



**University of Arizona
Confined Space Written Program
Environmental Health & Safety (EHS)
Program Administrator: Director, EHS**

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1. PURPOSE

This Confined Space Entry Program establishes minimum safety requirements for identifying, evaluating, and entering confined spaces at the University of Arizona. This program is designed to protect employees, students, contractors, and visitors from hazards associated with confined space entry. The purpose of this program is to:

- Prevent injuries, illnesses, and fatalities associated with confined space entry
- Establish procedures for identifying and classifying all confined spaces on UA properties
- Define safe work practices for entry into confined and permit-required confined spaces
- Assign clear roles and responsibilities for confined space operations
- Ensure compliance with applicable federal and state regulations
- Provide a framework for continuous improvement in confined space safety
- Protect the University community and maintain regulatory compliance

This program is based on:

- OSHA 29 CFR 1910.146 - Permit-Required Confined Spaces
- ANSI/ASSE Z117.1 - Safety Requirements for Confined Spaces

2. SCOPE

This program generally applies to:

- All University of Arizona employees (faculty, staff, and student employees) and non-employees who operates, sets up, maintains, cleans, services, repairs, or supervises machinery
- Contractors, subcontractors, and vendors performing work on university property
- Volunteers working in university-sponsored activities
- All University-owned, leased, operated, or controlled facilities

This program does not apply to:

- Construction work governed by 29 CFR 1926 Subpart AA (contractors must follow their own OSHA-compliant program and coordinate with EHS)
- Agricultural confined spaces on outlying properties (unless located on main campus or controlled facilities)
- Spaces that do not meet the regulatory definition of a confined space

2.1. Covered Populations

This program applies to all individuals who may be exposed to confined-related hazards in University-controlled workplaces, including but not limited to:

- Faculty
 - Postdoctoral associates



- Graduate assistants
- Instructional staff
- Staff
 - Student employees
 - Temporary employees
 - Visiting researchers
 - Facilities and maintenance personnel
- Contractors and vendors operating within University-controlled areas

Students in instructional settings may be covered when hazard exposure may occur as part of laboratory, studio, shop, or other instructional activities. Instructional units may provide hazard awareness training relevant to the course materials as approved by EHS.

2.2. Covered Locations

This program, with potential additional compliance programs, applies to all University of Arizona owned, operated, and leased facilities with confined space-related hazards. It also includes any equipment that meets the definition of a confined space on all University owned, operated, and leased facilities or any sites where workers are performing work on behalf of the University.

Examples include but are not limited to:

- Utility and steam tunnels
- Manholes, storm drains, pipes and sanitary sewer systems
- Electrical, utility, cable, and other pits
- Mechanical vaults
- Storage tanks (above and below ground)
- Boiler units
- Trenches deeper than 4 feet
- Crawl spaces or service areas with restricted access

When uncertainty exists about whether a space qualifies as a confined space, EHS shall be contacted for evaluation and determination. Until classified otherwise, any questionable space shall be treated as a permit-required confined space.

3. DEFINITIONS

Acceptable Entry Conditions: The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space. This includes atmospheric



conditions, physical hazards eliminated or controlled, and all procedural requirements met.

Attendant: An individual stationed outside one or more permit-required confined spaces who monitors the authorized entrants, maintains communication, summons rescue services when needed, and performs all attendant duties assigned in this program. The attendant must remain outside the space and shall not enter under any circumstances during active entry operations.

Authorized Entrant: A worker who is authorized by the unit, supervisor, and EHS through appropriate training and experience to enter a permit space and has received all required training for confined space entry.

Blanking or Blinding: The absolute closure of a pipe, line, or duct by fastening a solid plate (such as a spectacle blind or skillet blind) that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined Space:

A space that meets ALL of the following criteria:

- Is large enough and configured such that an employee can bodily enter and perform assigned work; AND
- Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, pits, manholes, tunnels, equipment housings, ductwork, pipelines, crawl spaces); AND
- Is not designed for continuous employee occupancy.

Permit-Required Confined Space (PRCS):

A location meeting the definition of a confined space that ALSO has ONE OR MORE of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere; OR
- Contains a material that has the potential for engulfing an entrant; OR
- 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
- Contains any other recognized serious safety or health hazard including but not limited to: electrical hazards, unguarded machinery, mechanical hazards, thermal extremes, fall hazards, structural instability, or biological hazards.

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.

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 causes:

- Flammable gas, vapor, or mist in excess of 10% of its Lower Flammable Limit (LFL)
- Airborne combustible dust at a concentration that meets or exceeds its LFL
- Atmospheric oxygen concentration below 19.5% or above 23.5%
- Atmospheric concentration of any substance that could result in employee exposure in excess of its Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV)
- Any other atmospheric condition that is Immediately Dangerous to Life or Health (IDLH)

Double block and bleed: The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency: Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment: The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry: The action by which any part of a person passes through an opening into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit (permit): The written or printed document that is provided by the EHS to allow and control entry into a permit space.

Entry Supervisor: The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry. This person may be a supervisor, foreman, crew chief, or other designated competent person AND the role may pass from individual to another during the course of an entry operation.

Hot Work: Work involving burning, welding, cutting, brazing, soldering, grinding, or using any fire- or spark-producing tools, or any work that produces a source of ignition. Hot work in confined spaces requires additional permits and precautions.

Hot work permit: The written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.



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.

Inerting: The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

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 of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking: The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Oxygen deficient atmosphere: An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

Permit system: The written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition: Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service: The personnel designated to rescue employees from permit spaces.

Retrieval System: The equipment (including a retrieval line, chest or full-body harness, wristlets if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces. Retrieval systems must be used whenever feasible for vertical entries.

Testing: The process by which the hazards that may confront entrants of a permit space are identified and evaluated using calibrated direct-reading instruments. Testing includes specifying the tests that are to be performed in the permit space before entry and periodically during entry operations.



Monitoring: The process by which the permit space atmosphere is checked continuously or at regular intervals using calibrated instruments to determine if acceptable entry conditions are being maintained during the course of entry operations.

Competent Person: An individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. Competent persons must have relevant training and experience.

Unit: Any University college, school, unit, program, or other operating unit.

Unit Leader(s): Any person of authority and responsibility, from supervisor to senior university leader, within a Unit.

Workers: Refers to all employees, non-employees, or administrators that are or may be exposed to machine hazards. Also refers to all authorized, affected, and other workers, as defined in this section and 29 CFR 1910.147.

Employees: All University employees, including faculty, staff, graduate assistants/associates, and student workers, whether their employment is full-time, part-time, permanent, or temporary.

Non-Employee: All University students, affiliates, associates, volunteers, and interns who are granted status (enrollee, DCC, etc.) by the University, who are participating in a university-sanctioned program to benefit educationally and/or professionally.

Administrative/Other: Any UA affiliated person who does not fit within the Employee or Non-Employee category, such as a vendor providing services.

4. ROLES & RESPONSIBILITIES

Environmental Health & Safety (EHS)

- Overall administration, management, and enforcement of the Confined Space Entry Program
- Developing and maintaining written program procedures and documentation
- Conducting initial confined space surveys and maintaining the university-wide confined space inventory
- Evaluating and classifying locations (including equipment) as confined spaces or not, and if confined, as permit-required, non-permit, or reclassified based on hazard abatement
- Providing a standardized permit entry form and permit process.



- Working with units to develop specific entry procedures for permit-required confined spaces and for the reclassification of permit-required confined spaces
- Reviewing and approving unit-specific confined space procedures
- Providing training, supporting unit-level training, and maintaining training records
- Conducting annual program audits and periodic inspections of confined space operations
- Maintaining and calibrating atmospheric monitoring equipment
- Serving as a technical resource and subject matter expert for departments
- Coordinating with emergency response services (e.g., police departments, fire departments, etc.) for preplanning activities and any active emergencies
- Investigating all incidents, near-misses, and procedural deviations involving confined spaces

Unit Leadership

- Ensuring unit-level compliance with this program
- Designating competent supervisors with confined space safety responsibilities
- Ensuring adequate staffing for safe entry operations
- Ensuring rescue services are available for any confined spaces entered within their unit's control
- Supporting any worker, including supervisors, who stop work due to confined space hazards or related concerns
- Ensuring budget allocation for safety equipment and training
- Reviewing incident reports and implementing corrective actions
- Participating in annual program review

Supervisors

- Identifying potential confined spaces within their areas of responsibility and reporting them promptly, but particularly prior to any entries, to EHS for assessment and classification
- Ensuring all workers within their area of responsibility receive required confined training, both generally and specific to the entry permit/procedure, before any confined space entry
- Ensuring entry permits are properly completed and authorized by EHS prior to any permit-required entries (including hot work permits)
- Designating qualified entry supervisors, attendants, and authorized entrants and ensuring appropriate training has been provided
- Ensuring availability, quality, and proper use of all required equipment, including atmospheric monitoring equipment, ventilation, PPE, and rescue crew/equipment



- Enforcing strict compliance with all program requirements and work procedures
- Prohibiting entry when acceptable entry conditions cannot be established or maintained
- Immediately notifying EHS of any incidents, near-misses, program deficiencies, or unsafe conditions
- Coordinating with contractors performing confined space work in their areas

Workers

- Following all confined space safety procedures and regulations
- Immediately reporting any identified confined spaces to their supervisor and EHS
- NEVER entering a confined space unless properly authorized and trained
- Reporting unsafe conditions, near-misses, or potential hazards to supervisors immediately
- Attending and completing all required training programs
- Procuring, maintaining, and using all required PPE and other confined space hazard control measures
- Respecting posted confined space warning signs and barriers

Entry Supervisor

- Verifying that all required preparations have been completed before authorizing entry, including isolation procedures, atmospheric conditions, etc.
- Completing and signing the entry permit for permit-required confined space entries
- Verifying that rescue services are available and that the means for summoning them are operable
- Ensuring that appropriate atmospheric testing and monitoring has been performed by qualified personnel using appropriately maintained and certified instrumentation
- Verifying that all entrants, attendants, and rescue personnel have received required training and are currently certified
- Ensuring acceptable entry conditions are established and maintained throughout entry operations
- Ensuring unauthorized persons stay clear of the confined space and removing them if they attempt entry
- Terminating the entry and canceling permits when:
 - Entry operations are complete
 - Unacceptable conditions develop
 - An emergency situation arises
- Verifying that rescue services are notified immediately if there is an unauthorized entry or emergency and coordinating with services and EHS on rescue operations



- Taking appropriate action to resolve any deviations from permit requirements
- Ensuring proper permit documentation, completion, and closeout procedures
- Conducting pre-entry briefings with all personnel involved in the entry operation
- Not serving any concurrent roles, like attendant, when acting as the entry supervisor UNLESS explicitly approved by EHS in writing

Attendant

An attendant **SHALL NOT** perform any other duties while acting as the attendant. One attendant may monitor multiple permit spaces only if they can effectively perform all attendant duties for each space simultaneously.

- Remaining outside the permit space during all entry operations and never entering the space under any circumstances (particularly never to act as a rescuer)
- Knowing the hazards that may be faced during entry, including mode, signs or symptoms, and consequences of exposure
- Being aware of possible behavioral effects of hazard exposure on authorized entrants
- Continuously maintaining an accurate count of authorized entrants and ensuring means to identify them
- Maintaining constant communication with authorized entrants (visual, voice, signal line, radio, or other EHS-approved means)
- Monitoring activities inside and outside the space to determine if it is safe for entrants to remain
- Ordering entrants to evacuate immediately if the attendant detects:
 - A prohibited condition
 - Any behavioral effects of hazard exposure in entrants
 - A situation outside the space that could endanger entrants
 - The attendant cannot effectively and safely perform required duties
 - An emergency alarm is activated
- Summoning rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape
- Warning unauthorized persons to stay away from the permit space and requiring them to exit immediately, should they enter (including escalation to EHS if they refuse to follow instructions issued by the Attendant)
- Informing authorized entrants and the entry supervisor if unauthorized persons enter the space
- Taking no action that might interfere with attendant duties or safety of entrants

Authorized Entrant

- Completing all required training before entry



- Knowing the hazards of the space, including mode, signs, symptoms, and consequences of exposure to each hazard
- Inspecting all personal protective equipment (PPE) prior to every use, maintaining properly after use, and using all required PPE during confined space entries
- Maintaining continuous communication with the attendant
- Immediately alerting the attendant whenever the entrant recognizes warning signs or symptoms of exposure or detects a prohibited condition
- Exiting the space as quickly and safely as possible when:
 - Ordered by the attendant or entry supervisor
 - Recognizing warning signs or symptoms of exposure to a hazard
 - A prohibited condition is detected
 - An evacuation alarm is activated
- Performing only work (including hot work) that has been authorized by the permit or other means within the confined space
- Following all permit requirements and safe work practices
- Not bringing unauthorized materials or equipment into the space
- Reporting any unsafe conditions or equipment malfunctions immediately to the attendant and entry supervisor

Contractors and Vendors

- Providing written evidence of confined space training and programming to EHS prior to beginning work
- Implementing their own (at minimum) OSHA-compliant confined space entry procedures and permits
- Coordinating with University EHS prior to any permit-required confined space entry or the reclassification of any permit-required confined spaces
- Providing their own properly maintained and calibration equipment, atmospheric monitoring instruments, ventilation, PPE, and rescue equipment unless otherwise agreed in writing
- Complying with all University confined space requirements set forth in this document
- Immediately reporting all incidents, near-misses, or newly identified hazards to EHS
- Providing copies of completed entry permits to EHS
- Coordinating activities when University personnel and contractor personnel are working in or near the same confined spaces

Stop-Work and Hazard Abatement Authority

EHS retains the authority to require immediate corrective action where confined space hazards present. EHS may require:

- Immediate correction of deficiencies
- Temporary suspension of operations



- Mandatory retraining
- Supervisor corrective action plans
- Escalation to Unit Leadership

Stop-work authority is exercised procedurally and proportionally and is intended to prevent injury, exposure, regulatory citation, or institutional liability.

Escalation and Accountability Structure

Accountability for safety and compliance follows this escalation structure:
Supervisor → Unit Leadership → Environmental Health & Safety (EHS)

If deficiencies are identified:

- Supervisor is notified and corrective action(s) required.
- If unresolved, corrective action(s) and deadlines are communicated to Unit Leadership.
- If systemic, high-risk, repeated, or unresolved after escalation to Unit Leadership, EHS may intervene directly with authority from their senior leadership

This structured escalation ensures procedural accountability while maintaining institutional oversight.

5. CONFINED SPACE IDENTIFICATION AND CLASSIFICATION

Proper identification and classification of confined spaces is the foundation of this program. All spaces must be evaluated systematically to determine if they meet the definition of a confined space and, if so, whether they are permit-required or non-permit.

5.1. Identification

It is the responsibility of units, supervisors, and workers to continuously assess their workspaces and locations for potential confined spaces – if a potential location is identified, they shall inform EHS.

EHS will also continuously assess workplaces and locations for potential confined spaces, including but not limited to:

- Reviewing building renovation and construction plans, blueprints, and facility drawings
- Physical walkthroughs of all workspaces
- Consultation with workers and facility managers



- Review of previous work orders and maintenance records
- Documentation of space dimensions, access points, and intended use

5.2. Classification

Any space that is suspected of being a confined space shall be systematically and consistently evaluated to determine if it is a confined space and if such, if it is a permit-required confined space. This shall be done using the EHS-provided Confined Space Evaluation Form, available in the Appendix of this document.

5.3. Confined Space Inventory and Database

EHS shall maintain a comprehensive, current inventory of all identified confined spaces at covered locations. This inventory should be made available to all workers covered by this program and include:

- Unique identification number for each confined space
- Building name and room/location designation
- GPS coordinates or specific location description
- Classification (permit-required, non-permit, or other)
- Dimensions and access point(s)
- Identified hazards and hazard assessment documentation
- Required control measures and entry procedures
- Date of last evaluation and name of evaluator
- Responsible unit and contact person (primary and secondary, ideally)
- Date of last entry and entry frequency
- Signage and barrier requirements
- Photos or diagrams of the space and access points

5.3.1. Annual Space Review

All confined spaces shall be evaluated annually or whenever:

- The use or configuration of the space changes
- New equipment or processes are introduced
- An incident or near-miss occurs
- Previously unidentified hazards are discovered
- Entry procedures or requirements change
- Requested by department personnel based on operational changes

Evaluation should include atmospheric testing and visual inspection to verify classification remains accurate.

5.4. Signage and Physical Identification



5.4.1. Non-Permit Required Confined Spaces

Signage must be posted on the entrance(s) to the confined space and shall minimally include the following elements:

- Signage must state: “DANGER – CONFINED SPACE”
- Preferred language includes “ENTRY BY AUTHORIZED PERSONNEL ONLY
- Be durable and weather-resistant
- Be visible and legible from normal approach distances
- Comply with OSHA sign requirements (red, black, and white coloring)
- Preferred in English and Spanish
- Example below:



5.4.2. Permit-Required Confined Spaces

Signage must be posted on the entrance(s) to the permit-required confined space and shall minimally include the following elements:

- Signage must state: “DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER” or “DANGER – CONFINED SPACE – ENTER BY PERMIT ONLY”
- Be durable and weather-resistant
- Be visible and legible from normal approach distances
- Comply with OSHA sign requirements (red, black, and white coloring)
- Preferred in English and Spanish
- Examples below:



5.5. Reclassification of Permit-Required Confined Spaces

If a 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. Specifically, the space must meet the following:

- The ONLY hazard posed by the permit space is a potential atmospheric hazard
 - The space does not contain hazards capable of causing death or serious physical harm, such as engulfment in solid or liquid material, electrical shock, or moving parts (it is acceptable if these hazards have been removed)
- Atmospheric testing demonstrates the space is safe and continuous monitoring verifies acceptable atmospheric conditions for the duration of the entry

If it is necessary to enter the permit-required space to eliminate hazards for reclassification, the entry shall be performed as a permit-required entry following the required permit process. 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. If conditions change or ventilation fails, the space immediately reverts to permit-required status and all entry must cease until a permit is issued. Control of atmospheric hazards through forced air ventilation does not constitute the elimination of the hazards.

Reclassification requires written approval from EHS and thorough documentation. Documentation of elimination is required to certify how the hazards were eliminated from the space, including the date, location, and signature of the person making the determination. Certification is to be posted at the space entrance and available to each entrant or their authorized representative. See Appendices for reclassification (alternative entry) form.



6. ENTRY PREPARATION & AUTHORIZATION

6.1. Pre-Entry Hazard Assessment

Before any entry into a confined space, permit-required or otherwise, a comprehensive hazard assessment must be conducted to identify all potential hazards. The assessment must be conducted with the EHS-provided form (see Appendix) and evaluate the following:

- Atmospheric Hazards
 - Oxygen deficiency (< 19.5%) or enrichment (> 23.5%)
 - Flammable gases or vapors (> 10% of LFL)
 - Toxic gases (carbon monoxide, hydrogen sulfide, nitrogen dioxide, etc.)
 - Combustible dusts
 - Corrosive atmospheres
 - Asphyxiant gases (nitrogen, argon, carbon dioxide)
 - Airborne contaminants exceeding PELs or TLVs
- Physical Hazards
 - Engulfment hazards (liquids, solids, flowable materials)
 - Configuration hazards (converging walls, sloped floors, inward-tapering spaces)
 - Mechanical hazards (moving equipment, rotating machinery, conveyor systems)
 - Electrical hazards (exposed conductors, inadequate grounding, arc flash potential)
 - Fall hazards (depth, unstable surfaces, inadequate fall protection)
 - Thermal hazards (heat stress, hypothermia, hot surfaces, steam)
 - Noise hazards (levels exceeding safe limits or impairing communication)
 - Visibility/lighting hazards
 - Structural hazards (instability, collapse potential)
 - Biological/infectious hazards (sewage, waste, animal exposure)
- Process and Work Activity Hazards
 - Hazards introduced by the work to be performed (welding fumes, paint vapors, etc.)
 - Chemical use and storage within the space
 - Hot work requirements
 - Duration and frequency of entry
 - Number of workers required
 - Tool and equipment requirements

6.2. Pre-Entry Preparations



6.2.1. Development of Entry Procedures

Based on the hazard assessment, specific entry procedures shall be developed for each permit-required confined space and should be developed for all confined spaces. See the Appendix for a template entry procedure.

These procedures shall include, at minimum, the following elements:

- Specific hazard controls for identified hazards
- Atmospheric testing requirements and acceptable limits
- Ventilation requirements (forced air, exhaust, or both)
- Isolation procedures (lockout/tagout, blanking, line breaking)
- Personal protective equipment requirements
- Retrieval equipment and rescue procedures
- Communication methods
- Lighting requirements
- Duration limits for entry
- Emergency response procedures

6.2.2. Equipment Provision and Inspection

All required equipment must be identified, procured, inspected, and made available before entry. Required equipment includes:

- Atmospheric Testing Equipment: Calibrated and maintained multi-gas monitors (minimum: oxygen, LEL, carbon monoxide, hydrogen sulfide or other gas, as necessitated by confined space hazards) (intrinsically safe)
- Ventilation Equipment: Forced-air blowers, exhaust fans, flexible ducting (intrinsically safe) that are adequate to maintain ventilation requirements (see sections below)
- Rescue Equipment: Tripods, winches, full-body harnesses, retrieval lines
- Communication Equipment: Two-way radios, signal lines, or other effective communication means (intrinsically safe)
- Lighting: Explosion-proof (Intrinsically safe) lighting where flammable atmospheres may exist
- PPE: Hard hats, safety glasses, gloves, protective clothing, respiratory protection as needed
- Barriers and Signage: Barricades, caution tape, warning signs
- Safety Data Sheets: For any chemicals known to be used in the entry
- As needed:
 - Ladders, fall protection, and egress equipment
 - Lockout/tagout devices
 - Entry permit (blank form)
 - Emergency contact list
 - First aid kit



- Respiratory protection (if atmospheric hazards cannot be eliminated)
- Other protective clothing (chemical suits, splash protection, etc.)
- Hot work permits and equipment
- Specialized tools
- Fire extinguisher

6.2.3. Personnel Requirements

A minimum number of personnel are required for all confined space entries, regarding of permit-required status or not.

All entries require:

- One (1) Entry Supervisor (may also serve as Attendant)
- One (1) Attendant (must remain outside the space)
- One (1) or more Authorized Entrants
- All personnel involved must hold current certifications for their assigned role
- Be physically and mentally capable of performing their duties
- Obtain medical clearance, with need determined by EHS during confined space assessment, to ensure any existing medical conditions will not be aggravated by entry

6.2.4. Training and Qualification Verification

Prior to entry, the Entry Supervisor must verify that all personnel have received appropriate training and hold current certifications. This includes:

- General confined space entry training (completed within past 2 years)
- Role-specific training (entrant, attendant, entry supervisor)
- Site-specific training for the particular confined space(s)
- Atmospheric monitoring equipment training (if applicable)
- Rescue procedures training
- First Aid/CPR certification (current)

6.2.5. Site Characterization and Verification

6.2.5.1. Isolation of Energy Sources

- All energy sources that could pose a hazard must be isolated using lockout/tagout procedures
- Pipes and lines must be blanked, blinded, or double-blocked and bled
- Verification testing must confirm isolation is effective



- Each authorized entrant must apply their personal lock to the lockout system
- Locks may only be removed by the person who applied them or through EHS authorized lock removal procedures
- Reference the UA Lockout/Tagout (LOTO) program for additional information on energy sources and controls

6.2.5.2. Ventilation & Atmospheric Testing

Forced-air ventilation must be established prior to atmospheric testing and prior to entry. It must also continue for the duration of the entire entry.

Other ventilation requirements include:

- Fresh air intake must be from clean source (not contaminated areas)
- Discharge must be away from entry point and breathing zones
- Ducting must reach deep into space (not just entry portal)
- Exhaust must be directed away from the entry point and breathing zones
- Ventilation equipment must be bonded and grounded if flammable atmospheres exist or could develop (intrinsically safe)
- Ventilation must maintain 20 air changes per hour (ACH) based on the volume of the confined space, equating for a full air exchange every 3 minutes

Before atmospheric testing, the confined space must have gone through a minimum of 5 to 7 complete air changes. Atmospheric hazards must be tested in the following order:

- Oxygen - Acceptable range: 19.5% to 23.5%
 - If below 19.5%: Ventilate and retest; investigate source of deficiency
 - If above 23.5%: Ventilate and retest; investigate source of enrichment; consider fire/explosion risk
- Flammable Gases/Vapors (LEL) - Acceptable: Less than 10% of LEL
 - If 10% or greater: Do not enter; ventilate and investigate source; retest
 - If any reading above 0%: Exercise extreme caution; identify source; use explosion-proof equipment
- Toxic Gases - Acceptable: Below applicable PEL or TLV
 - Carbon Monoxide (CO): Less than 35 ppm (OSHA PEL)
 - Hydrogen Sulfide (H₂S): Less than 10 ppm (OSHA PEL)
 - Other gases as appropriate for the space
- Additional Contaminants - As identified in hazard assessment

Testing must be performed:



- From outside the space using extension probes or sampling lines
- At various levels to account for gases stratifying by density
- In all areas where entrants will work or travel
- To allow for adequate sensor response time
- And recorded on the entry permit (as necessary)
- Continue for the duration of the entry, at no more than 30 minute intervals
- At an entrant's breathing zone and be available to the entrant and attendant (along with including audio-visual alarms for any exceedances)

If testing shows any atmospheric parameter is outside acceptable limits:

- Entry shall not be authorized
- Ventilation must be continued and retesting can occur after another 5-7 ACHs
- If acceptable conditions cannot be achieved, the entry plan shall be canceled until appropriate respiratory protection or other control means can be obtained or achieved

6.2.5.3. Illumination

- Adequate lighting must be provided for all work areas
- Lighting must be appropriate for the classified electrical area
- Explosion-proof lighting required where flammable atmospheres may exist
- Emergency backup lighting should be available
- All lighting equipment must be inspected before use

6.2.5.4. Communication Systems

Establish and test communication methods between entrants and attendant:

- Two-way radios (intrinsically safe if required)
- Visual contact (if line-of-sight maintained)
- Signal lines or ropes
- Voice communication
- Combination of methods for redundancy

Test communications before entry and establish protocols for:

- Regular check-ins
- Emergency signals
- Loss of communication procedures



6.2.5.5. Retrieval Systems

For permit-required confined spaces, retrieval equipment must be used unless it increases the risk of injury or does not contribute to rescue. When required:

- Full-body harnesses must be worn by all entrants
- Retrieval lines must be attached to harnesses at center back (at shoulder level) or above the head
- Retrieval lines must be secured to a mechanical device (tripod, davit, winch) outside the space
- The mechanical device must be capable of retrieving entrants without entry by rescuers
- Wristlets may be used in lieu of harnesses only if the space configuration and size allow
- One retrieval system is required for each entrant

Retrieval systems are not required when:

- The Entry Supervisor demonstrates that retrieval equipment would increase overall risk
- Retrieval equipment would not contribute to rescue (horizontal entries > 5 feet from opening)
- Alternative rescue methods are established and documented

6.3. Permit Authorization

6.3.1. Permit Completion

The Entry Supervisor must:

- Complete all sections of the confined space entry permit
- Verify all preconditions are met
- Document all test results
- List all personnel and their roles
- Specify authorized work activities
- Establish time limits for entry
- Sign and date the permit authorizing entry

6.3.2. Pre-Entry Briefing

Before entry, the Entry Supervisor must conduct a documented briefing (see Appendices) with all personnel covering:

- Space-Specific Hazards
 - Review each identified hazard



- Explain where hazards are located
 - Describe signs/symptoms of exposure
- Controls Implemented
 - Isolation and lockout points
 - Ventilation effectiveness
 - Atmospheric test results and limits
 - Barriers and restricted areas
- Work Plan
 - Specific tasks to be performed
 - Tools and equipment to be used
 - Estimated duration
 - Work sequence
- PPE and Equipment Use
 - Demonstrate proper use of each item
 - Verify fit and function
 - Confirm everyone understands limitations
- Communication Procedures
 - How communication will be maintained
 - Frequency of check-ins
 - Emergency signals and responses
- Entry and Exit Procedures
 - Safe entry technique
 - Limitations on movement within space
 - Exit route and emergency egress
- Emergency Procedures
 - Recognition of emergency conditions
 - Evacuation signals and procedures
 - Rescue plan and equipment
 - How to summon help
- Roles and Responsibilities
 - Clarify who is doing what
 - Confirm attendant's position and duties
 - Verify everyone understands their role
- Questions and Concerns

6.3.3. Posting the Permit

- The signed permit must be posted at the entry point
- The permit must remain posted for the entire duration of entry
- The permit must be accessible for inspection by any authorized person
- If multiple entries occur, a new permit is required for each entry (including if breaks are taken)

7. ENTRY OPERATIONS



7.1. Standard Entry

Before breaking the plane of the confined space entrance:

- Attendant confirms position outside space
- Communication system tested and confirmed working
- Continuous atmospheric monitoring begins
- Entrant dons all required PPE
- Entrant attaches retrieval equipment (if required)
- Final atmospheric test performed
- Entry Supervisor gives verbal authorization to enter
- Entrant enters slowly and carefully
- Attendant maintains visual contact or communication
- Continuous monitoring confirms acceptable conditions

7.2. Authorized Work

Only work specifically authorized on the permit may be performed. Any changes to work scope require:

- Re-evaluation of hazards
- Update to permit or issuance of new permit
- Approval from Entry Supervisor
- Additional briefing if hazards change

7.2.1. Continuous Ventilation & Atmospheric Monitoring

- Atmospheric conditions must be monitored continuously or at intervals not exceeding 30 minutes
- Ventilation must maintain 20 air changes per hour (ACH) based on the volume of the confined space, equating for a full air exchange every 3 minutes
- Monitoring must cover all areas where entrants are working and monitoring must also be taken from the entrant(s) breathing zone
- Monitor alarms must be set appropriately enable communication to all entrants
- Test results must be documented on the permit
- Atmospheric hazards must be tested in the following order:
 - Oxygen - Acceptable range: 19.5% to 23.5%
 - If below 19.5%: Ventilate and retest; investigate source of deficiency
 - If above 23.5%: Ventilate and retest; investigate source of enrichment; consider fire/explosion risk
 - Flammable Gases/Vapors (LEL) - Acceptable: Less than 10% of LEL



- If 10% or greater: Do not enter; ventilate and investigate source; retest
- If any reading above 0%: Exercise extreme caution; identify source; use explosion-proof equipment
- Toxic Gases - Acceptable: Below applicable PEL or TLV
 - Carbon Monoxide (CO): Less than 35 ppm (OSHA PEL)
 - Hydrogen Sulfide (H₂S): Less than 10 ppm (OSHA PEL)
 - Other gases as appropriate for the space
- Additional Contaminants - As identified in hazard assessment
- If testing shows any atmospheric parameter is outside acceptable limits:
 - Entry permit shall be immediately canceled and evacuation must begin immediately

7.2.2. Hot Work in Confined Spaces

If hot work (welding, cutting, grinding) is required:

- A separate hot work permit must be obtained and posted
- Flammable atmosphere testing must show 0% LEL
- Continuous monitoring for flammable atmospheres required
- Fire watch must be established
- Fire extinguishing equipment must be immediately available
- Additional ventilation may be required for vapor control

Before Hot Work Begins:

- Obtain separate Hot Work Permit
- Verify flammable atmosphere is 0% LEL (not just below 10%)
- Continue monitoring for flammable atmosphere throughout hot work
- Remove or protect combustible materials
- Provide fire watch (trained person with fire extinguisher)
- Have fire extinguisher immediately accessible to entrant
- Clear combustibles from area beneath work (if elevated)
- Inspect after work for smoldering materials

During Hot Work:

- Monitor continuously for fire, sparks, and flammable atmosphere
- Fire watch must remain for at least 30 minutes after work ceases
- If LEL reading exceeds 0%, stop hot work immediately
- Ventilation must be continuous

Hot Work Prohibition: Do not conduct hot work if atmospheric conditions cannot be maintained at 0% LEL.

7.2.3. Prohibited Activities



The following are prohibited unless specifically authorized and controlled:

- Bringing unauthorized chemicals into the space
- Use of gasoline-powered equipment (exhaust hazards)
- Smoking or open flames
- Removal of safety equipment or guards
- Alterations to ventilation systems
- Entry by unauthorized personnel

7.2.4. Multi-Day or Extended Entries

- Standard permits are valid for one shift or 8 hours, whichever is less
- A new permit is required for each entry day
- If work extends beyond permit duration, entrants must exit and a new permit must be issued

7.2.5. Shift Changes

When entry operations continue across shift changes:

- Outgoing Entry Supervisor must brief incoming Entry Supervisor
- All permit conditions must be reverified
- Incoming personnel must be briefed on all hazards and conditions
- Atmospheric testing must be repeated
- New permit may be required depending on time elapsed

7.2.6. Alternate Entry Procedures (Reclassified Spaces)

When a permit-required confined space is reclassified as non-permit required space:

- Certification of reclassification must be posted at entry point
- Continuous forced-air ventilation must operate throughout entry
- Continuous atmospheric monitoring required
- If conditions change, entry must stop and space reverts to permit-required
- All entry activities must be documented
- EHS must be notified of any issues

7.2.7. Emergency Entry

Emergency entry, unless part of an EHS-approved and appropriately trained rescue team, is NEVER permitted even in the event of an emergency

7.3. Emergency Procedures

7.3.1. Emergency Conditions



An emergency exists when:

- An entrant exhibits signs of distress or exposure
- Atmospheric conditions exceed acceptable limits
- Communication is lost and cannot be re-established
- An entrant does not respond to communication attempts
- An external event threatens safety of entrants
- Equipment failure compromises safety systems

7.3.2. Emergency Actions

Attendant

- Order immediate evacuation of all entrants if they are able to evacuate
- NOT enter the space under any circumstances
- Summon emergency rescue services immediately (call 911)
- Notify University Police (520-621-8273) and EHS (520-626-6850)
- Attempt non-entry rescue using retrieval equipment if safe to do so
- Keep other personnel away from the space
- Provide information to emergency responders about the space, hazards, and victims

Entry Supervisor

- Cancel the permit immediately
- Ensure rescue services have been contacted
- Ensure no additional personnel enter the space
- Coordinate with emergency responders
- Account for all personnel
- Secure the area

Entrants

- Exit immediately upon order or recognition of hazard
- Not attempt to rescue other entrants by entering the space
- Report to attendant or designated assembly point
- Provide information about conditions inside the space

8. EXIT OPERATIONS

8.1. Exit Procedures

When authorized work is complete:



- Entry Supervisor verifies all work is complete
- All entrants exit the space
- All tools and equipment are removed
- Attendant confirms all personnel have exited
- Atmospheric monitoring concludes
- Retrieval equipment is removed

8.2. Post-Entry Procedures

After all entrants have exited:

- Entry Supervisor cancels the permit by signing/dating
- Space is re-secured (locks, barriers, signage)
- Equipment is inspected and stored properly
- Permit is retained for recordkeeping
- De-briefing is conducted with all entry personnel

8.3. Permit Closeout

The Entry Supervisor must:

- Complete all sections of the permit including actual entry/exit times
- Document any deviations or issues encountered
- Note any recommendations for future entries
- Sign and date the permit closure
- Forward the original permit to EHS within 5 business days
- Maintain a copy in unit

8.3.1. De-briefing

A post-entry de-briefing must be conducted with all participants to:

- Review what went well
- Identify any problems or concerns
- Discuss any unexpected conditions
- Capture lessons learned
- Identify needed improvements to procedures
- Document any near-misses or incidents
- Acknowledge good safety practices

9. TRAINING AND AUTHORIZATION

9.1. Training Authority and Responsibility



EHS provides, as well as supports unit-driven and provided, confined space training programs for the University of Arizona community. Training may be delivered through:

- Direct instruction by EHS personnel
- EHS-approved (via documented train-the-trainer programming) unit-level trainers
- Online training modules created or approved by EHS
- Vendor-provided training, as approved in writing by EHS

9.2. Conditions Requiring Training

Initial Training

All authorized, affected, and other workers must receive confined space training. Training to satisfy minimum requirements set by EHS (below) can be provided by EHS, unit-level trainer, or vendor and must minimally cover requirements specified below:

- Characteristics of confined spaces
- Definitions relating to confined spaces
- Key components of a confined space plan
- Hazards in a confined space
- Eliminating hazards
- Rescue preparation
- Characteristics of Confined Spaces
- Characteristics of Permit-Required Confined Spaces
- Role-specific training shall also be provided:
 - Authorized Entrants
 - Recognizing hazards including signs, symptoms, and consequences of exposure
 - Proper use of PPE, monitoring devices, communication systems, and alarm systems
 - Communication protocols with the attendant to enable continuous monitoring
 - Alerting the attendant upon detecting any warning sign or prohibited condition
 - Evacuating immediately when ordered, when an alarm activates, or when a prohibited condition is detected
 - Attendants



- Hazard recognition including behavioral effects of exposure in entrants
- Maintaining an accurate headcount of authorized entrants at all times
- Monitoring conditions inside and outside the space
- Summoning rescue services when entrants may need assistance
- Performing non-entry rescue procedures as specified in the program
- Preventing unauthorized individuals from entering the space
- Entry Supervisors
 - Verifying that all atmospheric tests have been conducted and all equipment is in place
 - Confirming rescue services are available and communication methods are operational
 - Terminating entry and canceling the permit when unsafe conditions develop
 - Removing unauthorized individuals from the entry area
 - Ensuring operations remain consistent with permit terms throughout the entry

Supervisors should receive additional training from EHS or their unit leadership upon assignment of supervisory duties, including assessments, incident reporting obligations, and more

Additional Training

Retraining shall be provided to any previously trained worker when:

- Changes in the workplace render previous training obsolete,
- Changes in the types of controls to be used render previous training obsolete,
- As shown through a periodic inspection or demonstration (incident, injury, near miss, etc.), potential or known inadequacies are identified in an affected worker's knowledge or use of assigned entry procedures to indicate that they have not retained the requisite understanding or skill to properly utilize them
- Routine refresher training should be provided to all workers annually and may be required for specific workers at on a more frequent basis (e.g., based on the risk of the spaces, worker turnover, etc.)

10. RECORDKEEPING AND DOCUMENTATION



Required records may include inventory, inspections, corrective actions, entry permits and monitoring records, training/authorization, incidents/near misses, audits/annual reviews, and procurement documentation where relevant. EHS will coordinate with units on maintenance of these records, including training and inspections, to ensure records are readily available.

Routine Inspections

Units should perform routine inspections and EHS will perform a program audit annually. Inspections shall occur, at minimum, annually but units are encouraged to conduct these more frequently.

- Review of program documentation
 - Availability of procedures to personnel
 - Adequacy of confined space inventory
 - Permit reviews
 - Accuracy of space classifications
 - Quality of entry procedures
 - Effectiveness of forms and permits
- Interviews with entry supervisors, attendants, and entrants
- Observation of actual entry operations (when feasible)
- Review of training records
 - Records of training completion
 - Currency of certifications
 - Effectiveness of training content
 - Competency of trained personnel
 - Adequacy of training frequency
 -
- Equipment
 - Availability of required equipment
 - Condition of equipment
 - Calibration records for monitoring instruments
 - Adequacy of equipment inventory
 - Proper storage and maintenance
 - Testing of atmospheric monitoring instruments
- Review of incident reports and corrective actions

Program revisions occur when: regulations change, new machinery/technology is introduced, incidents reveal gaps, audits identify systemic issues, or organizational changes affect ownership/supervision/maintenance.

11. REFERENCES

- OSHA 29 CFR 1910.146 - Permit-Required Confined Spaces
- ANSI/ASSE Z117.1 - Safety Requirements for Confined Spaces

12. APPENDICES



12.1. CONFINED SPACE HAZARD EVALUATION & QUALIFICATION FORM

Section 1: Space Information		
Building #:	Room #:	Location of Entrance(s):
Evaluator(s):	Current Eval Date:	Location Owner(s):
Description of space (characteristics, configuration, number of entry points, etc.):		Insert photo of space & entrance(s)
Section 2: Space Hazard Assessment		
Are there hazards to be mitigated to open the entrance(s)? ☐ Yes ☐ No	Conditions to open entrance(s) (describe):	
Are there known or suspected atmospheric hazards? ☐ Yes ☐ No		
☐ Oxygen deficiency (less than 19.5% oxygen)	Confirmed by monitoring? ☐ Yes ☐ No	
☐ Oxygen enrichment (greater than 23.5% oxygen)	Confirmed by monitoring? ☐ Yes ☐ No	
☐ Flammable gas, vapor, mist, combustible dust $\geq 10\%$ LEL or $\geq$ LFL	Substance(s): Confirmed by monitoring? ☐ Yes ☐ No	
☐ Toxic gas, vapor, or mist in excess of its PEL, TLV, or other recommended guidelines	Substance(s): Confirmed by monitoring? ☐ Yes ☐ No	
☐ Inert or oxygen displacement atmosphere; simple asphyxiant	Substance(s): Confirmed by monitoring? ☐ Yes ☐ No	
☐ Any other atmospheric condition that is immediately dangerous to life or health?	Substance(s): Confirmed by monitoring? ☐ Yes ☐ No	
Are there known or suspected sources of uncontrolled energy? ☐ Yes ☐ No		
Source Type	Describe Energy Source	
☐ Electrical		
☐ Thermal		
☐ Chemical		
☐ Mechanical		



☐ Pneumatic	
☐ Hydraulic	
☐ Gravity/Stored Energy	
☐ Other	
Are there known or suspected engulfment hazards? ☐ Yes ☐ No	
Describe potential engulfment hazards:	
Are there known or suspected entrapment or configuration hazards? ☐ Yes ☐ No	
Configuration Hazard	Describe Configuration Hazard
☐ Inwardly converging walls	
☐ Downward sloping/tapering floor	
☐ Drop offs	
☐ Low overhead clearance	
☐ Complex layout	
☐ Unstable / structural integrity	
☐ Other	
Are there known or suspected external hazards? ☐ Yes ☐ No	
External Hazard	Describe External Hazard
☐ Traffic	
☐ Machine, equipment, process	
☐ Terrain	
☐ External connections	
☐ Other	
Are there known or suspected additional hazards? ☐ Yes ☐ No	
Additional Hazard	Describe Additional Hazard
☐ Slip, trip, fall	
☐ Noise	
☐ Thermal (high/low temps)	
☐ Vibration	
☐ Ionizing radiation	
☐ Non-ionizing radiation	
☐ Flora/fauna, environmental	



☐ Other			
Section 3: Space Determination			
Meets confined space criteria? ☐ Yes ☐ No	1. Bodily entry possible?	☐ Yes	☐ No
	2. Limited or restricted entry and exit?	☐ Yes	☐ No
	3. Not designed for continuous human occupancy?	☐ Yes	☐ No
Meets permit required criteria? ☐ Yes ☐ No	1. Atmospheric hazard(s)?	☐ Yes	☐ No
	2. Potential for engulfment?	☐ Yes	☐ No
	3. Internal configuration hazard?	☐ Yes	☐ No
	4. Other serious safety hazard?	☐ Yes	☐ No
Meets alternative entry* criteria? ☐ Yes ☐ No <i>*alternative entry / reclassification</i>	1. Atmospheric hazard(s) is only hazard?	☐ Yes	☐ No
	2. Atmospheric hazard can be maintained in safe condition with ventilation only?	☐ Yes	☐ No
	3. All other hazards can be mitigated?	☐ Yes	☐ No

12.2. PERMIT-REQUIRED CONFINED SPACE ENTRY PERMIT TEMPLATE

Issue Date:		Issue Time:	
Site ID:		Site Owner:	
Entry Supervisor:			
Authorized Entrant(s):			
Entry Attendant(s):			
Purpose of Entry:			
Rescue Contact Info:			
Cancel Date:		Cancel Time:	
Permit Cancel Reason:			

PRE-ENTRY BRIEFING

(☒)	HAZARDS: (☒)		REQUIRED ENTRY EQUIPMENT: (☒)		COMMUNICATION: (☒)
☐	Oxygen deficiency	☐	Respiratory protection	☐	Line of sight
☐	Oxygen enrichment	☐	Body protective equipment	☐	Radios
☐	Toxic gases or vapors > PEL	☐	Hearing protection	☐	Other:
☐	Uncontrolled energy hazard(s)	☐	Lighting		
☐	Flammable hazard(s) (gases, vapors, dusts)	☐	Fire Extinguishers / Suppression Equipment		WRITTEN RESCUE PLAN (☒)
☐	Entrapment or configuration hazard(s)	☐	Rescue Equipment	☐	Worker Rescue
☐	Engulfment hazard(s)	☐	Fall Protection	☐	Worker Non-Entry Rescue
☐	Entrance hazard(s)	☐	Other:	☐	Outside Rescue
☐	Other:	☐	Other:	☐	Other:

PRE-ENTRY BRIEFING CONT.

ENTRY PREPARATIONS			
☐	Permits obtained (hot work, others)	☐	Rescue team informed
☐	Lockout/Tagout completed	☐	Ventilation initiated
☐	Area secured	☐	Atmospheric testing initiated
☐	Affected workers informed	☐	Required equipment, including PPE, available and in use
☐	Hazards reviewed and confirmed	☐	Other:
☐	Work procedures reviewed		
☐	Communication plan reviewed		
☐	Roles and responsibilities reviewed		

VENTILATION

Ventilation Tester(s)			
Testing Equipment Make/Model			
Testing Equipment Calibration Date			
Ventilation Equipment Make/Model			
CFM needed?		5-7 Purges Before Atmospheric Testing?	☐ Yes ☐ No

ATMOSPHERIC TESTING

Atmospheric Tester(s)			Equipment Make/Model		
Equipment Calibration Date(s)			Bump Check Performed?	☐ Yes ☐ No	
Atmospheric Condition	Target Value	Start/Stop Time	Start/Stop Time	Start/Stop Time	Start/Stop Time
Air Changes Per Hour (ACHs)	20 ACHs				
O ₂	>19.5%, <23.5%				



Flammability	10% LEL / LFL				
Carbon Monoxide	<35 ppm				
Hydrogen sulfide	<10 ppm				
Sulfur Dioxide	<2 ppm				
Other					
Other					
Other					

****Attach instrument calibration records to this permit***

**I, THE ENTRY SUPERVISOR, CERTIFY REQUIRED-ENTRY CONDITIONS ARE MET
AND IT IS SAFE TO COMMENCE WORK AT THIS SITE.**

Entry Supervisor Signature:

Time:

Entry Attendant Signature:

12.3. ALTERNATIVE ENTRY CONFINED SPACE ENTRY TEMPLATE

Entry Date:		Entry Time:	
Site ID:		Site Owner:	
Entry Supervisor:			
Authorized Entrant(s):			
Entry Attendant(s):			
Purpose of Entry:			
Rescue Contact Info:			
Meets alternative entry* criteria? ☐ Yes ☐ No <i>*alternative entry / reclassification</i> IF NO, REFER TO PERMIT REQUIRED CONFINED SPACE ENTRY PERMIT FORM	1. Atmospheric hazard(s) is only hazard? ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	2. Atmospheric hazard can be maintained in safe condition with ventilation only? ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	3. All other hazards can be mitigated? ☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

PRE-ENTRY BRIEFING

(☒)	HAZARDS: (☒)		REQUIRED ENTRY EQUIPMENT: (☒)		COMMUNICATION: (☒)
☐	Oxygen deficiency	☐	Respiratory protection	☐	Line of sight
☐	Oxygen enrichment	☐	Body protective equipment	☐	Radios
☐	Toxic gases or vapors > PEL	☐	Hearing protection	☐	Other:
☐	Uncontrolled energy hazard(s)	☐	Lighting		
☐	Flammable hazard(s) (gases, vapors, dusts)	☐	Fire Extinguishers / Suppression Equipment		WRITTEN RESCUE PLAN (☒)
☐	Entrapment or configuration hazard(s)	☐	Rescue Equipment	☐	Worker Rescue
☐	Engulfment hazard(s)	☐	Fall Protection	☐	Worker Non-Entry Rescue

☐	Entrance hazard(s)	☐	Other:	☐	Outside Rescue
☐	Other:	☐	Other:	☐	Other:
ENTRY PREPARATIONS					
☐	Permits obtained (hot work, others)	☐	Rescue team informed		
☐	Lockout/Tagout completed	☐	Ventilation initiated		
☐	Area secured	☐	Atmospheric testing initiated		
☐	Affected workers informed	☐	Required equipment, including PPE, available and in use		
☐	Hazards reviewed and confirmed	☐	Other:		
☐	Work procedures reviewed				
☐	Communication plan reviewed				
☐	Roles and responsibilities reviewed				

VENTILATION

Ventilation Tester(s)			
Testing Equipment Make/Model			
Testing Equipment Calibration Date			
Ventilation Equipment Make/Model			
CFM needed?		5-7 Purges Before Atmospheric Testing?	☐ Yes ☐ No

ATMOSPHERIC TESTING

Atmospheric Tester(s)		Equipment Make/Model	
Equipment Calibration Date(s)		Bump Check Performed?	☐ Yes ☐ No
Atmospheric Condition	Target Value	Start/Stop Time	Start/Stop Time
Air Changes Per Hour (ACHs)	20 ACHs		



O ₂	>19.5%, <23.5%				
Flammability	10% LEL / LFL				
Carbon Monoxide	<35 ppm				
Hydrogen sulfide	<10 ppm				
Sulfur Dioxide	<2 pm				
Other					
Other					
Other					

****Attach instrument calibration records to this permit***

I, THE SUPERVISOR, CERTIFY REQUIRED-ENTRY CONDITIONS ARE MET AND IT IS SAFE TO COMMENCE WORK AT THIS SITE.

Supervisor Signature:

Time:

12.4. PRE-ENTRY BRIEFING FORM

(☒)	HAZARDS: (☒)		REQUIRED ENTRY EQUIPMENT: (☒)		COMMUNICATION: (☒)
☐	Oxygen deficiency	☐	Respiratory protection	☐	Line of sight
☐	Oxygen enrichment	☐	Body protective equipment	☐	Radios
☐	Toxic gases or vapors > PEL	☐	Hearing protection	☐	Other:
☐	Uncontrolled energy hazard(s)	☐	Lighting		
☐	Flammable hazard(s) (gases, vapors, dusts)	☐	Fire Extinguishers / Suppression Equipment		WRITTEN RESCUE PLAN (☒)
☐	Entrapment or configuration hazard(s)	☐	Rescue Equipment	☐	Worker Rescue
☐	Engulfment hazard(s)	☐	Fall Protection	☐	Worker Non-Entry Rescue
☐	Entrance hazard(s)	☐	Other:	☐	Outside Rescue
☐	Other:	☐	Other:	☐	Other:
ENTRY PREPARATIONS					
☐	Permits obtained (hot work, others)	☐	Rescue team informed		
☐	Lockout/Tagout completed	☐	Ventilation initiated		
☐	Area secured	☐	Atmospheric testing initiated		
☐	Affected workers informed	☐	Required equipment, including PPE, available and in use		
☐	Hazards reviewed and confirmed	☐	Other:		
☐	Work procedures reviewed				
☐	Communication plan reviewed				
☐	Roles and responsibilities reviewed				