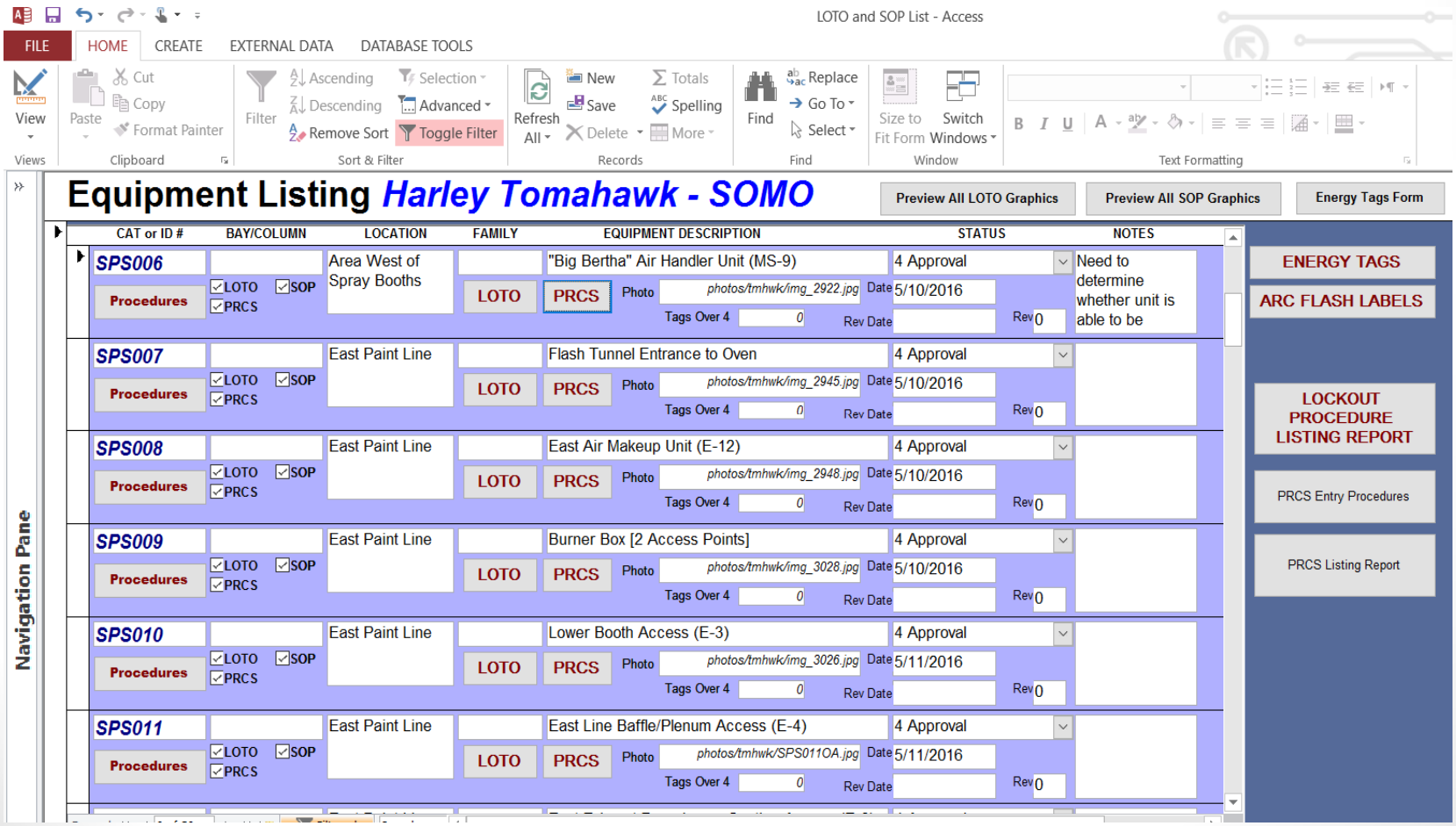
Safety Best Practice: Inventory

- Utilize MS Access/Database Application to maximize efficiency in developing and maintaining your space attributes



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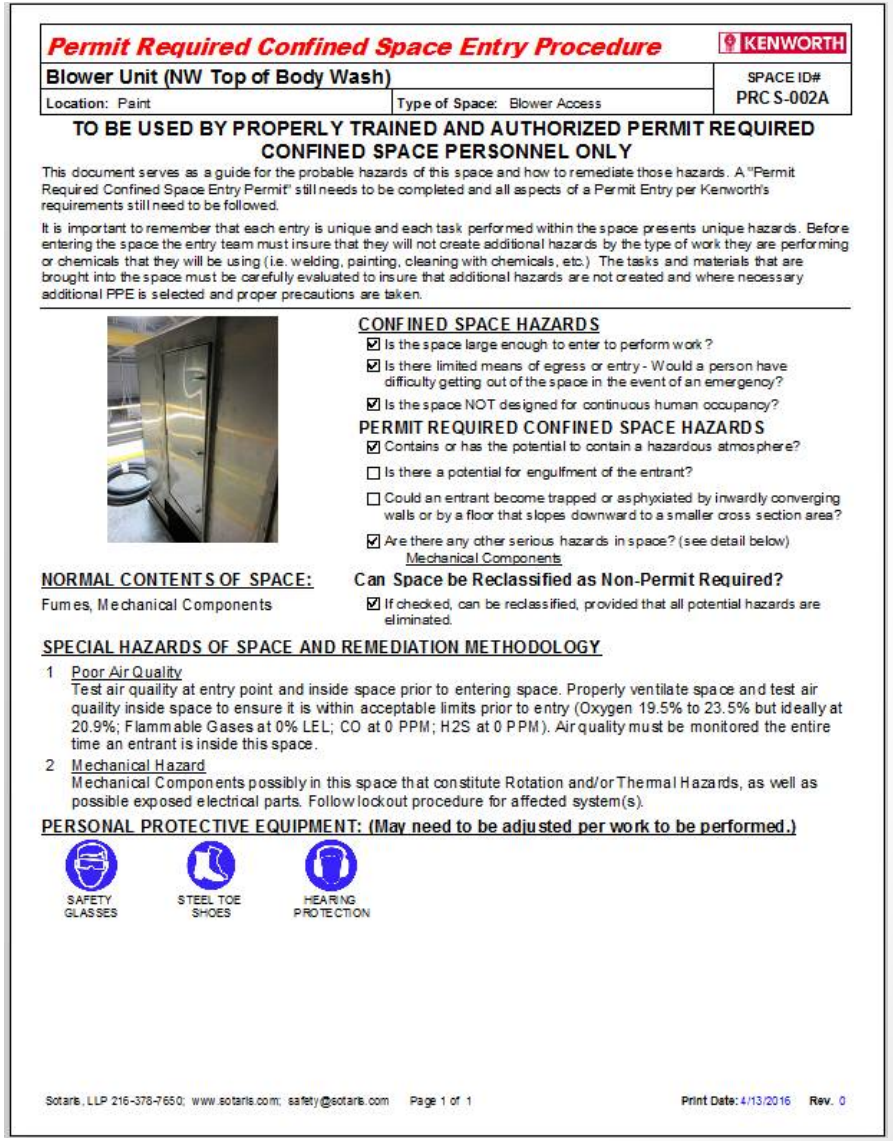
PRCS Procedures

- Details guidelines for entering space, Contents of Space, Special Hazards and Remediation Methods, Whether Capable of Being Reclassified, Personal Protective Equipment, etc.



Permit Required Confined Space Entry Procedure — KENWORTH

Blower Unit (NW Top of Body Wash)		SPACE ID#
Location: Paint	Type of Space: Blower Access	PRCS-002A

TO BE USED BY PROPERLY TRAINED AND AUTHORIZED PERMIT REQUIRED CONFINED SPACE PERSONNEL ONLY

This document serves as a guide for the probable hazards of this space and how to remediate those hazards. A "Permit Required Confined Space Entry Permit" still needs to be completed and all aspects of a Permit Entry per Kenworth's requirements still need to be followed.

It is important to remember that each entry is unique and each task performed within the space presents unique hazards. Before entering the space the entry team must insure that they will not create additional hazards by the type of work they are performing or chemicals that they will be using (i.e. welding, painting, cleaning with chemicals, etc.) The tasks and materials that are brought into the space must be carefully evaluated to insure that additional hazards are not created and where necessary additional PPE is selected and proper precautions are taken.

CONFINED SPACE HAZARDS

- ☑ Is the space large enough to enter to perform work?
- ☑ Is there limited means of egress or entry - Would a person have difficulty getting out of the space in the event of an emergency?
- ☑ Is the space NOT designed for continuous human occupancy?

PERMIT REQUIRED CONFINED SPACE HAZARDS

- ☑ Contains or has the potential to contain a hazardous atmosphere?
- ☐ Is there a potential for engulfment of the entrant?
- ☐ Could an entrant become trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward to a smaller cross section area?
- ☑ Are there any other serious hazards in space? (see detail below)
  Mechanical Components

NORMAL CONTENTS OF SPACE:

Fumes, Mechanical Components

Can Space be Reclassified as Non-Permit Required?

- ☑ If checked, can be reclassified, provided that all potential hazards are eliminated.

SPECIAL HAZARDS OF SPACE AND REMEDIATION METHODOLOGY

1. Poor Air Quality
   Test air quality at entry point and inside space prior to entering space. Properly ventilate space and test air quality inside space to ensure it is within acceptable limits prior to entry (Oxygen 19.5% to 23.5% but ideally at 20.9%; Flammable Gases at 0% LEL; CO at 0 PPM; H2S at 0 PPM). Air quality must be monitored the entire time an entrant is inside this space.
2. Mechanical Hazard
   Mechanical Components possibly in this space that constitute Rotation and/or Thermal Hazards, as well as possible exposed electrical parts. Follow lockout procedure for affected system(s).

PERSONAL PROTECTIVE EQUIPMENT: (May need to be adjusted per work to be performed.)

SAFETY GLASSES | STEEL TOE SHOES | HEARING PROTECTION

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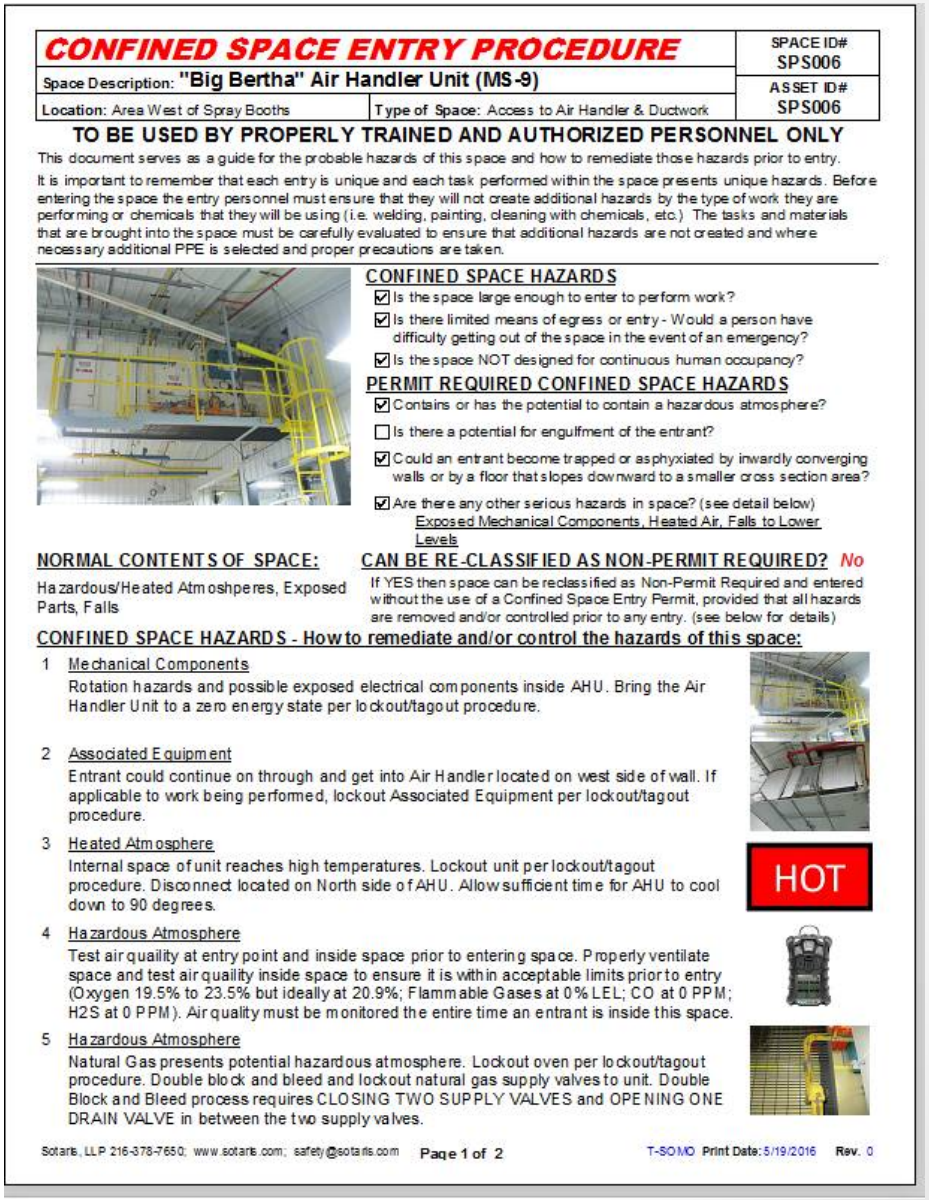
PRCS Procedures

- Details guidelines for entering space, Contents of Space, Special Hazards and Remediation Methods, Whether Capable of Being Reclassified, Personal Protective Equipment, etc.



CONFINED SPACE ENTRY PROCEDURE

SPACE ID# SPS006

Space Description: "Big Bertha" Air Handler Unit (MS-9)

ASSET ID# SPS006

Location: Area West of Spray Booths | Type of Space: Access to Air Handler & Ductwork

TO BE USED BY PROPERLY TRAINED AND AUTHORIZED PERSONNEL ONLY

This document serves as a guide for the probable hazards of this space and how to remediate those hazards prior to entry.

It is important to remember that each entry is unique and each task performed within the space presents unique hazards. Before entering the space the entry personnel must ensure that they will not create additional hazards by the type of work they are performing or chemicals that they will be using (i.e. welding, painting, cleaning with chemicals, etc.) The tasks and materials that are brought into the space must be carefully evaluated to ensure that additional hazards are not created and where necessary additional PPE is selected and proper precautions are taken.

CONFINED SPACE HAZARDS

- ☑ Is the space large enough to enter to perform work?
- ☑ Is there limited means of egress or entry - Would a person have difficulty getting out of the space in the event of an emergency?
- ☑ Is the space NOT designed for continuous human occupancy?

PERMIT REQUIRED CONFINED SPACE HAZARDS

- ☑ Contains or has the potential to contain a hazardous atmosphere?
- ☐ Is there a potential for engulfment of the entrant?
- ☑ Could an entrant become trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward to a smaller cross section area?
- ☑ Are there any other serious hazards in space? (see detail below) Exposed Mechanical Components, Heated Air, Falls to Lower Levels

NORMAL CONTENTS OF SPACE:

Hazardous/Heated Atmoshperes, Exposed Parts, Falls

CAN BE RE-CLASSIFIED AS NON-PERMIT REQUIRED? *No*

If YES then space can be reclassified as Non-Permit Required and entered without the use of a Confined Space Entry Permit, provided that all hazards are removed and/or controlled prior to any entry. (see below for details)

CONFINED SPACE HAZARDS - How to remediate and/or control the hazards of this space:

1 Mechanical Components
Rotation hazards and possible exposed electrical components inside AHU. Bring the Air Handler Unit to a zero energy state per lockout/tagout procedure.

2 Associated Equipment
Entrant could continue on through and get into Air Handler located on west side of wall. If applicable to work being performed, lockout Associated Equipment per lockout/tagout procedure.

3 Heated Atmosphere
Internal space of unit reaches high temperatures. Lockout unit per lockout/tagout procedure. Disconnect located on North side of AHU. Allow sufficient time for AHU to cool down to 90 degrees.

4 Hazardous Atmosphere
Test air quaility at entry point and inside space prior to entering space. Properly ventilate space and test air quaility inside space to ensure it is within acceptable limits prior to entry (Oxygen 19.5% to 23.5% but ideally at 20.9%; Flammable Gases at 0% LEL; CO at 0 PPM; H2S at 0 PPM). Air quality must be monitored the entire time an entrant is inside this space.

5 Hazardous Atmosphere
Natural Gas presents potential hazardous atmosphere. Lockout oven per lockout/tagout procedure. Double block and bleed and lockout natural gas supply valves to unit. Double Block and Bleed process requires CLOSING TWO SUPPLY VALVES and OPENING ONE DRAIN VALVE in between the two supply valves.

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PRCS Permit Example

CONFINED SPACE ENTRY PERMIT – SPACE ID _____

Date:		
Site location or description:		
Purpose of entry:		
Supervisor(s) in charge of crews:	Type of crew (welding, plumbing, etc):	Phone #:
Permit duration:		
Communication procedures (including equipment):		
Rescue procedures (also see emergency contact phone numbers at end of form):		

REQUIREMENTS COMPLETED (Put N/A if item doesn't apply)	DATE	TIME	REQUIREMENTS COMPLETED (Put N/A if item doesn't apply)	DATE	TIME
Lockout/De-energize/Try-out			Supplied Air Respirator (N/A if alternate entry)		
Line(s) Broken-Capped-Blank			Respirator(s) (Air Purifying)		
Purge-Flush and Vent			Protective Clothing		
Ventilation			Full Body Harness w/ "D" ring		
Secure Area (Post and Flag)			Emergency Escape Retrieval Equip		
Lighting (Explosive Proof)			Lifelines		
Hot Work Permit			Standby safety personnel (N/A if alternate entry)		
Fire Extinguishers			Other:		

Add other specific information, if needed, or attach additional instructions or requirements. See the following examples in bold print.			
Line(s) to be bled/blanked:			
Ventilation equipment:			
PPE clothing:			
Respirator(s):			
Other:			
Other:			

CONFINED SPACE ENTRY PERMIT

AIR MONITORING -

NOTE THAT TESTING NEEDS TO BE PERFORMED AT OPENING, THEN EVERY 4' AND AT BOTTOM

Substance Monitored		Permissible Levels		Monitoring Results						
Time monitored (put time)		Record the time								
Percent Oxygen		19.5% to 23.5%								
LEL/LFL		Under 10%								
Toxic 1:		____ PEL	___STEL							
Toxic 2:		____ PEL	___STEL							
Toxic 3:		____ PEL	___STEL							
Toxic 4:		____ PEL	___STEL							

REMARKS:

Air Tester Name	ID#	Instrument(s) Used (For example: oxygen meter, combustible gas indicator, etc.)	Model # or Type	Serial# or Unit

ATTENDANTS AND ENTRANTS

Attendant(s) (Required for all confined space work except alternate entry)	ID#	Confined Space Entrant(s)	ID#

REMARKS:

SUPERVISOR AUTHORIZATION - ALL CONDITIONS SATISFIED

Department or phone number: _____

EMERGENCY CONTACT PHONE NUMBERS:

AMBULANCE: 911 FIRE: 911 SAFETY: RESCUE TEAM:

_____ _____ _____ _____

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Permit Shall Include…

- The permit space to be entered;
- The purpose of the entry
- The date and the authorized duration of the entry permit
- The authorized entrants within the permit space, by name or by such other means
- The personnel, by name, currently serving as attendants;
- The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;
- The hazards of the permit space to be entered;

CONTINUED ON NEXT SLIDE

Permit Shall Include…

- The measures used to isolate the permit space and to eliminate or control permit space hazards before entry;
  - NOTE: Those measures can include the lockout or tagging of equipment and procedures for purging, inerting, ventilating, and flushing permit spaces.
- The acceptable entry conditions;
- The results of initial and periodic tests performed with the names or initials of the testers and time performed
- The rescue and emergency services that can be summoned and the means for summoning those services;
- The communication procedures used by authorized entrants and attendants to maintain contact during the entry;
- Equipment, such as PPE, testing equipment, communications equipment, alarm systems, and rescue equipment,
- Any other information or additional permits, such as for hot work, that have been issued to authorize work

Construction PRCS Changes

- More detailed provisions requiring **coordinated activities** when there are multiple employers at the worksite.
- Requiring a **competent person to evaluate the work site** and identify confined spaces, including permit spaces.
- Requiring **continuous atmospheric monitoring** whenever possible.
- Requiring **continuous monitoring of engulfment** hazards.
- Allowing for the **suspension of a permit**, instead of cancellation, in the event of changes from the entry conditions list on the permit or an unexpected event requiring evacuation of the space.
- General Industry standard. These include:
  - Requiring that employers who are relying on local emergency services for emergency services **arrange for responders to give the employer advance notice** if they will be unable to respond for a period of time
  - Requiring employers to provide training in **a language and vocabulary that the worker understands.**

Persons Involved in Entry

- Four main categories needed for an authorized entry into a Permit-Required Confined Space:
  - **Authorized Entrant**
  - **Attendant**
  - **Entry Supervisors***
  - **Rescue and Medical Persons**

* *An entry supervisor also may serve as an attendant or as an authorized entrant.*

Pre-Entry

- A pre-entry meeting **orients all workers to the job** to being done. When conducting a pre-entry meeting:
  - **The entire crew must attend**, including all attendants, entrants, and entry supervisors
  - **Review the possible hazards** of entry and work
  - **Review personal protection equipment and communication**
  - **Review procedure for contacting the rescue team**, and verify that a rescue team available
  - Complete the entry permit

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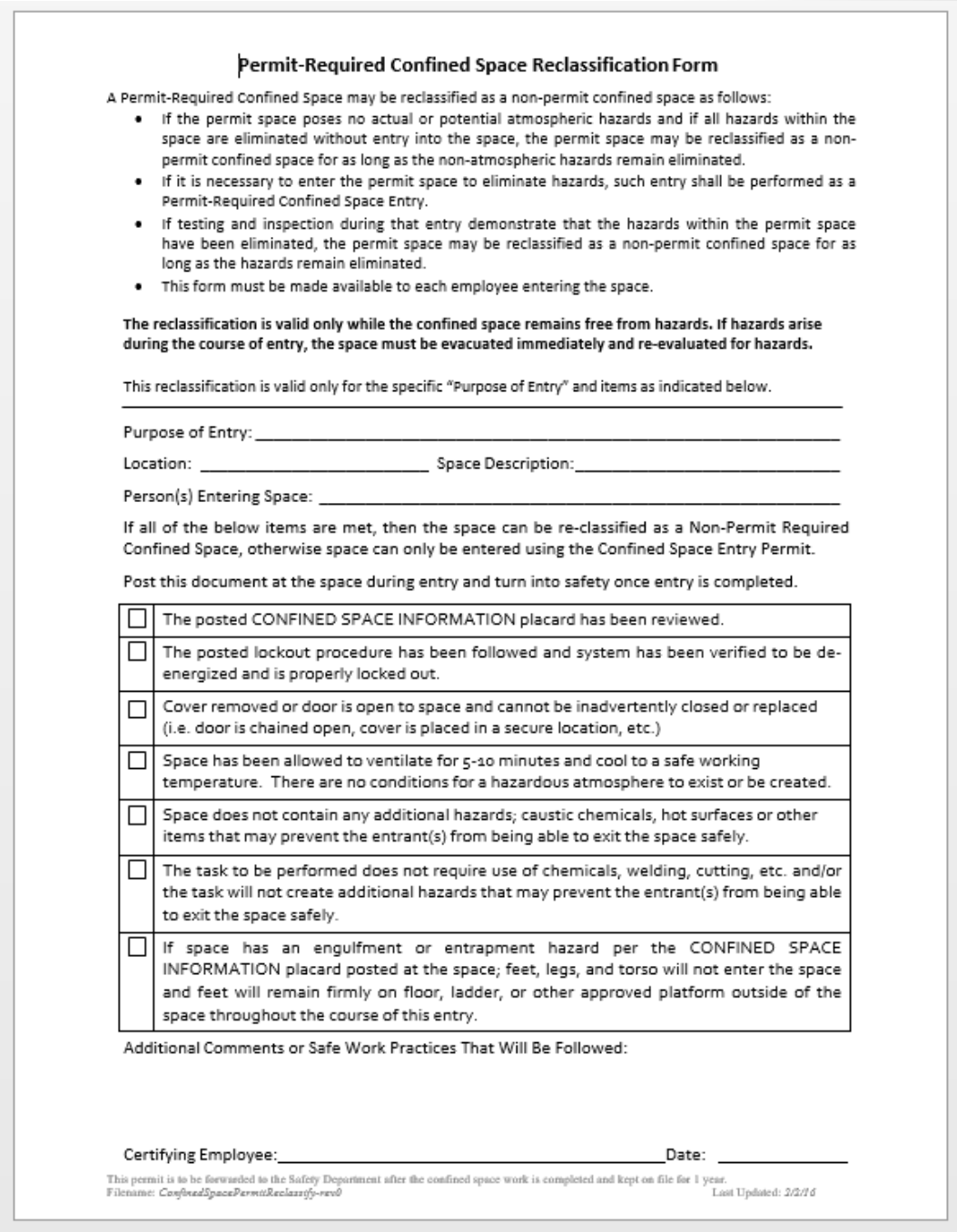
PRCS Reclassification Document (Best Practice)

- Documents how the space was reclassified from PRCS to NPRCS



Permit-Required Confined Space Reclassification Form

A Permit-Required Confined Space may be reclassified as a non-permit confined space as follows:

- If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.
- If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed as a Permit-Required Confined Space Entry.
- If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.
- This form must be made available to each employee entering the space.

The reclassification is valid only while the confined space remains free from hazards. If hazards arise during the course of entry, the space must be evacuated immediately and re-evaluated for hazards.

This reclassification is valid only for the specific "Purpose of Entry" and items as indicated below.

Purpose of Entry: _____

Location: _____ Space Description: _____

Person(s) Entering Space: _____

If all of the below items are met, then the space can be re-classified as a Non-Permit Required Confined Space, otherwise space can only be entered using the Confined Space Entry Permit.

Post this document at the space during entry and turn into safety once entry is completed.

☐	The posted CONFINED SPACE INFORMATION placard has been reviewed.
☐	The posted lockout procedure has been followed and system has been verified to be de-energized and is properly locked out.
☐	Cover removed or door is open to space and cannot be inadvertently closed or replaced (i.e. door is chained open, cover is placed in a secure location, etc.)
☐	Space has been allowed to ventilate for 5-10 minutes and cool to a safe working temperature. There are no conditions for a hazardous atmosphere to exist or be created.
☐	Space does not contain any additional hazards; caustic chemicals, hot surfaces or other items that may prevent the entrant(s) from being able to exit the space safely.
☐	The task to be performed does not require use of chemicals, welding, cutting, etc. and/or the task will not create additional hazards that may prevent the entrant(s) from being able to exit the space safely.
☐	If space has an engulfment or entrapment hazard per the CONFINED SPACE INFORMATION placard posted at the space; feet, legs, and torso will not enter the space and feet will remain firmly on floor, ladder, or other approved platform outside of the space throughout the course of this entry.

Additional Comments or Safe Work Practices That Will Be Followed:

Certifying Employee: _____ Date: _____

This permit is to be forwarded to the Safety Department after the confined space work is completed and kept on file for 1 year.
Filename: *ConfinedSpacePermitReclassify-rev0* Last Updated: *2/2/16*

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Reclassification: PRCS to Non-PRCS

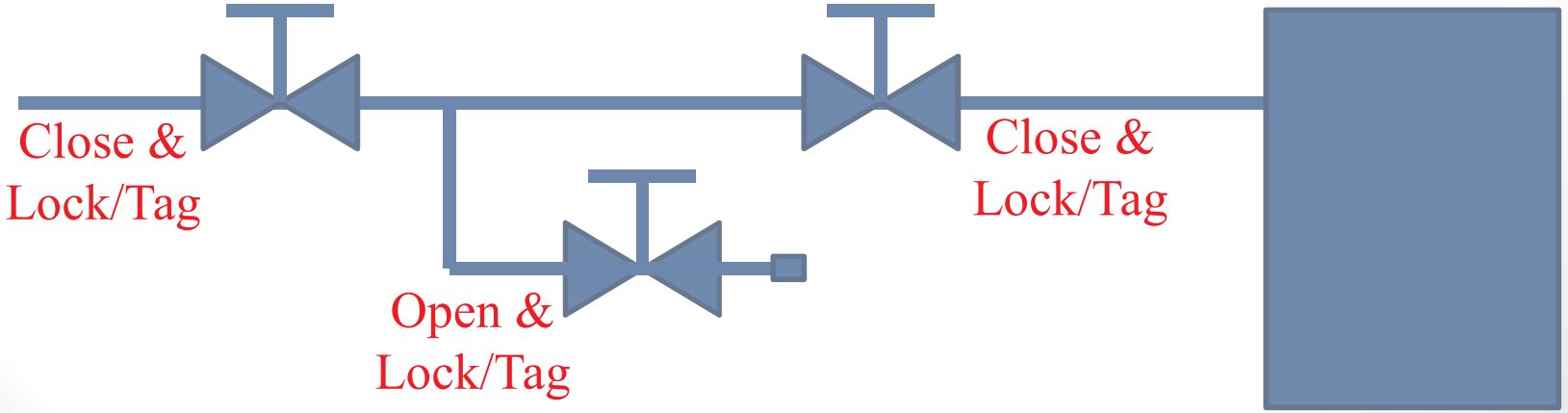
- If the permit space **poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space**, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.
- If entry is required to eliminate hazards, must enter under Permit condition only!

  NOTE: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.

- Basis of reclassification must be documented with; the date, the location of the space, and the **signature of the person making the determination.**
- If hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space shall exit the space and re-evaluation performed.

Reclassification: PRCS to Non-PRCS

- Effective Control of Fluid Lines Into a PRCS
- Isolating a fluid flowing through a pipe by double block and bleed
  - the closure of a line, duct, or pipe by closing and *locking or tagging* [emphasis added] two in-line valves
  - opening and locking or tagging a drain or vent valve in the line between the two closed valves



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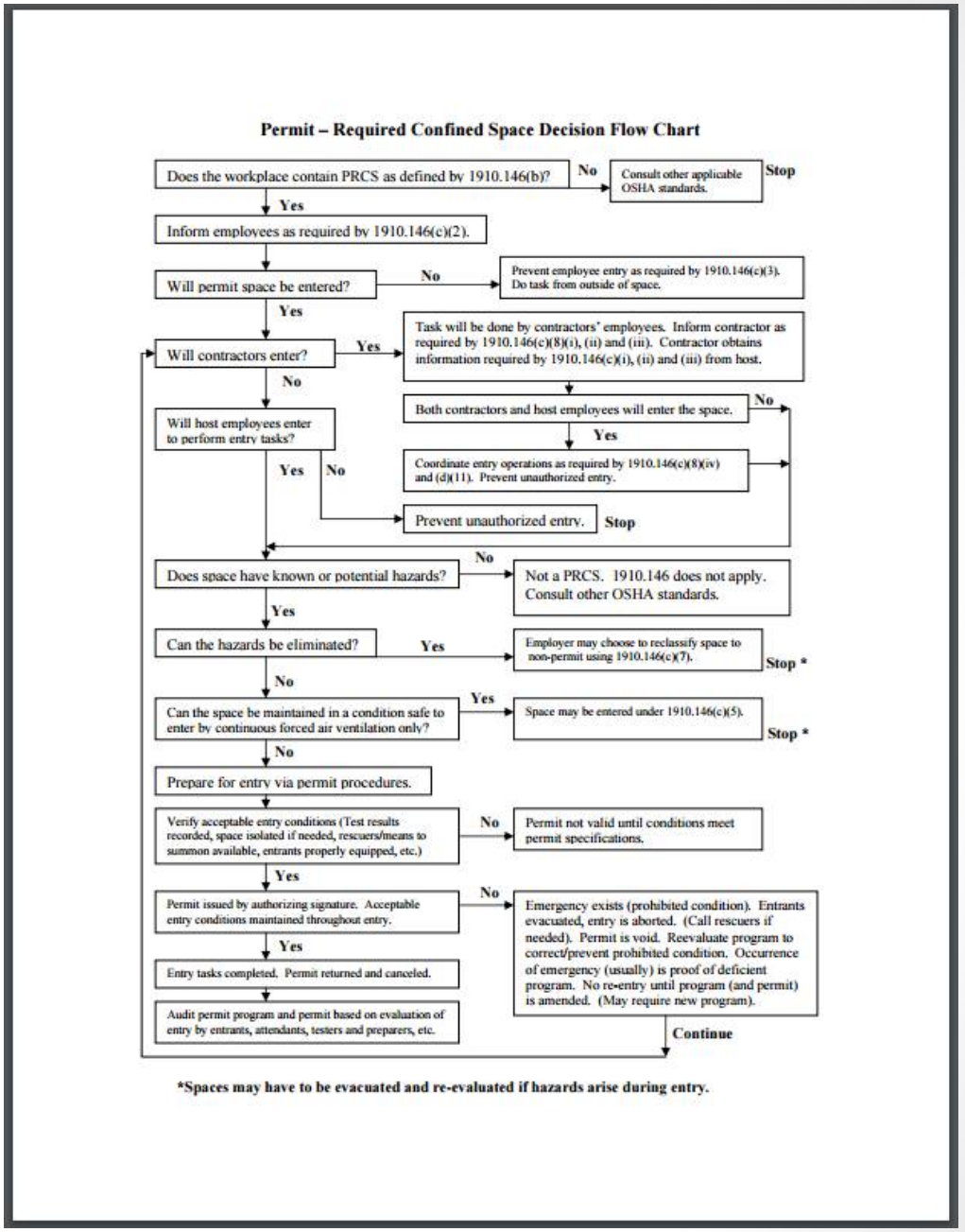
PRCS Flow Chart: OSHA App. A



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Employer Responsibilities

- When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:
  - **Inform the contractor that the workplace contains permit spaces**
  - Permit space entry is allowed only through compliance with a permit space program
  - **Apprise the contractor of hazards present**
  - Apprise the contractor of **any precautions and protection techniques**
  - **Coordinate** entry operations
  - Debrief the contractor at the conclusion of the entry operations

Contractor Responsibilities

In addition to complying with the permit space requirements that apply to all employers, **each contractor who is retained to perform permit space entry operations shall**:

- **Obtain any available information** regarding permit space hazards and entry operations from the host employer;
- **Coordinate entry operations with the host employer,** when both host employer personnel and contractor personnel will be working in or near permit spaces,; and
- **Inform the host employer of the permit space program that the contractor will follow** and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

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.

- Knowledge is information you have in your head;
- Skill is the ability to use knowledge to actually accomplish something.

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Summary:
Steps to Enter PRCS

- Pull all applicable Permits
- Hold Pre-Entry Meeting
- Establish Roles and Responsibilities
- Evaluate Hazards
- Eliminate Hazards Where Possible
- Fill out Permits
- Perform Air Monitoring
- Ventilate if Needed
- Insure Rescue is Apprised of Entry
- Enter Space to Perform assigned Tasks
- Cancel Permit Upon Exit

QUESTIONS

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