OSHA Confined Space Complete Safety Pack

FORBES SAFETY SOLUTIONS

Complete bundle — 7 templates included

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FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Confined Space Entry	**JHA Number:**	FSS-JHA-027
Project Name:		**Date:**	
Location:		**Revision:**	0
Regulatory References:	*29 CFR 1910.146 (Permit-Required Confined Spaces); 29 CFR 1926 Subpart AA (Confined Spaces in Construction)*		
Prepared By:		**Approved By:**	
Competent Person:		**Supervisor:**	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Space Identification & Hazard Assessment	• Unidentified permit-required conditions • Unknown atmospheric hazards • Engulfment potential • Energy sources not identified	H	• Survey and inventory all confined spaces on site • Classify each space as permit-required or non-permit per 1910.146 • Post warning signs at all confined space entries ("DANGER — Confined Space") • Review historical data, SDS, and process info for each space • Identify all energy sources requiring lockout/tagout • Conduct pre-entry hazard assessment with competent person
2. Atmospheric Testing	• Oxygen deficiency (<19.5%) • Oxygen enrichment (>23.5%) • Toxic gas exposure (H_2S, CO) • Flammable atmosphere (>10% LEL)	H	• Calibrate multi-gas detector before each use per manufacturer specs • Test atmosphere before entry in this order: O_2, combustibles, toxics • Test at multiple levels (top, middle, bottom) of space • Continuous monitoring required during all entry operations • Establish action levels: O_2 19.5-23.5%, LEL <10%, H_2S <10ppm, CO <25ppm • Document all readings on entry permit • Evacuate immediately if readings exceed action levels
3. Ventilation Setup	• Inadequate air circulation • Introduction of contaminants via ventilation • Recirculation of hazardous atmosphere • Noise exposure from blowers	M	• Position blower intake in clean air source — away from exhaust/contaminants • Direct forced air to lowest point of space for heavier-than-air gases • Allow adequate ventilation time before entry (minimum 15 minutes) • Re-test atmosphere after ventilation before allowing entry • Maintain continuous mechanical ventilation during all entry operations • Use intrinsically safe ventilation equipment in flammable atmospheres
4. Entry Permit Completion	• Incomplete hazard communication • Missing authorization • Inadequate rescue planning • Untrained personnel entry	M	• Complete all sections of confined space entry permit • Verify atmospheric test results recorded on permit • Confirm rescue plan and rescue team availability • List all authorized entrants, attendants, and entry supervisor • Verify all entrants have current confined space training • Entry supervisor signs permit — post at entry point • Permit valid for one shift only; renew for subsequent shifts
5. Entry & Work Operations	• Atmospheric changes during work • Engulfment by stored materials • Entrapment in converging geometry • Electrical/mechanical energy contact	H	• Attendant stationed at entry point at all times — no exceptions • Maintain continuous communication (visual, voice, radio, or hardwired) • Entrants wear retrieval harness with lifeline attached to tripod/davit • Continuous atmospheric monitoring with audible/visual alarms • All energy sources locked out/tagged out before entry • Limit number of entrants to essential personnel only • Entrants authorized to self-evacuate at any time without question
6. Exit & Permit Closeout	• Residual hazards left in space • Incomplete documentation • Failure to secure space after exit	L	• All entrants exit space and are accounted for • Remove all tools, equipment, and materials from space • Close and secure space entry point to prevent unauthorized entry • Entry supervisor cancels permit and documents closeout

			• Review any incidents or near-misses during entry • File completed permit with project safety records • Debrief crew on lessons learned

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat	*ANSI/ISEA Z89.1, Type I or II*	Bump cap may be acceptable in low-clearance spaces
Safety Glasses / Goggles	*ANSI/ISEA Z87.1+*	Splash-proof goggles if liquid hazards present
Full-Body Harness with Retrieval D-Ring	*ANSI/ASSP Z359.1*	Dorsal D-ring for fall arrest; sternal for retrieval
Supplied Air Respirator (SAR) or SCBA	*NIOSH 42 CFR Part 84; ANSI Z88.2*	Required when atmosphere cannot be made safe
Chemical-Resistant Gloves	*ANSI/ISEA 105; EN 374*	Select based on chemical exposure present
Steel-Toe Safety Boots	*ASTM F2413 (I/75 C/75)*	Chemical-resistant soles if needed
High-Visibility Vest	*ANSI/ISEA 107, Class 2*	Required for surface crew visibility
Hearing Protection	*ANSI S3.19 / S12.6 (NRR ≥ 25 dB)*	Required when ventilation noise exceeds 85 dBA

EMERGENCY PROCEDURES

Atmospheric Emergency / Alarm:

- All entrants evacuate space IMMEDIATELY upon alarm activation
- Attendant initiates rescue procedures — does NOT enter the space
- Attendant calls 911 and activates on-site rescue team
- Account for all entrants by name — report to rescue team
- Provide rescue team with atmospheric data and space configuration
- On-site rescue team enters only with proper equipment and training

Entrant Down / Unresponsive:

- Attendant attempts non-entry rescue using retrieval system (tripod/davit)
- Call 911 and activate confined space rescue team
- NEVER enter the space to attempt rescue without proper equipment and backup
- If extracted, begin CPR/AED and treat for atmospheric exposure
- Provide EMS with SDS information on potential chemical exposures

Engulfment Emergency:

- Shut off all material flow sources immediately
- Call 911 — request confined space rescue with engulfment capability
- Do not attempt to pull victim from engulfment material
- Maintain communication with victim if conscious
- Provide rescue team with material type and estimated depth

Emergency Contact Information:

- Emergency Services: 911
- Confined Space Rescue Team: [Insert Name & Phone]
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Poison Control: 1-800-222-1222

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
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7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Underground Vault Entry

Regulatory References: 29 CFR 1910.146, 29 CFR 1910.269(e)
Document No: FSS-JHA-036 | Revision: 0 | Date: _____

Project Name:		**Date:**	
Location:		**JHA Number:**	
Supervisor:		**Permit Required:**	☐ Yes ☐ No
Prepared By:		**Reviewed By:**	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Vault Identification & Access	Traffic near vault opening Unauthorized access Unknown vault condition	H M H	Set up traffic control (cones, signs, flaggers) per MUTCD Verify vault location against utility maps Barricade work area with minimum 10-ft perimeter Post confined space entry signage Remove vault cover using proper lifting techniques/tools
2. Atmospheric Testing	Toxic atmosphere (H2S, CO) Oxygen deficiency/enrichment Explosive atmosphere (LEL)	H H H	Test atmosphere BEFORE entry at all levels (top, middle, bottom) Calibrate multi-gas detector per manufacturer specs O2: 19.5%-23.5%, LEL: <10%, CO: <25 ppm, H2S: <10 ppm Continuous atmospheric monitoring throughout entry Document all readings on confined space entry permit
3. Ventilation Setup	Inadequate air supply Recirculation of contaminated air Noise from blower equipment	H M M	Position forced-air ventilation blower at vault opening Ensure fresh air intake is upwind and away from exhaust sources Supply ductwork to bottom of vault for positive ventilation Run ventilation minimum 15 minutes before entry Retest atmosphere after ventilation and before entry
4. Entry & Work Operations	Falls during entry/exit Ergonomic strain (cramped space)	H M H	Use fixed ladder or approved entry/egress equipment Attendant stationed at vault opening at all times

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	Electrical contact Insects/vermin	M	Entrant wears full-body harness connected to retrieval system Verify all circuits de-energized and LOTO applied before work Rotate workers to minimize time in cramped positions Inspect vault for insects/vermin before and during entry
5. Cable/Equipment Work	Electrical contact with energized cables Pinch points Cuts from cable/tools Chemical exposure (cable insulation)	H M M L	Confirm zero-energy state on all cables before handling Use voltage-rated insulating gloves and tools Identify and mark ALL conductors in the vault Use proper cable-cutting tools; secure cable ends Wear chemical-resistant gloves if handling splicing compounds Maintain communication with surface attendant at all times
6. Exit & Securing Vault	Falls during exit Leaving vault unsecured Tool/equipment left below	M M L	Inventory all tools and materials before exiting Exit using fixed ladder with three-point contact Replace vault cover securely; verify flush with grade Remove traffic control devices only after vault is secured Complete confined space permit closeout documentation Debrief crew on any issues encountered

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Hard Hat (ANSI Z89.1 Type I, Class E)	☐ Safety Glasses (ANSI Z87.1)
☐ FR-Rated Clothing	☐ Steel-Toe Boots (ASTM F2413)
☐ Rubber Insulating Gloves (Class appropriate)	☐ Full-Body Harness with Retrieval Line
☐ Multi-Gas Detector (LEL, O2, CO, H2S)	☐ High-Visibility Vest (ANSI/ISEA 107 Class 2)
☐ Hearing Protection (if noise >85 dBA)	☐ Respiratory Protection (SCBA/SAR if required)

EMERGENCY PROCEDURES

1. If atmospheric alarm sounds, immediately evacuate the vault using the retrieval system. Do NOT re-enter until atmosphere is retested and verified safe.

2. In case of water intrusion or flooding, evacuate immediately. Notify supervisor and de-energize all electrical sources if safe to do so.

3. If a worker becomes unresponsive, activate the retrieval system from the surface. Do NOT enter the vault for rescue without proper equipment and training.

4. For electrical contact, de-energize the source if safe. Call 911 immediately. Begin CPR if the victim is unresponsive and not breathing.

5. Administer first aid for insect bites/stings. Seek medical attention for allergic reactions. Ensure EpiPen is available if known allergies exist.

6. Report all incidents to site supervisor immediately. Complete incident report within 24 hours.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
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REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

CONFINED SPACE ENTR

Forbes Safety Solutic

Ref: 29 CFR 1910.146 | 29 CFR 192

Company:	
Space ID / Location:	
Date:	
Time In:	
Time Out:	
Purpose of Entry:	

PRE-ENTRY CHECK

#	Pre-Entry Item	Yes	No	N/A
1	Space isolated (lockout/tagout)?			
2	Atmosphere tested?			
3	Ventilation in place?			
4	Rescue equipment staged?			
5	Communication established?			
6	Entry supervisor briefed crew?			

ATMOSPHERIC MONI

Acceptable Limits: O_2 19.5–23.5% | LEL <10% | CO <25 ppm | H_2S <10 ppm

Time	O_2 %	LEL %	CO (ppm)

PERSONNEL	
Entry Supervisor:	
Attendant(s):	
Entrant(s):	

EMERGENCY CONTACTS & RI	
Emergency Contact Name/Phone:	
Rescue Service:	
Rescue Service Phone:	
Nearest Hospital:	

PERMIT CANCELLA	
Reason for Cancellation:	
Time of Cancellation:	
Cancelled By (Signature):	
Date:	

Y PERMIT

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6 Subpart AA

KLIST

		Notes

TORING

H_2S (ppm)	Other	Initials

ESCUE SERVICE

TION

Our Standard

CONFINED SPACE ENTRY PROGRAM

Written Safety Program

[COMPANY NAME]

[Company Address]

[City, State ZIP]

[Phone Number]

Revision Date: [MM/DD/YYYY]

Revision Number: [1.0]

Prepared by Forbes Safety Solutions

Document Control

This document is the property of [COMPANY NAME]. It must be reviewed and updated at least annually or when conditions change.

Revision #	Date	Description of Change	Approved By
1.0	[Date]	Initial Release	[Name/Title]

Table of Contents

Note: Right-click and select "Update Field" to refresh the Table of Contents after editing.

1. Purpose and Scope

1.1 Purpose

The purpose of this Confined Space Entry Program is to establish the procedures and practices necessary to protect employees from the hazards of entry into permit-required confined spaces. This program complies with OSHA's Permit-Required Confined Spaces standard and provides a systematic approach to identifying confined spaces, evaluating their hazards, and implementing controls to ensure safe entry and work.

Confined spaces represent some of the most hazardous work environments. Atmospheric hazards, engulfment, entrapment, and other serious dangers claim an average of 92 worker lives each year. This program is designed to prevent such incidents at [COMPANY NAME].

1.2 Scope

This program applies to all [COMPANY NAME] employees, subcontractors, and temporary workers who may enter or work in or around confined spaces. This includes, but is not limited to:

- Storage tanks, process vessels, and silos
- Vaults, pits, and manholes
- Pipelines and ductwork large enough for employee entry
- Boilers, furnaces, and heat exchangers
- Sewers, storm drains, and underground utility vaults
- Hoppers, bins, and rail tank cars
- Excavations and trenches that meet confined space criteria
- Attic spaces, crawl spaces, and similar areas with limited access

1.3 Regulatory References

- 29 CFR 1910.146 – Permit-Required Confined Spaces (General Industry)
- 29 CFR 1926 Subpart AA – Confined Spaces in Construction
- 29 CFR 1910.147 – Control of Hazardous Energy (Lockout/Tagout)
- 29 CFR 1910.134 – Respiratory Protection
- 29 CFR 1910.1200 – Hazard Communication
- ANSI/ASSE Z117.1 – Safety Requirements for Confined Spaces
- NFPA 350 – Guide for Safe Confined Space Entry and Work

2. Definitions

Confined Space: A space that (1) is large enough and so configured that an employee can bodily enter and perform assigned work, (2) has limited or restricted means for entry or exit, and (3) is not designed for continuous employee occupancy.

Permit-Required Confined Space (PRCS): A confined space that has one or more of the following characteristics: (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, or (4) contains any other recognized serious safety or health hazard.

Non-Permit Confined Space: A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Acceptable Entry Conditions: Conditions that must exist in a permit space to allow safe entry and work. Includes atmospheric monitoring results within acceptable limits.

Atmospheric Testing: The process of monitoring the air within a confined space using calibrated direct-reading instruments to determine if the atmosphere is safe for entry.

Authorized Entrant: An employee who is authorized by the employer to enter a permit space.

Attendant: An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties.

Entry Supervisor: The person responsible for determining if acceptable entry conditions are present at a permit space, for authorizing entry, overseeing entry operations, and terminating entry.

Engulfment: The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance.

Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following: flammable gas/vapor/mist >10% of LEL; airborne combustible dust; oxygen <19.5% or >23.5%; atmospheric concentration of any substance exceeding its PEL; any other condition that is IDLH.

Hot Work: Operations capable of providing a source of ignition (e.g., riveting, welding, cutting, burning, heating).

Immediately Dangerous to Life or Health (IDLH): 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.

Isolation: The process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as blanking or blinding, misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout; or blocking or disconnecting all mechanical linkages.

Inerting: The displacement of the atmosphere in a permit space by a noncombustible gas to such an extent that the resulting atmosphere is noncombustible. WARNING: An inerted space is IDLH and requires supplied air for entry.

Retrieval System: The equipment used for non-entry rescue of persons from permit spaces, including a retrieval line, chest or full-body harness, wristlets, and a mechanical device or fixed point sufficient to aid in rescue.

3. Roles and Responsibilities

3.1 Employer / Management

- Establish, implement, and maintain this Confined Space Entry Program
- Identify and evaluate all confined spaces in the workplace
- Inform employees of the existence, location, and danger of permit-required confined spaces by posting danger signs or other effective means
- Provide all necessary confined space entry equipment at no cost to employees
- Ensure all employees involved in confined space operations are properly trained
- Coordinate entry operations when both host employer and contractor employees will be working in or near permit spaces
- Conduct annual program review and update as necessary
- Ensure rescue services are available and capable of responding in a timely manner
- Maintain all required documentation and records

3.2 Entry Supervisor

- Know the hazards that may be faced during entry, including the mode, signs/symptoms, and consequences of exposure
- Verify that all tests specified by the permit have been conducted and that all procedures and equipment are in place before endorsing the permit and allowing entry
- Terminate the entry and cancel the permit when entry operations are completed or when a prohibited condition arises
- Verify that rescue services are available and that means for summoning them are operable
- Remove unauthorized individuals from the permit space or its vicinity
- Determine that entry operations remain consistent with the terms of the permit and acceptable entry conditions are maintained
- Ensure the permit is completed, signed, and posted at the entry point

3.3 Authorized Entrant

- Know the hazards that may be faced during entry, including the mode, signs/symptoms, and consequences of exposure
- Properly use all equipment as required (PPE, monitoring equipment, communications, rescue equipment)
- Communicate with the attendant as necessary so the attendant can monitor entrant status and alert entrants to evacuate if necessary
- Alert the attendant when the entrant recognizes any warning sign or symptom of a dangerous condition or detects a prohibited condition

- Exit the permit space as quickly as possible when ordered to evacuate, when recognizing signs of exposure, when a prohibited condition exists, or when an evacuation alarm is activated

3.4 Attendant

- Know the hazards that may be faced during entry, including the mode, signs/symptoms, and consequences of exposure
- Remain outside the permit space during entry operations and maintain an accurate count of entrants
- Maintain effective and continuous communication with authorized entrants
- Monitor activities inside and outside the space to determine if it is safe for entrants to remain
- Order the entrants to evacuate immediately if a prohibited condition is detected, if behavioral effects of exposure are observed, if a situation outside the space could endanger entrants, or if the attendant cannot effectively perform all required duties
- Summon rescue and emergency services as soon as it is determined that entrants may need assistance
- Perform non-entry rescue procedures as specified in the rescue plan
- Do NOT enter the permit space for any reason unless relieved by another authorized attendant
- Keep unauthorized persons from entering the permit space
- Inform entrants and the entry supervisor if unauthorized persons enter the space

4. Confined Space Entry Procedures

4.1 Space Identification and Evaluation

[COMPANY NAME] shall identify all confined spaces in the workplace using the Space Inventory Form (Appendix C). Each space shall be evaluated to determine if it is a permit-required confined space. The evaluation shall consider:

- Configuration and physical characteristics of the space
- Potential for hazardous atmospheres (from the process, materials stored, adjacent operations, or the space itself)
- Potential for engulfment by stored materials
- Internal configuration hazards (inwardly converging walls, floors that slope to a smaller cross-section)
- Other recognized serious hazards (mechanical, electrical, hydraulic, thermal, chemical)
- Historical information about the space (previous incidents, materials processed)

Spaces shall be re-evaluated whenever conditions change, processes are modified, or new information about the space becomes available.

4.2 Permit System

A Confined Space Entry Permit (Appendix A) shall be completed and authorized before any employee enters a permit-required confined space. The permit shall include:

- Space identification and location
- Purpose of entry and authorized duration
- Date and time of entry authorization and expiration
- Names of authorized entrants, attendants, and the entry supervisor
- Hazards of the permit space
- Measures used to isolate the permit space and eliminate or control hazards (lockout/tagout, ventilation, etc.)
- Acceptable entry conditions (atmospheric limits, temperature, etc.)
- Results of initial and periodic atmospheric tests with tester's initials
- Rescue and emergency services and how to summon them
- Communication procedures between entrants and attendants
- Equipment required (PPE, testing, communications, lighting, barriers)
- Hot work permit number (if applicable)
- Any other permits issued in connection with the entry (e.g., hot work, lockout/tagout)

The permit shall be posted at the entry point and shall be valid for one work shift only. Permits shall be canceled when entry operations are completed or when a prohibited condition arises. Canceled permits shall be retained for at least one year for program review.

4.3 Atmospheric Testing

Atmospheric testing is mandatory before any entry into a permit-required confined space and shall continue throughout the duration of entry. Testing shall be performed in the following order:

4.3.1 Testing Sequence

Atmospheric testing shall always be performed in this specific order:

- 1. OXYGEN (O_2) — Test first because combustible gas meters require adequate oxygen to function accurately. Acceptable range: 19.5% to 23.5%.
- 2. COMBUSTIBLE GASES (LEL) — Test second. Acceptable level: Less than 10% of the Lower Explosive Limit (LEL).
- 3. TOXIC GASES — Test third. Common toxic gases and their Permissible Exposure Limits include: Hydrogen Sulfide (H_2S): Less than 10 ppm; Carbon Monoxide (CO): Less than 25 ppm. Additional toxic substances shall be tested based on the specific hazards of the space.

4.3.2 Atmospheric Monitoring Requirements

- Testing shall be conducted at multiple levels within the space (top, middle, bottom) because gases stratify by weight
- Initial testing shall be performed from outside the space using remote probes or sampling lines
- Continuous monitoring shall be maintained throughout the duration of the entry
- If continuous monitoring is not feasible, periodic monitoring shall be conducted at intervals not exceeding 15 minutes
- All atmospheric monitoring results shall be documented on the Atmospheric Testing Log (Appendix B) and on the entry permit
- If the atmosphere is found to be outside acceptable limits at any time, all entrants shall immediately evacuate the space

4.3.3 Acceptable Atmospheric Conditions

Atmospheric Hazard	Acceptable Level	Action Level	IDLH Level
Oxygen (O_2)	19.5% – 23.5%	< 19.5% or > 23.5%	< 16%
Combustible Gas (LEL)	< 10% LEL	≥ 10% LEL	≥ 20% LEL
Hydrogen Sulfide (H_2S)	< 10 ppm	≥ 10 ppm	100 ppm
Carbon Monoxide (CO)	< 25 ppm	≥ 25 ppm	1,200 ppm

4.3.4 Instrument Calibration

All atmospheric monitoring instruments shall be:

- Calibrated according to the manufacturer's instructions before each day of use (bump test minimum)
- Full calibration performed at intervals specified by the manufacturer (typically monthly or per manufacturer's schedule)
- Calibrated using certified calibration gas that is traceable to NIST standards
- Maintained with current calibration records that include date, gas concentrations used, and person performing calibration
- Removed from service immediately if calibration fails or if the instrument is damaged
- Replaced or repaired by qualified personnel only

4.4 Ventilation

Mechanical ventilation shall be provided to maintain acceptable atmospheric conditions within the permit space:

- Forced-air ventilation shall be used to maintain oxygen levels within the acceptable range and to reduce concentrations of toxic and combustible gases below action levels
- Ventilation equipment shall be positioned to direct fresh air into the space and to avoid recirculating contaminated air
- The air supply for ventilation shall be from a clean source — never from areas where contaminants may be present
- Ventilation shall be started before entry and continued for a sufficient time to purge the space before the initial entry
- Ventilation shall continue throughout the duration of entry operations
- If ventilation is interrupted, all entrants shall evacuate and the space shall be re-tested before re-entry
- Natural ventilation alone is generally NOT sufficient for permit-required confined spaces

4.5 Isolation and Lockout/Tagout

Before entry, the permit space shall be isolated from all energy sources and material inputs:

- All pipes, lines, and ducts carrying materials into the space shall be blanked, blinded, disconnected, or double block-and-bled
- All mechanical equipment within the space shall be locked out and tagged out per 29 CFR 1910.147
- Electrical energy sources shall be de-energized and locked out
- Hydraulic, pneumatic, and other stored energy sources shall be relieved, blocked, and secured
- Physical barriers shall be used where blanking/blinding is not feasible

- The entry supervisor shall verify all isolation and LOTO measures before authorizing entry

4.6 Rescue Procedures

[COMPANY NAME] shall ensure that rescue services are available for confined space emergencies. The following rescue hierarchy shall be used:

4.6.1 Non-Entry Rescue (Preferred)

Non-entry rescue is the preferred rescue method and shall be used whenever possible:

- Each authorized entrant shall wear a chest or full-body harness with a retrieval line attached to the center of the back near shoulder level, above the head, or at another point approved by the manufacturer
- The other end of the retrieval line shall be attached to a mechanical retrieval device or fixed point outside the space
- The retrieval system shall be configured so that rescue can begin as soon as the need is recognized
- A mechanical retrieval device (tripod with winch) shall be available at vertical entries exceeding 5 feet in depth
- Retrieval lines shall be managed to prevent entanglement and to maintain the ability to retrieve the entrant at all times

4.6.2 Entry Rescue

If non-entry rescue is not feasible or fails, entry rescue shall be performed only by trained rescue personnel:

- Entry rescuers shall be trained in CPR, first aid, and the use of rescue equipment including SCBA/SAR
- Rescuers shall practice rescue operations at least once every 12 months using simulated confined space conditions
- Rescue services shall be capable of responding within a timeframe appropriate to the identified hazards
- If using a third-party rescue service (fire department, etc.), [COMPANY NAME] shall evaluate the service's capabilities, response time, and ability to function in the specific permit spaces
- Rescue personnel shall be provided with all information about the space, its hazards, and the conditions of the entrants
- Rescuers entering the space shall be treated as authorized entrants and all entry procedures shall apply

4.7 Contractor Coordination

When [COMPANY NAME] hires contractors to perform confined space work on company premises, the following coordination shall occur:

- Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program
- Apprise the contractor of the hazards identified in the specific permit space(s)
- Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces
- Coordinate entry operations with the contractor when both host and contractor employees will be working in or near the same permit space
- Debrief the contractor after entry operations regarding any hazards confronted or created during entry
- Obtain the contractor's confined space program and entry procedures for review

5. Training Requirements

5.1 General Training

All employees who may be involved in confined space operations shall receive training appropriate to their assigned duties. Training shall be provided before the employee is first assigned duties involving confined spaces and before there is a change in assigned duties.

5.2 Training by Role

5.2.1 Authorized Entrant Training

- Recognition of confined space hazards (atmospheric, physical, engulfment, entrapment)
- Signs, symptoms, and consequences of exposure to atmospheric hazards
- Proper use of atmospheric monitoring equipment
- Proper use of personal protective equipment (PPE), including respiratory protection
- Communication procedures with the attendant
- Emergency and self-rescue procedures
- Prohibition against unauthorized self-rescue by other entrants

5.2.2 Attendant Training

- All topics covered in Authorized Entrant Training
- Duties and responsibilities of the attendant role
- Procedures for summoning rescue and emergency services
- Non-entry rescue procedures and equipment use
- Maintaining an accurate count and identity of entrants
- Recognizing behavioral effects of hazard exposure in entrants
- Procedures for preventing unauthorized entry

5.2.3 Entry Supervisor Training

- All topics covered in Authorized Entrant and Attendant Training
- Permit completion, authorization, and cancellation procedures
- Hazard assessment and acceptable entry condition verification
- Coordination of entry operations and multi-employer communication
- Authority to terminate entry and cancel permits
- Program administration and documentation requirements

5.2.4 Rescue Team Training

- All topics covered in Authorized Entrant Training
- CPR and first aid certification (current)

- Use of rescue equipment (retrieval systems, SCBA/SAR, patient packaging)
- Practice rescue operations at least once every 12 months using simulated conditions representative of actual permit spaces
- Recognition and treatment of medical emergencies common to confined space incidents

5.3 Retraining

Retraining shall be provided when:

- Job duties change or new confined spaces are introduced
- A change in permit space operations creates a hazard about which the employee has not been trained
- The employer has reason to believe there are deviations from the entry procedures or inadequacies in the employee's knowledge
- After any confined space incident or near miss
- At minimum, annual refresher training shall be provided to maintain competency

5.4 Training Documentation

Training records shall include: employee name and signature, date(s) of training, trainer name and qualifications, topics covered, and duration. Records shall be maintained for the duration of employment plus three years. Use the Training Sign-Off Sheet (Appendix E) to document each session.

6. Inspection and Audit Procedures

6.1 Permit Review

[COMPANY NAME] shall review canceled entry permits within one year of each entry to ensure that the program is protecting employees. The review shall evaluate:

- Whether the permit procedures were followed correctly
- Whether the atmospheric testing results were within acceptable limits
- Whether rescue provisions were adequate
- Whether any problems or deviations occurred during entry
- Whether any corrective actions are needed to improve the program

6.2 Annual Program Audit

A comprehensive audit of the entire Confined Space Entry Program shall be conducted annually. The audit shall be performed by a person knowledgeable about confined space entry and shall evaluate:

- Space inventory accuracy and completeness
- Permit adequacy and compliance
- Atmospheric monitoring procedures and instrument calibration records
- Training adequacy and currency of all involved employees
- Rescue plan effectiveness and rescue drill results
- Equipment condition and availability
- Contractor coordination effectiveness
- Incident and near-miss investigation results and corrective actions
- Compliance with applicable OSHA standards

6.3 Equipment Inspection

All confined space entry equipment shall be inspected before each use and maintained per manufacturer specifications:

- Atmospheric monitoring instruments — daily bump test, monthly full calibration
- Ventilation equipment — functional test, power source verification
- Retrieval systems (tripod, winch) — mechanical inspection, cable/harness check
- Communication equipment — functional test before each entry
- Respiratory protection — inspection per 29 CFR 1910.134
- Personal protective equipment — visual inspection for damage, proper fit verification
- Lighting — functional test, intrinsically safe verification where required

7. Documentation and Recordkeeping

[COMPANY NAME] shall maintain the following records:

Record Type	Retention Period	Responsible Party
Confined Space Inventory	Duration of space existence + 1 year	Safety Manager
Entry Permits (canceled)	Minimum 1 year	Entry Supervisor
Atmospheric Testing Logs	1 year minimum (retain with permit)	Entry Supervisor
Instrument Calibration Records	Duration of instrument service + 1 year	Safety Manager
Training Records	Duration of employment + 3 years	Safety Manager
Rescue Drill Records	5 years minimum	Safety Manager
Incident/Near Miss Reports	5 years minimum	Safety Manager
Annual Program Audit Reports	5 years minimum	Management
Contractor Coordination Records	Duration of contract + 1 year	Safety Manager

All records shall be readily accessible for review by OSHA compliance officers, employees, and their designated representatives.

Appendix A: Confined Space Entry Permit

Field	Information
Permit Number:	[ ]
Space Name/ID:	[ ]
Space Location:	[ ]
Purpose of Entry:	[ ]
Date of Entry:	[ ]
Time Authorized:	[ ] Time Expires: [ ]

Personnel

Role	Name(s)
Entry Supervisor:	
Authorized Entrant(s):	
Attendant(s):	
Rescue Team/Service:	

Hazard Identification

- ☐ Hazardous Atmosphere ☐ Oxygen Deficiency ☐ Oxygen Enrichment
- ☐ Flammable Gas/Vapor ☐ Toxic Gas/Vapor ☐ Combustible Dust
- ☐ Engulfment Hazard ☐ Entrapment Hazard ☐ Mechanical Hazard
- ☐ Electrical Hazard ☐ Thermal Hazard ☐ Noise Hazard
- ☐ Falling Object Hazard ☐ Slip/Trip/Fall Hazard ☐ Other: _____

Hazard Control Measures

- ☐ Lockout/Tagout completed ☐ Lines blanked/blinded/disconnected
- ☐ Mechanical ventilation in place ☐ Continuous atmospheric monitoring
- ☐ Pedestrian/vehicle barricades ☐ Hot work permit issued (#_____)
- ☐ Retrieval system in place ☐ Communication system verified
- ☐ Emergency services notified ☐ Other: _____

Atmospheric Test Results

Time	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Other	Tester Initials

Required PPE / Equipment

- ☐ Hard Hat ☐ Safety Glasses ☐ Hearing Protection ☐ Gloves (Type: ____)
- ☐ Steel-Toe Boots ☐ FR Clothing ☐ Chemical-Resistant Suit
- ☐ Full-Body Harness with Retrieval Line ☐ SCBA ☐ SAR (Supplied Air)
- ☐ Explosion-Proof Lighting ☐ GFCI Protected Power ☐ Radio/Communication
- ☐ Multi-Gas Monitor ☐ Tripod/Winch ☐ Other: _____

Authorization

I verify that all precautions have been taken, acceptable entry conditions exist, and rescue services are available.

Entry Supervisor Signature: _____ Date/Time: _____

Permit Canceled By: _____ Date/Time: _____

Reason for Cancellation: ☐ Work Complete ☐ Prohibited Condition ☐ Shift Change ☐ Other: _____

Appendix B: Atmospheric Testing Log

Field	Information
Space Name/ID:	[ ]
Permit Number:	[ ]
Date:	[ ]
Monitor Make/Model:	[ ]
Monitor Serial #:	[ ]
Last Calibration Date:	[ ]
Bump Test Performed:	☐ Yes ☐ No Time: [ ] By: [ ]

Monitoring Results

Test at top, middle, and bottom of space. Record all readings.

Time	Level (T/M/B)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Other (specify)	Tester Initials

Acceptable Limits: O_2: 19.5–23.5% | LEL: <10% | H_2S: <10 ppm | CO: <25 ppm

Tester Signature: _____ Date: _____

Appendix C: Confined Space Inventory Form

This inventory shall be reviewed and updated at least annually. All spaces shall be evaluated to determine permit-required status.

Space ID #	Space Name / Description	Location	Permit Required? (Y/N)	Primary Hazards	Last Evaluation Date	Evaluated By

Inventory Completed By: _____ Date: _____

Reviewed By: _____ Date: _____

Appendix D: Pre-Entry Checklist

Field	Information
Space Name/ID:	[ ]
Permit Number:	[ ]
Date:	[ ]
Entry Supervisor:	[ ]

Pre-Entry Verification

#	Item	Yes	No	N/A	Initials
1	Has the space been identified and evaluated?				
2	Has the entry permit been completed and authorized?				
3	Have all entrants, attendants, and supervisors been trained?				
4	Has the space been isolated (LOTO, blanking, blinding)?				
5	Has atmospheric testing been performed (O_2, LEL, toxics)?				
6	Are atmospheric readings within acceptable limits?				
7	Is mechanical ventilation in place and operating?				
8	Is continuous atmospheric monitoring available?				
9	Is the retrieval system set up and operational?				
10	Is rescue equipment on-site and ready for use?				
11	Has the rescue service been notified/confirmed?				
12	Is communication equipment tested and working?				
13	Is all required PPE available and properly fitted?				
14	Are barricades/barriers in place around the entry point?				
15	Is the entry permit posted at the entry point?				
16	Has a pre-entry safety briefing been conducted?				
17	Is hot work permit issued (if applicable)?				
18	Is adequate lighting available (intrinsically safe if required)?				

Entry Supervisor Signature: _____ Date: _____

Appendix E: Training Sign-Off Sheet

Field	Information
Training Topic:	Confined Space Entry Program
Training Date:	[ ]
Training Location:	[ ]
Trainer Name:	[ ]
Trainer Qualifications:	[ ]
Training Duration:	[ ]

Topics Covered

- ☐ Confined space identification and classification
- ☐ Permit system and entry procedures
- ☐ Atmospheric testing procedures and instrument operation
- ☐ Ventilation requirements and procedures
- ☐ Roles and responsibilities (entrant, attendant, supervisor)
- ☐ Isolation and lockout/tagout requirements
- ☐ Rescue procedures (non-entry and entry rescue)
- ☐ Personal protective equipment use
- ☐ Emergency procedures and evacuation
- ☐ Applicable OSHA standards (29 CFR 1910.146, 1926 Subpart AA)

Employee Acknowledgment

By signing below, I acknowledge that I have received training in the above topics, understand the material presented, had the opportunity to ask questions, and agree to comply with the confined space entry requirements of [COMPANY NAME].

#	Employee Name (Print)	Employee Signature	Date	Role Trained (E/A/S/R)

E = Entrant | A = Attendant | S = Supervisor | R = Rescue

Trainer Signature: _____ Date: _____

FORBES SAFETY SOLUTIONS

Permit-Required Confined Space Entry Program

Enhanced/Comprehensive

Prepared for:
[COMPANY NAME]

Regulatory References:
29 CFR 1910.146 | 29 CFR 1926 Subpart AA

Effective Date: [DATE]
Review Date: [ANNUAL REVIEW DATE]

Table of Contents

1. Purpose and Scope

This Permit-Required Confined Space Entry Program establishes comprehensive procedures for the safe identification, evaluation, and entry of permit-required confined spaces at [COMPANY NAME] worksites. This program applies to all employees, contractors, and subcontractors who may enter, supervise, or support confined space entry operations.

This enhanced program exceeds minimum regulatory requirements by incorporating best practices for atmospheric monitoring, rescue planning, contractor coordination, and annual program review to ensure the highest level of worker protection.

2. Regulatory References

- 29 CFR 1910.146 — Permit-Required Confined Spaces (General Industry)
- 29 CFR 1926 Subpart AA — Confined Spaces in Construction
- ANSI/ASSE Z117.1 — Safety Requirements for Confined Spaces
- NFPA 350 — Guide for Safe Confined Space Entry and Work
- OSHA Confined Space CPL Directive

3. Definitions

Confined Space:

A space that: (1) is large enough for an employee to enter and perform work; (2) has limited or restricted means of entry or exit; and (3) is not designed for continuous employee occupancy.

Permit-Required Confined Space (PRCS):

A confined space that has 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 to engulf an entrant; (3) has an internal configuration such that an entrant could be trapped or asphyxiated; or (4) contains any other recognized serious safety or health hazard.

Atmospheric Hazard:

An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following: flammable gas/vapor/mist >10% LEL, airborne combustible dust, oxygen <19.5% or >23.5%, atmospheric concentration of any substance exceeding its PEL.

Entry:

The action by which any part of an employee's body breaks the plane of an opening into a permit-required confined space.

Alternate Entry Procedures:

Entry procedures used when the employer can demonstrate that the only hazard in the space is a controlled atmospheric hazard that can be eliminated through continuous forced air ventilation alone.

4. Roles and Responsibilities

4.1 Employer / Program Administrator

- Develop, implement, and maintain this written confined space program
- Designate a Confined Space Program Administrator
- Ensure adequate resources for equipment, training, and rescue services
- Conduct annual program reviews and updates
- Maintain the confined space inventory

4.2 Entry Supervisor

- Verify all entry conditions and authorize entry by signing the permit
- Ensure all pre-entry testing is completed and documented
- Ensure rescue services are available and have been notified
- Cancel the entry permit and terminate entry when conditions warrant
- Remove unauthorized individuals from the area
- Ensure acceptable entry conditions are maintained throughout entry

4.3 Authorized Entrant

- Know the hazards and symptoms of exposure
- Use equipment properly (PPE, communication, monitoring)
- Communicate with attendant continuously
- Alert the attendant when warning signs or symptoms are recognized
- Exit the space immediately when ordered or when hazards are detected

4.4 Attendant

- Remain at the entry point at all times during entry operations
- Monitor entrants and conditions inside and outside the space
- Maintain an accurate count of all entrants in the space
- Order evacuation when conditions warrant
- Summon rescue services when needed — never enter the space for rescue
- Prevent unauthorized entry

4.5 Rescue Team

- Be trained and equipped for confined space rescue operations
- Practice rescue from representative spaces at least annually
- Be available within an appropriate response time
- Ensure at least one member is trained in first aid and CPR

5. Confined Space Identification and Inventory

A comprehensive survey shall be conducted of all worksite areas to identify confined spaces. Each identified space shall be:

1. Documented in the Confined Space Inventory Log (Appendix B)
2. Evaluated for permit-required characteristics
3. Classified as permit-required or non-permit confined space
4. Marked with appropriate warning signage: "DANGER — PERMIT-REQUIRED CONFINED SPACE — DO NOT ENTER"
5. Re-evaluated whenever conditions change or at least annually

Common confined spaces include but are not limited to: manholes, vaults, tanks, vessels, silos, bins, hoppers, pits, pipelines, trenches, excavations, tunnels, and ductwork.

6. Hazard Assessment

Prior to any entry, a thorough hazard assessment shall be conducted for each permit-required confined space. The assessment shall evaluate:

- Atmospheric hazards (toxic, flammable, oxygen-deficient/enriched)
- Physical hazards (engulfment, entrapment, moving parts, energized equipment)
- Chemical hazards (residual materials, cleaning agents)
- Biological hazards (mold, bacteria, animal waste)
- Thermal hazards (extreme heat/cold)
- Noise hazards
- Configuration hazards (converging walls, sloped floors)

The hazard assessment shall be documented on the entry permit and reviewed with all entry personnel before entry begins.

7. Atmospheric Testing and Monitoring

7.1 Testing Requirements

Atmospheric testing shall be conducted before entry and continuously during entry operations. Testing shall be performed in the following order:

1. Oxygen (O_2) — test first, as other sensors require adequate oxygen to function
2. Combustible gases (LEL) — test second
3. Toxic gases (H_2S, CO, and others as identified) — test third

Testing shall be conducted at multiple levels within the space (top, middle, bottom) to account for stratification of gases.

7.2 Acceptable Atmospheric Levels

Parameter	Acceptable Level	Action Level	IDLH
Oxygen (O_2)	19.5% – 23.5%	< 19.5% or > 23.5%	< 16%
LEL (Combustible Gas)	< 10% LEL	≥ 10% LEL	≥ 20% LEL
Hydrogen Sulfide (H_2S)	< 10 ppm	≥ 10 ppm	100 ppm
Carbon Monoxide (CO)	< 25 ppm	≥ 25 ppm	1,200 ppm
Sulfur Dioxide (SO_2)	< 2 ppm	≥ 2 ppm	100 ppm
Ammonia (NH_3)	< 25 ppm	≥ 25 ppm	300 ppm

7.3 Instrument Calibration

All atmospheric monitoring instruments shall be calibrated according to manufacturer specifications and at minimum before each day of use with known concentration calibration gas. Calibration records shall be maintained.

8. Ventilation Requirements

Mechanical ventilation shall be used to control atmospheric hazards within permit-required confined spaces:

- Forced air ventilation shall supply clean, breathable air to the space
- Ventilation equipment shall be positioned to prevent recirculation of contaminated air
- Air supply intake shall be located in a clean air zone away from exhaust or contamination sources
- Ventilation shall operate continuously during entry when used as an atmospheric control measure
- Ventilation alone does not eliminate the need for atmospheric monitoring

Ventilation rate shall be sufficient to maintain atmospheric conditions within acceptable levels as defined in Section 7.2.

9. Entry Permit System

No employee shall enter a permit-required confined space without a valid, signed entry permit. The permit shall include:

- Space identification and location
- Purpose of entry and authorized duration
- Names of authorized entrants, attendants, and entry supervisor
- Hazards of the space and control measures
- Atmospheric monitoring results (pre-entry and continuous)
- Rescue and emergency procedures and contact information
- Communication procedures
- Equipment required (PPE, ventilation, lighting, barriers)
- Hot work permit number (if applicable)
- Lockout/tagout verification

Permits are valid for one shift only and shall be posted at the entry point. Completed permits shall be retained for at least one year for annual program review. A comprehensive entry permit form is provided in Appendix A.

10. Entry Procedures

10.1 Pre-Entry Checklist

1. Conduct a pre-entry briefing with all entry team members
2. Complete lockout/tagout/isolation of all energy sources
3. Verify rescue services are available and have been notified
4. Test the atmosphere — O_2, LEL, H_2S, CO (in that order, at multiple levels)

5. Verify ventilation equipment is operational
6. Ensure all required PPE and equipment is available and inspected
7. Complete and sign the entry permit
8. Post the permit at the entry point
9. Establish communication between entrant(s) and attendant
10. Verify barriers and signage are in place

10.2 During Entry

- Continuous atmospheric monitoring shall be maintained
- The attendant shall maintain communication with entrants at all times
- The attendant shall maintain an accurate count of entrants
- The entry supervisor shall periodically verify conditions remain acceptable
- If any atmospheric reading exceeds acceptable levels, all entrants shall immediately evacuate

10.3 Post-Entry

- All tools and equipment shall be removed from the space
- A head count of all entrants shall be verified
- The space shall be secured against unauthorized re-entry
- The entry permit shall be closed out with time and signature
- The completed permit shall be filed for record retention

11. Communication Procedures

Effective communication shall be established and maintained between the attendant and entrants throughout the entry operation. Acceptable communication methods include:

- Voice communication (direct or hands-free radio)
- Visual contact
- Hardwired intercom or telephone
- Rope signals (tug-line) — as a secondary backup only

Communication shall be tested before entry begins. If communication is lost at any time, entrants shall immediately evacuate the space.

12. Rescue and Emergency Services

12.1 Rescue Planning

Rescue planning shall be completed before any entry operation begins. The entry employer shall evaluate and select the appropriate rescue method:

- Self-rescue: entrant exits the space independently using retrieval systems
- Non-entry rescue: entrant is retrieved without another person entering the space (e.g., retrieval line and tripod)
- Entry rescue: trained rescuers enter the space to recover the entrant

12.2 On-Site Rescue Team

When on-site rescue is designated, the rescue team shall:

- Be trained in confined space rescue and first aid/CPR
- Practice making permit space rescues at least once every 12 months using representative simulated conditions
- Be equipped with appropriate PPE and rescue equipment
- Be notified prior to each entry and remain on standby

12.3 Off-Site Rescue Service

When relying on off-site rescue services, the employer shall:

- Evaluate the rescue service's ability to respond in a timely manner
- Document response time — rescue must be achievable within a timeframe appropriate to the identified hazards
- Provide the rescue service with access to the space for practice and planning
- Ensure the rescue service is informed of the hazards of each space
- Verify annually that the service is capable and willing to respond

12.4 Retrieval Systems

Each authorized entrant shall use a chest or full-body harness with a retrieval line attached to a mechanical retrieval device or fixed anchor point when entering vertical spaces deeper than 5 feet. Wristlets may be used as an alternative if the employer can demonstrate that a harness is infeasible or creates a greater hazard.

13. Alternate Entry Procedures (Reclassification)

A permit-required confined space may be reclassified as a non-permit confined space under the following conditions (per 29 CFR 1910.146(c)(7)):

1. The space poses no actual or potential atmospheric hazards, OR
2. All hazards within the space are eliminated without entry, OR
3. The only hazard is a controlled atmospheric hazard that can be eliminated by continuous forced air ventilation alone (alternate entry per 1910.146(c)(5))

For alternate entry procedures:

- Continuous forced air ventilation shall be maintained throughout entry
- Atmospheric testing shall demonstrate the space is safe before entry
- A full entry permit is not required, but documentation of conditions and ventilation shall be maintained
- If hazards arise during entry, all entrants shall exit and the space reverts to permit-required status

14. Contractor Coordination

When contractors perform permit-required confined space entry at [COMPANY NAME] worksites:

14.1 Host Employer Responsibilities

- Inform contractors of permit-required confined spaces and their hazards
- Inform contractors of any precautions or procedures that the host has implemented for the protection of employees in or near the spaces
- Coordinate entry operations when both host and contractor employees will be working in or near the space
- Debrief the contractor at the conclusion of entry operations regarding any hazards encountered

14.2 Contractor Responsibilities

- Obtain all available information from the host employer about the confined space hazards
- Ensure contractor employees are properly trained and equipped
- Inform the host employer of the permit space program the contractor will follow
- Inform the host employer of any hazards encountered or created during entry

15. Training

All employees involved in confined space operations shall receive training before initial assignment and whenever there is a change in duties, a change in space conditions, or inadequacies in the program are identified. Training shall cover:

15.1 All Affected Employees

- Hazards of confined spaces and recognition of symptoms
- This written program and its requirements
- Prohibition against unauthorized entry

15.2 Authorized Entrants

- All items above plus:
- Proper use of atmospheric monitoring equipment
- Proper use of PPE and rescue equipment
- Communication procedures
- Emergency and evacuation procedures

15.3 Attendants

- Duties and responsibilities of attendants
- Emergency notification procedures
- Non-entry rescue techniques
- When to order evacuation

15.4 Entry Supervisors

- All entrant and attendant training
- Permit completion and authorization
- Hazard assessment and control evaluation
- Permit cancellation and termination of entry

15.5 Rescue Team Members

- All entrant training
- Confined space rescue techniques
- First aid and CPR (current certification)
- Annual practice rescue drills from representative spaces

16. Annual Program Review

[COMPANY NAME] shall review this confined space program at least annually, using the cancelled entry permits retained from the previous 12 months. The review shall evaluate:

- Whether the program adequately protects employees
- Any deficiencies identified during entry operations
- Incidents, near-misses, or rescue events
- Changes in confined space inventory
- Employee feedback and training effectiveness
- Equipment condition and adequacy

The review shall be documented and any revisions to the program shall be implemented promptly.

17. Recordkeeping

- Entry permits: retained for at least one year
- Training records: maintained for duration of employment
- Atmospheric monitoring calibration records: maintained for 3 years
- Confined space inventory: updated annually and when conditions change
- Annual program review documentation: retained for 5 years
- Rescue service evaluations: retained for 3 years
- Incident and near-miss reports: retained for 5 years

Appendix A: Confined Space Entry Permit

(Comprehensive Fillable Form)

Permit Number:	
Date:	
Space Location/ID:	
Purpose of Entry:	
Entry Supervisor:	
Phone/Radio:	
Estimated Entry Time:	
Estimated Exit Time:	

Authorized Personnel

Role	Name	Signature
Entrant #1		
Entrant #2		
Entrant #3		
Attendant #1		
Attendant #2		
Entry Supervisor		

Hazard Assessment

Hazard	Present? (Y/N)	Controls in Place
Atmospheric (toxic/flammable)		
Oxygen deficiency/enrichment		
Engulfment		
Entrapment		
Mechanical/moving parts		
Electrical		
Thermal extremes		
Other:		

Pre-Entry Atmospheric Monitoring

Parameter	Reading #1 (Top)	Reading #2 (Mid)	Reading #3 (Bottom)	Acceptable?
O_2 (%)				
LEL (%)				
CO (ppm)				
H_2S (ppm)				
Other:				

Instrument Make/Model: _____ Serial #: _____ Last Calibration: _____

Required Equipment Checklist

Equipment	Available? (Y/N)	Equipment	Available? (Y/N)
Atmospheric monitor		Ventilation blower	
Retrieval system/tripod		Communication equipment	
Full-body harness		Fire extinguisher	
SCBA/SAR		Barricades/signage	
Lighting		GFCI for all electrical	

Lockout/Tagout Verification

All energy sources isolated and locked out? ☐ Yes ☐ No

LOTO verified by: _____ Time: _____

Rescue Provisions

☐ On-site rescue team on standby ☐ Off-site rescue service notified

Rescue Service Contact: _____ Phone: _____

Estimated Response Time: _____

Authorization

I have reviewed conditions and authorize entry into this confined space.

Entry Supervisor Signature: _____ Date/Time: _____

Permit Closure

All entrants have exited: ☐ Yes Space secured: ☐ Yes

Closed by: _____ Date/Time: _____

Conditions encountered / notes: _____

Appendix B: Confined Space Inventory Log

Document all identified confined spaces at the worksite.

Facility / Worksite: _____ Conducted by: _____ Date: _____

Space ID	Location / Description	Type	PRCS? (Y/N)	Known Hazards	Last Assessment Date
CS-001					
CS-002					
CS-003					
CS-004					
CS-005					
CS-006					
CS-007					
CS-008					
CS-009					
CS-010					

Type codes: MH = Manhole, TK = Tank/Vessel, VT = Vault, PT = Pit, PP = Pipeline, TR = Trench, OT = Other

Reviewed by: _____ Date: _____

Appendix C: Pre-Entry Atmospheric Monitoring Record

Use this form to document continuous atmospheric monitoring during entry operations.

Permit Number:	
Space Location/ID:	
Date:	
Monitor Operator:	
Instrument Make/Model:	
Serial Number:	
Calibration Date:	

Monitoring Readings

Time	O_2 (%)	LEL (%)	CO (ppm)	H_2S (ppm)	Other	Initials

Action Taken for Out-of-Range Readings

Time	Parameter	Reading	Action Taken

Monitoring completed by: _____ Signature: _____

Entry Supervisor review: _____ Date: _____

CONFINED SPACE ENTRY

29 CFR 1910.146 & 1926 Subpart AA

Presenter: _____

Date: _____

FORBES SAFETY SOLUTIONS

TOOLBOX TALK

WHY THIS MATTERS

- From 2011 to 2018, 1,030 workers died in confined spaces — an average of 129 deaths per year (BLS Census of Fatal Occupational Injuries).
- More than 60% of confined space fatalities are would-be rescuers. The worker who goes in to save a buddy without proper equipment becomes the second victim.
- Atmospheric hazards are invisible killers: hydrogen sulfide (H2S) deadens your sense of smell at high concentrations, carbon monoxide (CO) is odorless, and oxygen-deficient air gives no warning before you collapse.
- Permit-required confined spaces account for the majority of fatalities. The permit exists to force you through a checklist that keeps you alive.
- Construction now has its own confined space standard (29 CFR 1926 Subpart AA) — if you're in construction, you must follow it, not just the general industry rule.

Source: BLS Confined Space Fatalities Fact Sheet

ATMOSPHERIC TESTING & PERMIT ELEMENTS

- Test the atmosphere BEFORE entry, in this order: (1) Oxygen — must be 19.5% to 23.5%, (2) Flammability (LEL) — must be below 10% of the lower explosive limit, (3) Toxics — H2S below 10 ppm, CO below 25 ppm.
- Test at multiple levels — top, middle, and bottom of the space. Gases stratify: H2S is heavier than air (sinks), methane is lighter (rises), CO mixes evenly.
- Continuous atmospheric monitoring during the entire entry, not just at the start. Conditions change — welding, coating, or disturbing sludge can release deadly gases instantly.
- Entry permit must include: space identification, purpose of entry, date/time, authorized entrants, attendant name, atmospheric readings, rescue procedures, communication method, and entry supervisor signature.
- Permit-required vs. non-permit: A permit-required space has a recognized hazard (atmospheric, engulfment, configuration, or other). You can reclassify to non-permit ONLY by eliminating all hazards and documenting the basis.

Source: OSHA 29 CFR 1910.146

ATTENDANT DUTIES & RESCUE PLANNING

- The attendant stays OUTSIDE the space for the entire entry. No exceptions. Their job is to monitor entrants, maintain communication, track who is inside, and summon rescue if anything goes wrong.
- The attendant must NEVER enter the space to attempt rescue. This is how 60% of confined space deaths happen. Your job is to call for help, not become the next victim.
- Communication must be continuous. If you lose contact with an entrant for any reason, initiate emergency procedures immediately — do not wait to see if they respond.
- Rescue planning: Non-entry rescue (retrieval systems with tripods and winches) is preferred. Entry rescue requires a trained rescue team with SCBA on standby. "Call 911" is not a rescue plan — municipal responders may not arrive equipped for confined space rescue.
- Every entrant must wear a chest or full-body harness attached to a retrieval line unless the retrieval line creates a greater hazard. The retrieval system must be in place and functional before anyone enters.

Source: CDC/NIOSH Confined Space Alert

DISCUSSION QUESTIONS

Take 5 minutes to discuss with your crew:

1. Can you identify every confined space on this site? Which ones are permit-required and which are not?

2. If our gas monitor alarmed right now, what's the immediate procedure? Who do you contact first?

3. Who is the trained attendant for today's entry, and what are the three things they must never do?

4. If you saw a co-worker collapse in a confined space, what would you do — and what would you NOT do?

ATTENDANCE SIGN-OFF

Date: _____ Topic: Confined Space Entry Presenter: _____

#	PRINT NAME	COMPANY	SIGNATURE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

PERMIT-REQUIRED CONFINED SPACE AWARENESS

Understanding Entry Hazards and Required Controls

Reference: 29 CFR 1910.146 | 29 CFR 1926 Subpart AA

FORBES SAFETY SOLUTIONS

KEY STATISTICS

~100

Workers die in confined spaces in the U.S. every year

60%

Of confined space fatalities are would-be rescuers

#1

Atmospheric hazards are the leading cause of confined space deaths

WHAT MAKES A SPACE "CONFINED" AND "PERMIT-REQUIRED"

Confined Space — Three Criteria — large enough to enter and perform work; has limited or restricted entry/exit; not designed for continuous occupancy

Permit-Required — Hazard #1 — contains or has the potential to contain a hazardous atmosphere (toxic, flammable, oxygen-deficient/enriched)

Permit-Required — Hazard #2 — contains material that could engulf or trap an entrant (grain, sand, water, sewage)

Permit-Required — Hazard #3 — has an internal configuration that could trap or asphyxiate (inwardly converging walls, sloping floors)

Permit-Required — Hazard #4 — contains any other recognized serious safety or health hazard (mechanical, electrical, thermal)

Key Rule — never enter any confined space without first determining if it is permit-required — assume it is until proven otherwise

ATMOSPHERIC HAZARDS AND MONITORING

Oxygen Deficiency — below 19.5% O_2 is immediately dangerous; normal atmosphere is 20.9%

Oxygen Enrichment — above 23.5% O_2 creates extreme fire and explosion risk

Flammable Gases — monitor for LEL (Lower Explosive Limit); entry prohibited above 10% LEL

Toxic Gases — H_2S, CO, and other toxics must be below their PEL before entry

Continuous Monitoring — atmospheric testing must occur before entry and continuously throughout the work

Calibrated Instruments — all gas monitors must be bump-tested daily and calibrated per manufacturer requirements

ROLES, PERMITS, AND RESCUE PLANS

Entrant — the worker who enters; must know the hazards, monitor conditions, and exit immediately if danger arises

Attendant — remains outside at all times; tracks entrants, monitors conditions, summons rescue — never enters

Entry Supervisor — authorizes entry by signing the permit; verifies all precautions are in place before work begins

The Permit — documents hazards, controls, atmospheric readings, rescue plan, and duration — posted at the entry point

Rescue Plan — non-entry retrieval (tripod + harness) is preferred; entry rescue only by trained rescue teams

Never Enter Without a Permit — even to retrieve a tool — an unauthorized entry can be fatal in seconds

KNOWLEDGE CHECK

Which of the following is NOT one of the three criteria that define a confined space?

- A) Large enough to enter and perform work
- B) Contains a hazardous atmosphere
- C) Has limited or restricted entry/exit
- D) Not designed for continuous occupancy

Answer: B) A hazardous atmosphere makes it permit-required, but it is not one of the three defining criteria of a confined space.

CONFINED SPACE AWARENESS — SIGN-OFF

All attendees must print and sign below to confirm understanding of this topic.

#	PRINT NAME	SIGNATURE	DATE
1			
2			
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