Confined Space Entry Training

Introduction – Greeting Your Trainees

Good morning everyone. My name is _____, and I'm your Safety Officer.
Today we're going to talk about a type of work that has caused some of the most serious and tragic industrial accidents around the world: confined space entry.

A confined space may look harmless—a tank, a manhole, a pit—but inside there can be toxic gases, oxygen deficiency, or the risk of engulfment. Workers can collapse within seconds without warning. This training is designed to make sure that never happens here.

Our goal is to ensure that every one of you understands what a confined space is, why it's dangerous, what procedures and equipment you must use, and how to respond if something goes wrong. By the end of this session, you should feel confident about recognising confined spaces, applying the correct entry procedures, and protecting yourself and your co-workers.

1. What a Confined Space Is

A confined space is defined by its characteristics:
- Large enough for a person to enter and perform work
- Limited or restricted means of entry/exit
- Not designed for continuous human occupancy

Examples on our sites include tanks, silos, hoppers, pits, vaults, shafts, pipelines, sewers, storage bins, grain elevators, and trenches with restricted access.

Permit-Required Confined Space: some spaces contain or may contain serious hazards and require special entry procedures and authorisation.

2. Why Confined Space Entry Is Dangerous

Hazards include:
- Oxygen deficiency from rusting/fermentation or displacement by other gases
- Toxic atmospheres (H2S, CO, solvents)
- Flammable/explosive atmospheres (vapours, residues)
- Engulfment (grain, sand, sludge)
- Physical hazards (moving equipment, heat stress, electrical)
- Restricted movement and exit, poor visibility/communication

Many fatalities occur when co-workers attempt rescue without training or equipment, leading to multiple deaths.

3. Legal & Company Requirements

Standards require employers to identify/classify spaces, implement a permit system, test/monitor atmospheres, ventilate, isolate hazards, train/authorise entrants/attendants/supervisors, and

develop/practice rescue procedures.

Our policy meets or exceeds these requirements. No one enters a permit-required confined space without a written permit, trained personnel, and proper equipment.

4. Planning and Risk Assessment

Before work:
1) Identify the space and whether it is permit-required
2) Assess hazards: atmosphere, engulfment, mechanical/chemical
3) Isolate energy sources: lockout/tagout of lines, valves, electrical
4) Ventilate the space (mechanical fans/blowers)
5) Test atmosphere (O2, flammables, toxics) and record
6) Determine PPE/equipment (harness, lifeline, respirator)
7) Prepare rescue plan (trained team, equipment ready)
8) Brief the team on roles and responsibilities

Document the plan and communicate to all involved.

5. Entry Permit System

The permit is a formal authorisation that entry is safe under specified conditions. It includes:
- Identification of the space/work
- Names of entrants, attendants, supervisor
- Hazards and controls
- Atmospheric test results (O2, %LEL, toxics)
- Required PPE/equipment
- Communication methods
- Rescue/emergency procedures
- Time limits and expiration

Work stops if conditions change or the permit expires.

6. Ventilation and Atmospheric Testing

Atmospheric testing before and during entry using a calibrated multi-gas detector:
- Oxygen: 19.5% to 23.5%
- Flammable gases/vapours: <10% LEL
- Toxic substances: below permissible limits

Ventilation: use positive pressure blowers to supply fresh air and exhaust systems to remove contaminants; continue ventilation during entry. Never rely on ventilation without testing.

7. Personal Protective Equipment (PPE)

Select PPE based on hazards:
- Hard hat with chin strap, safety boots, suitable gloves
- Full-body harness and lifeline for non-entry rescue
- Respiratory protection (APR or supplied-air) if needed

- Eye/face and hearing protection as required

PPE is the last line of defence—control hazards first.

8. Safe Work Procedures for Entry

Sequence:
- Isolate the space (LOTO; blank/disconnect lines)
- Clean space (remove residues)
- Ventilate and test until safe
- Prepare equipment (PPE, comms, lighting, rescue)
- Assign roles (entrant, attendant, supervisor)
- Review the permit with the team
- Maintain continuous communication
- Monitor conditions; re-test regularly
- Exit immediately if alarms sound or conditions change

Never enter alone or without an attendant present.

9. Communication and Supervision

Maintain reliable communication (voice/radios/hand signals). Establish emergency signals before entry.

Attendant stays outside, monitors entrants/conditions, and orders evacuation if needed. Entry supervisor verifies permit, conditions, and rescue readiness. Loss of communication triggers immediate exit.

10. Emergency and Rescue Planning

No entry without a rescue plan:
- Rescue equipment at entry (tripod, winch, retrieval line)
- Trained rescue team available on site
- Regular practice drills
- First aid/CPR trained personnel

Aim for non-entry rescue using lifelines whenever possible. Entry rescue only by trained and equipped rescuers.

11. Training and Competency

All personnel must be trained in: hazard recognition, classification of spaces, use of gas detectors, ventilation, permits, PPE, roles (entrant/attendant/supervisor), and emergency response/rescue.

Competency verified via written/practical assessment and periodic refreshers.

12. Roles and Responsibilities

Entrants: understand hazards/procedures, use equipment properly, maintain communication, exit on order or alarm.

Attendants: remain outside, monitor entrants/conditions, maintain headcount, order evacuation, call rescue.

Entry Supervisor: verify permit/conditions, authorise entry, ensure rescue readiness, cancel permit when done.

Rescue Team: trained/equipped for entry rescue, practice regularly.

Safety Officer: identify/classify spaces, provide training/oversight, audit compliance and review incidents.

13. Common Mistakes to Avoid

- Entering without a permit
- Failing to test/retest atmosphere or using uncalibrated detectors
- Assuming ventilation is enough without verification
- Not wearing harness/lifeline
- Attendant leaving the post
- Attempting rescue without training/equipment
- Ignoring alarms or signs of distress

14. Summary & Key Messages

- Confined spaces: large enough to enter, limited entry/exit, not for continuous occupancy
- Major hazards: oxygen deficiency, toxic/flammable atmospheres, engulfment, restricted movement
- No permit, no entry; test and ventilate before/during work
- Use appropriate PPE including harness/lifeline
- Maintain communication and supervision at all times
- Trained rescue team and equipment must be ready
- Know and perform your role; speak up about unsafe conditions

Following these principles ensures safe confined space work and that everyone goes home safely.