

Confined Spaces

INNM



Confined Space

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.



Evaluation of PRCs

- The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

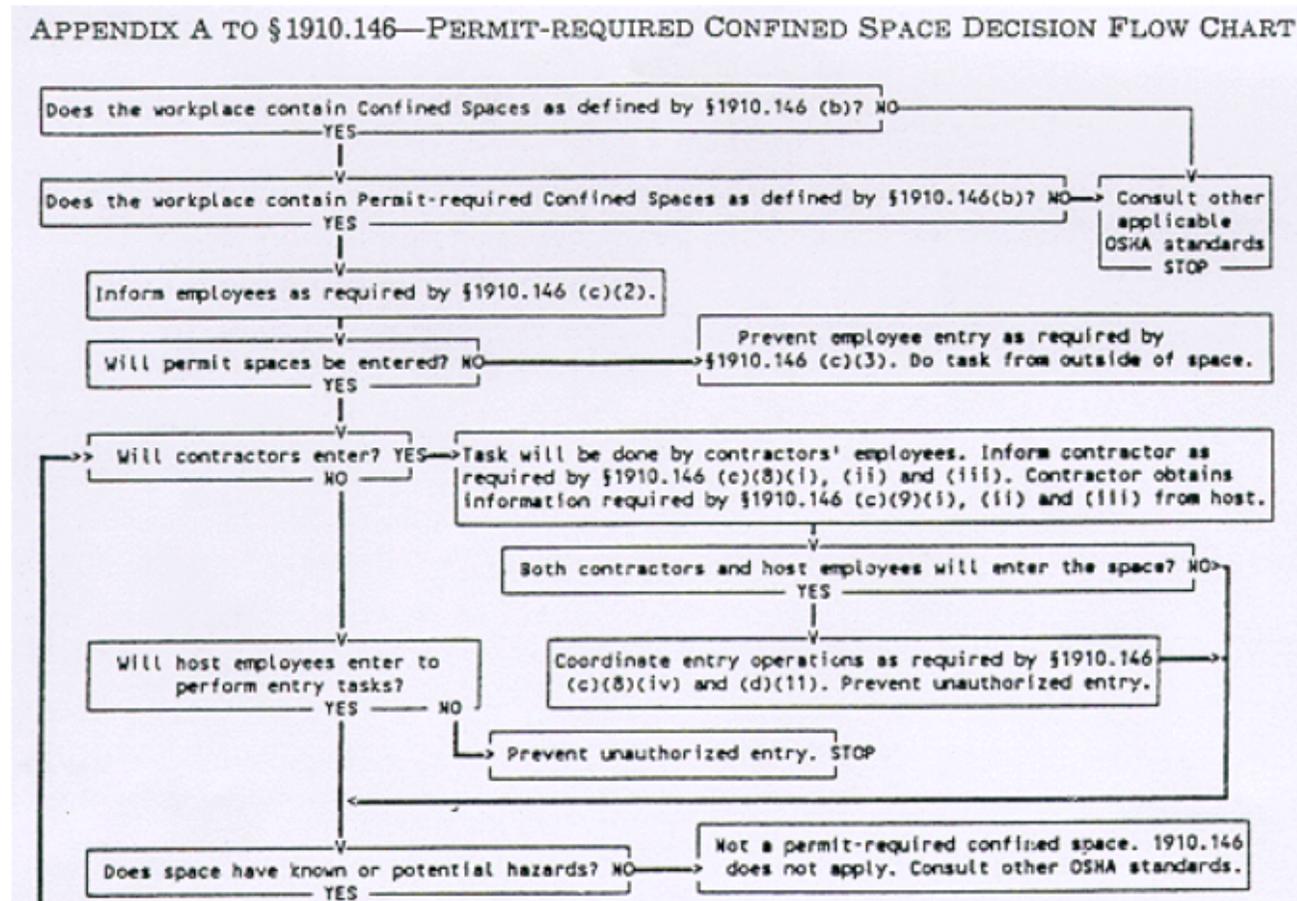
NOTE: Proper application of the decision flow chart in Appendix A to section 1910.146 would facilitate compliance with this requirement.



Flowchart

Appendix A to §1910.146 -- Permit-Required Confined Space Decision Flow Chart

Note: Appendices A through F serve to provide information and non-mandatory guidelines to assist employers and employees in complying with the appropriate requirements of this section.



Danger Signs

- If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

NOTE: A sign reading DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign.



Permit Required Confined Space (PRCS)

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- (4) Contains any other recognized serious safety or health hazard.



Hazardous Atmosphere

An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

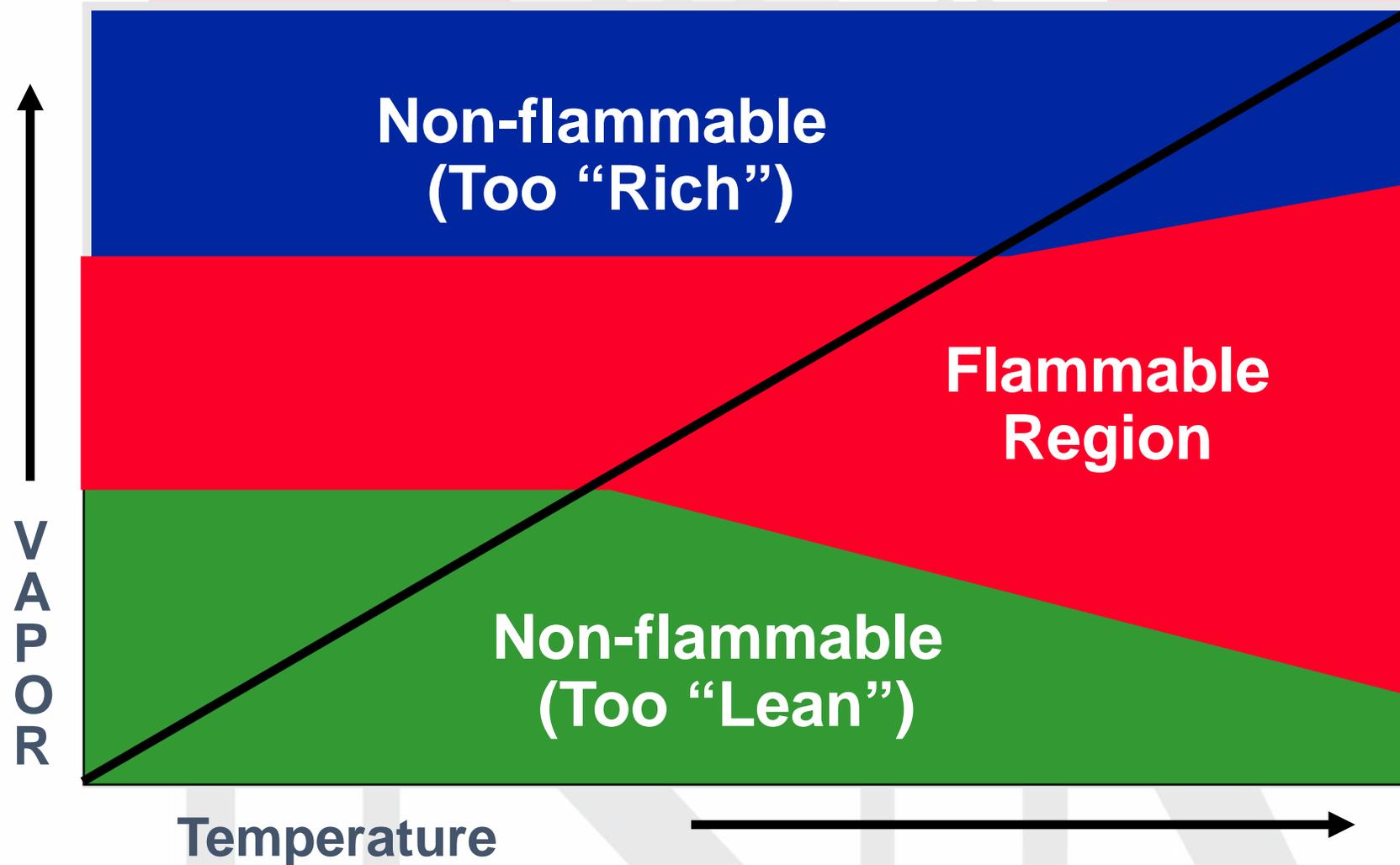
- (1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit.
- (2) Airborne combustible dust at a concentration that meets or exceeds its LFL.
- (3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- (4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit.



Testing the Atmosphere



Flammable Atmospheres



Dangers of Low Oxygen Levels

16 - 12% O₂ in Air

Deep breathing, fast heartbeat, poor attention, poor thinking, poor coordination

14 - 10% O₂ in Air

Faulty judgment, intermittent breathing, rapid fatigue (possibly causing heart damage), very poor coordination, lips turning blue

10% or less O₂ in Air

Nausea (vomiting), loss of movement, loss of consciousness followed by death

Less than 6% O₂ in Air

Spasmodic breathing, convulsive movement, death in approx. eight minutes

4% - 6% O₂ in Air

Coma in 40 seconds



Toxic

Substance	Permissible Exposure Limit (PPM)
Carbon Dioxide	5,000
Carbon Monoxide	50
Hydrogen Sulfide	20
Methane	1,000
Nitric Oxide	25
Oxygen diflouride	0.05
Phosgene (carbonyl chloride)	0.1
Sulfur Dioxide	5
Stoddard Solvent	500



Serious Health & Safety Hazards

- Electrical
- Biohazard
- Noise hazard
- Radiation
- Environmental



Access

- If the employer decides that its employees will not enter permit spaces, the employer shall take effective measures to prevent its employees from entering the permit spaces.



Access

- If the employer decides that its employees will enter permit spaces, the employer shall develop and implement a written permit space program.



Program

- Specifying acceptable entry conditions.
- Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces.
- Isolating the permit space.
- Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.



Program

- Providing pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.
- Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
- Equipment.
- Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained.



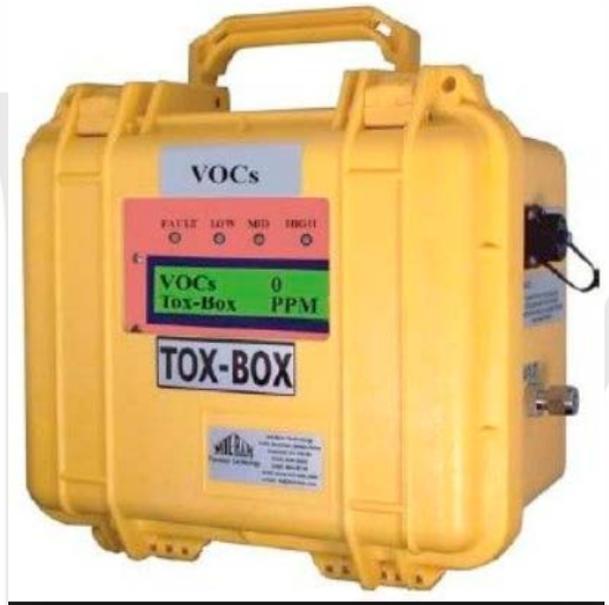
Program

- Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.
- Reevaluate the permit space.



Equipment for Air Monitoring

- Multi-gas readers
- Photo ionization detectors
- Single gas monitors
- Specific equipment to known related hazards



Entry

- Decide who will be involved in the PRCS activity
- Ensure all have current training
- Retrieve all equipment needed
- Fill out and get permit for entry approved



Personal Protective Equipment

- Appropriate Uniform
- Eye Protection
- Head Protection
- Gloves
- Etc.



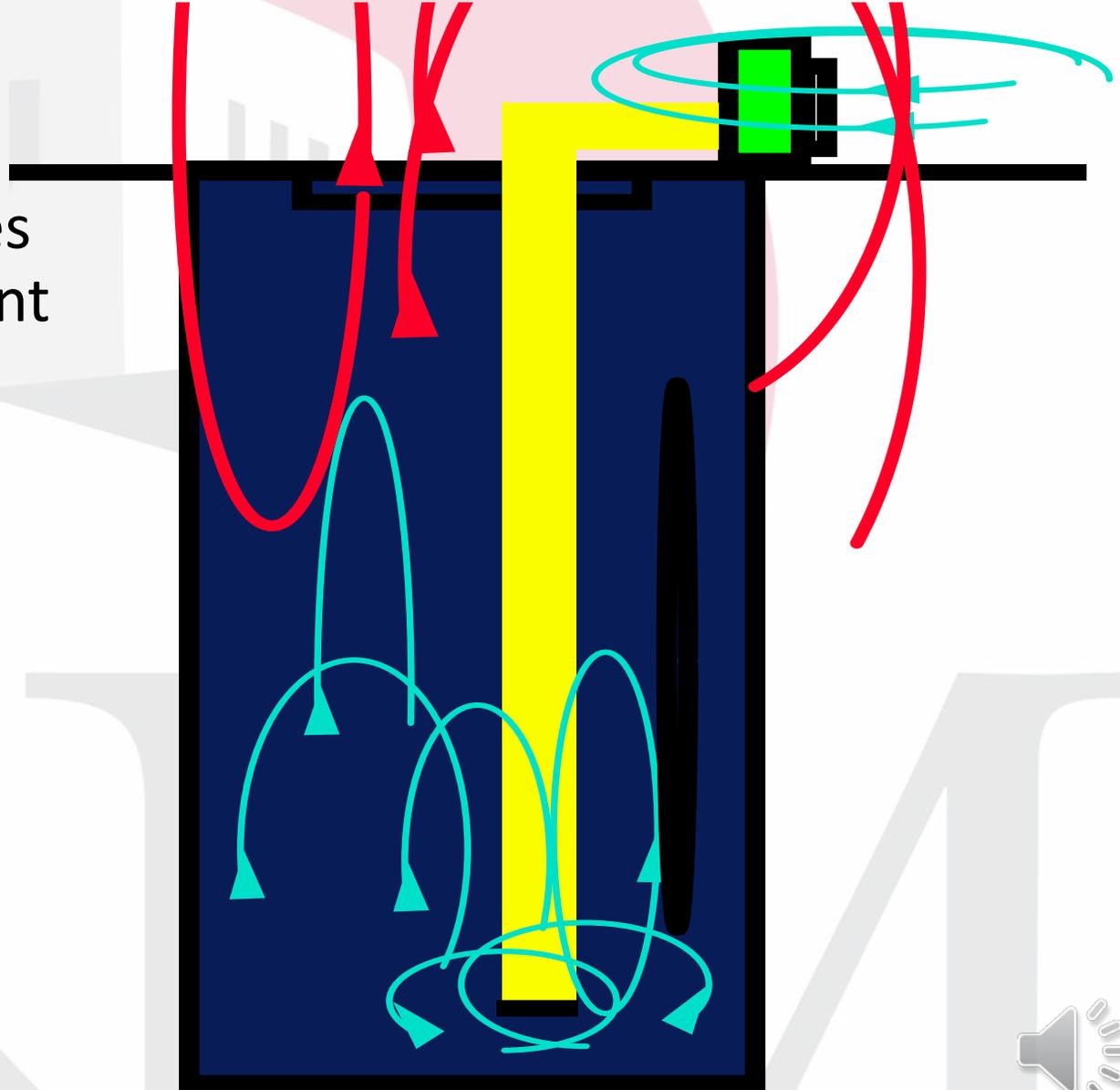
Tri-Pod

- A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.



Ventilation

- When ventilation is required, hoses should open at the inner most point to direct old atmosphere out.



Company Policy

- Check the University's policy for specific additional requirements for entry into an Permit Required Confined Space.



Permit

- Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.



Permit Shall Have the Following

- The permit space to be entered.
- The purpose.
- The authorized entrants.
- The personnel, by name, currently serving as attendants.
- The individual, by name, currently serving as entry supervisor.



Permit Shall Have the Following

- The hazards of the permit space.
- The measures used to control permit space hazards before entry.
- The acceptable entry conditions.
- The results of initial and periodic tests.
- The rescue and emergency services that can be summoned.



Permit Shall Have the Following

- The communication procedures used by authorized entrants and attendants to maintain contact during the entry.
- Equipment.
- Any other information whose inclusion is necessary.



Entry Team



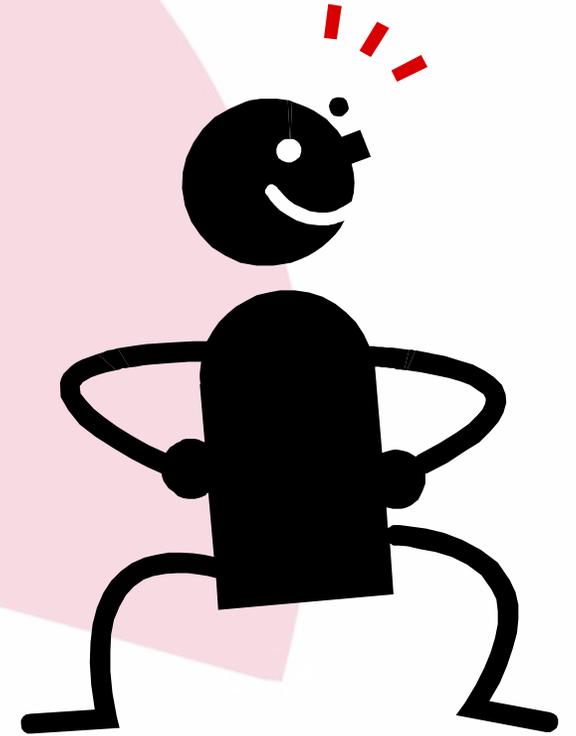
Attendant

- Knows the hazards that may be faced during entry.
- Is aware of possible behavioral effects of hazard exposure .
- Continuously maintains an accurate count of authorized entrants.
- Remains outside the permit space during entry operations until relieved by another attendant.
- Communicates with authorized entrants.
- Monitors activities inside and outside the space to determine if it is safe .



Entrant

- Know the hazards that may be faced during entry.
- Properly use equipment .
- Communicate with the attendant .
- Evacuate
 - An order to evacuate is given
 - The entrant recognizes any warning sign or symptom of exposure
 - Detects a prohibited condition
 - Evacuation alarm is activated



Supervisor

- Knows the hazards .
- Verifies, by checking that the appropriate entries have been made on the permit.
- Terminates the entry.
- Verifies that rescue services are available.
- Removes unauthorized individuals who enter or who attempt to enter.



Rescue

- Ability to respond to a rescue summons in a timely manner.
- Have the capability to reach the victim(s) within a time frame that is appropriate.
- Are equipped for and proficient in performing the needed rescue services.
- Inform each rescue team or service of the hazards they may confront when called on to perform rescue .



Rescue

- Provide the rescue team or service selected with access to all permit spaces.
- Each authorized rescue entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head.
- The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.

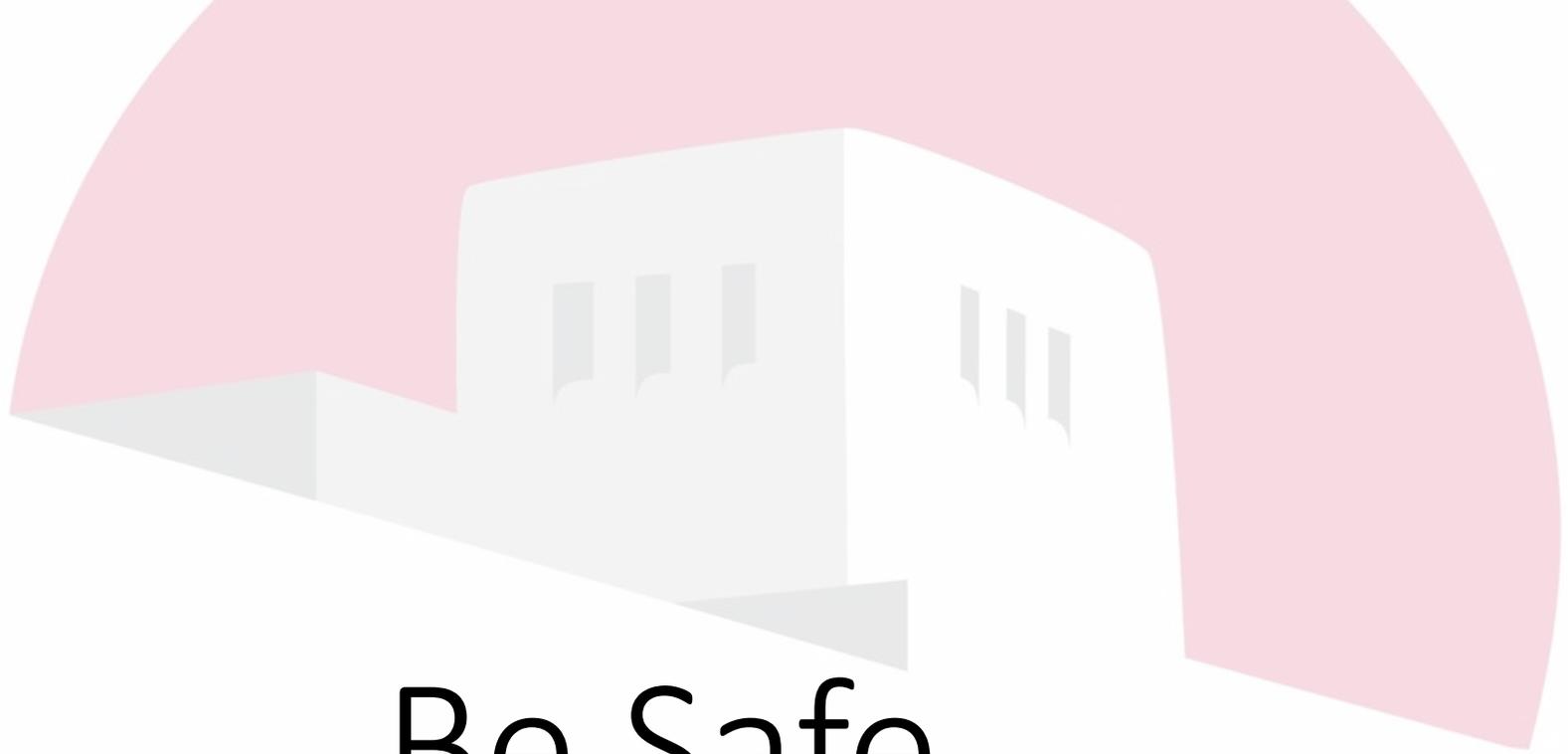


Training

- 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.

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Be Safe

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Acknowledgement

I _____, have completed the Confined Spaces training.
(Print Name)

Date: _____

Please print the acknowledgement sheet, fill in requested information and email to srsweb@unm.edu to complete training.