

# **Southwestern Community College**

**447 College Drive  
Sylva, NC 28779**

## **Confined Space Entry Program**

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**Office of Human Resources**

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This Permit-Required Confined Space (PRCS) Program is provided to protect authorized employees who must enter confined spaces and may be exposed to hazardous atmospheres; engulfment in materials; conditions which may trap or asphyxiate due to converging or sloping walls; or contains any other safety or health hazard.

Many workplaces contain confined spaces, not designed for human occupancy, which due to their configuration hinder employee activities including entry, work, and exit. Asphyxiation is the leading cause of death in confined spaces. Also, there have been cases when employees entering confined spaces were harmed, ground-up by augers, crushed, or battered by moving parts inside vessels, mixers, etc. The nature of confined spaces can cause toxic vapors to become highly toxic and harmful and in some cases immediately dangerous to life and health (IDLH) unless adequate precautions are taken.

The Occupational Safety and Health Administration (OSHA) has estimated that at least 62 fatalities and 12,643 injuries and illnesses occur annually due to confined space hazards. Implementing and maintaining an effective confined space entry program can prevent these deaths, injuries, and illnesses.

This PRCS Program describes the measures necessary (1) to prevent unauthorized entry into permit-required confined spaces, (2) identify and evaluate permit space hazards, and (3) implement the means, procedures, and practices necessary for safe entry operations.

**I. SCOPE AND APPLICATION**

These Permit-Required Confined Space (PRCS) Program covers all employees who enter permit confined spaces and contains the practices and procedures for their safe entry.

**II. COORDINATION**

The PRCS coordinator is *Charles J. Reece, Director of Human Resources and Facility Development*, who is responsible for maintaining a current copy of the

program and making it available to all employees. Specific questions about the program and interpretations should be directed to the PRCs Program coordinator.

### III. DEFINITIONS

**Acceptable entry conditions** means 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.

**Attendant** means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

**Authorized entrant** means an employee who is authorized by the employer to enter a permit space.

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

**Confined space** means a space that:

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

**Double block and bleed** means 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** means 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** means 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** means the action by which a person passes through an opening into a permit-required confined space. Entry includes 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) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (f) of this section.

**Entry supervisor** means the person (such as the department head, supervisor, or lead 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 as required by this section.

**Note:** An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

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

- A. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL),
- B. Airborne combustible dust at a concentration that meets or exceeds its LFL,

**Note:** This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

- C. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent,
- D. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, *Occupational Health and Environmental Control*, or in Subpart Z, *Toxic and Hazardous Substances*, of 29 CFR 1910, OSHA standards for General Industry, and which could result in employees exposure in excess of its dose or permissible exposure limit;

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

- E. Any other atmospheric condition that is immediately dangerous to life or health;

**Note:** Air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communications Standard 1910.1200 of this part, or published

information of the (ACGIH) can provide guidance in establishing acceptable atmospheric conditions.

**Hot work permit** means the employer's 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)** means 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.

**Note:** Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

**Inerting** means 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.

**Note:** This procedure produces an IDLH oxygen-deficient atmosphere.

**Isolation** means 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 and tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

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

**Non-permit confined space** means 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.

**Oxygen-deficient atmosphere** is an atmosphere containing less than 19.5 percent oxygen by volume.

**Oxygen enriched atmosphere** means an atmosphere containing more than 23.5 percent oxygen by volume.

**Permit-required confined space (permit space)** means a confined space that has one or more of the following characteristics:

- A. Contains or has a potential to contain a hazardous atmosphere;
- B. Contains a material that has the potential for engulfing an entrant.

- C. 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
- D. Contains any other recognized serious safety or health hazard.

**Permit-required confined space program** (permit space program) means the Southwestern Community College overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces .

**Permit system** means the Southwestern Community College written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

**Prohibited condition** means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

**Rescue service** means the personnel designated to rescue employees from permit spaces.

**Retrieval system** means 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.

**Testing** means the process by which the hazards that may confront entrants or a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

**Note:** Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.

#### IV. GENERAL REQUIREMENTS

This PRCS program covers the safety requirements, including a permit system, for employees to enter confined spaces, designated as permit-required confined spaces (permit spaces) which:

- pose special dangers for entrants;
- have configurations hampering efforts;
- which require protection for entrants from serious hazards including atmospheres which are or may be:
  - toxic,
  - explosive, or
  - asphyxiating; and
- which have other hazards.

##### A. Permit-Required Confined Spaces (PRCS)

All workplaces have been evaluated to identify the permit-required confined spaces. See Appendix A for a complete list of all the PRCS's.

## **B. Alternate Procedures for Entering Permit Confined Spaces**

Alternate procedures are used for entry into permit spaces under the following conditions:

1. The only hazard posed is an actual or potential hazardous atmosphere.
2. It has been demonstrated that continuous forced air ventilation alone is sufficient to maintain safety for entry.
3. Monitoring and inspection data has been developed that supports only an atmospheric hazard and continuous forced air ventilation alone maintains safety;
4. If an initial entry is necessary, an entry permit is used.
5. Entry into the permit space complies with the following.
  - (a) Any conditions making it unsafe to remove an entrance cover is eliminated before the cover is removed.
  - (b) When entrance covers are removed, the openings are promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that protects each employee working in the space from foreign objects entering the space.
  - (c) Before an employee enters the space, the internal atmosphere is tested, with a calibrated direct-reading instrument, for the following conditions in the order listed:
    - (1) Oxygen content,
    - (2) Flammable gases and vapors, and
    - (3) Potential toxic air contaminants.
  - (d) There is no hazardous atmosphere within the space whenever any employee is inside the space.
  - (e) Continuous forced air ventilation is used as follows:
    - (1) No employee enters the space until the forced air ventilation has eliminated any hazardous atmosphere.
    - (2) The forced air ventilation is directed so as to ventilate the immediate areas where an employee is or will be present within the space and continues until all employees leave the space;
    - (3) A clean source of forced air supply is used for ventilation that does not increase the hazards in the space.

- (f) The atmosphere within the space is periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
- (g) If a hazardous atmosphere is detected during entry:
  - (1) Each employee leaves the space immediately.
  - (2) The space is evaluated to determine how the hazardous atmosphere developed; and
  - (3) Measures are implemented to protect employees from the hazardous atmospheres before any subsequent entry.
- (h) The space is verified for safe entry and that the necessary protective measures described above have been taken through a written certification. See Appendix B.

### **C. Changes in Space Use or Configuration**

When there are changes in the use and configuration of a non-permit confined space that might increase the hazards to entrants, the space is reevaluated and, if necessary, reclassified as a permit-required confined space.

### **D. Confined Space Reclassification**

A permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

1. If the space poses no actual or potential atmospheric hazards and the hazards are eliminated without entry, and as long as the non-atmospheric hazards remain eliminated.
2. Entry into the space to eliminate the hazards is under an authorized permit and testing and inspection during the entry demonstrate the hazards were eliminated without requiring continuous forced air ventilation.
3. A certification is documented showing the hazards were eliminated.
4. If hazards arise within a permit space that has been declassified to a non-permit space, each employee must exit the space and the space is reevaluated to determine if it must be reclassified as a permit space.

### **E. Contractors**

In some cases contractors and other non-employees may enter permit spaces to perform work. When contractors and others enter permit spaces the following procedures are followed:

1. They (contractors) are informed that the workplace contains permit spaces and that they must follow a permit space entry program per OSHA standard 29 CFR 1910.146 and use an authorized permit for entry.

2. Apprise the contractor of the elements, including the hazards identified and the experience with the space making it a permit space.
3. Apprise the contractor of the precautions or procedures implemented for protection of employees in or near permit spaces; and
4. Debrief the contractor at the conclusion of the entry regarding the permit space program followed and regarding any hazards confronted or created in the space(s) during entry operations.
5. All contractors performing permit space entry are required to:
  - (a) Obtain and use the available information provided.
  - (b) Coordinate entry operations with other working in or near permit spaces; and
  - (c) Inform the college during debriefing or entry of the permit space program that will be followed, and any hazards confronted or created in the space(s).

## **V. PERMIT-REQUIRED CONFINED SPACE PROGRAM**

### **A. General**

This permit-required confined space program is designed to prevent unauthorized entry into permit confined spaces, identify and evaluate hazards and establish procedures and practices for safe entry including testing and monitoring conditions. The program requires for an attendant stationed outside permit spaces during entry; procedures to summon rescuers and prevent unauthorized personnel from attempting rescue; and a system for preparing, issuing, using and canceling entry permits. It also includes procedures for entry operations and canceling entry permits and review of the permit program at least annually and additionally as necessary.

The following measures have been implemented as necessary to prevent unauthorized employee entry into permit spaces.

1. All affected employees have been informed through initial safety training about the characteristics and presence of permit spaces.
2. Some permit spaces are also posted with danger signs to supplement the safety training. However, the posting of danger signs is not all inclusive and each employee must know what a permit space is, the usual hazards involved, and what precautions are required to ensure safe entry so they can help ensure their own protection.

The following means, procedures, and practices necessary for safe permit space entry operations have been implemented:

#### **(1) Acceptable Entry Conditions**

All permit space entrants protected from atmospheric hazards including oxygen deficiency (less than 19.5%) or increased oxygen concentration (greater than 23.5%), toxic materials (above the exposure limit), flammable gases and vapors, asphyxiating, and engulfment, configuration or any other recognized hazards.

**(2) Isolating the Permit Space**

All hazardous energy sources associated with permit spaces which may expose entrants to potential injury are isolated, locked out and/or tagged out prior to entry:

**(3) Purging, Inerting, Flushing, or Ventilating Permit Spaces**

All permit entry spaces are thoroughly purged, made inert, flushed, and/or ventilated as necessary to ensure the elimination and/or control of all hazards which may cause entrants injury and/or illness.

**(4) External Hazards**

Pedestrian, vehicle, or other barriers are provided as necessary to protect entrants from external hazards.

**(5) Verifying Acceptable Conditions**

Conditions in permit spaces are tested and monitored throughout entry as necessary to ensure that they are acceptable for the duration of the authorized entry.

**B. Equipment**

The following equipment is provided at no cost to employees, maintained properly, and used properly to ensure the safety of employees entering permit spaces.

**(1) Testing and monitoring equipment**

- **This equipment will be borrowed (from BRCC) or rented on a case by case basis prior to the issuance of a permit.**

**(2) Ventilating equipment**

- Dual purpose, push/draw ventilation system for sewer systems manholes. **This system is borrowed by arrangement with the Town of Sylva when needed for entry.**

**(3) Communications equipment**

- **The college utilizes a two-way radio communications system.**
- **Cellular telephones will be used to summons EMS personnel.**

**(4) Personal protective equipment**

- **Hard Hats, steel toed shoes, rain suits, full body harness, gloves, eye protection**

**(5) Lighting equipment**

- **Portable lighting will be utilized and will be of a type safe for confined space entry, such that sparks and ignition sources are eliminated.**

**(6) Barriers and shields**

- **Type II Portable barricades**
- **36” traffic cones**

**(7) Ingress and egress equipment (to be rented)**

- **Vertical entry tripod and winch system**
- **full body harness/lifelines**

**(8) Rescue and emergency equipment**

- **Jackson County EMS**
- **Town of Sylva Fire Department**

**(9) Other equipment**

**C. Evaluating Permit Space Conditions**

Permit space conditions are evaluated (tested/monitored) when entry operations are conducted as follows:

**(1) Testing and Monitoring**

The entry conditions in the permit space are tested to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), in such case, pre-entry testing is performed to the extent feasible before entry and entry conditions continuously monitored in work areas.

The tests and monitoring are conducted in permit spaces as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.

When conducting tests for atmospheric hazards, oxygen tests are conducted first, then combustible gases and vapors, and then for toxic gases and vapors. The tests are conducted in order to ensure that test instruments function

properly since an oxygen deficient atmosphere may adversely affect the test results.

#### **D. Attendants**

##### **(1) General**

At least one attendant is required outside the permit space into which entry is authorized for the duration of the entry operation.

##### **(2) Duties**

All attendants are required:

- (a) To know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (b) To be aware of possible behavioral effects of hazard exposure in entrants;
- (c) To continuously maintain an accurate accounting of entrants in the permit space and ensure a means to accurately identify authorized entrants.
- (d) To remain outside the permit space during entry operations until relieved by another attendant (once properly relieved, they may participate in other permit space activities including rescue if they are properly trained and equipped).
- (e) To communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate;
- (f) To monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the entrants to immediately evacuate if:
  - 1. the attendant detects a prohibited condition,
  - 2. detects entrant behavioral effects of hazard exposure,
  - 3. detects a situation outside the space that could endanger the entrants,
  - 4. or if the attendant cannot effectively and safely perform all the attendant duties.
- (g) To summon rescue and other emergency services as soon as the attendant determines that entrants need assistance to escape the permit space hazards.
- (h) To take the following action when unauthorized persons approach or enter a permit space while entry is underway:

- (1) Warn the unauthorized persons that they must stay away from the permit space,
  - (2) Advise the unauthorized persons that they must exit immediately if they have entered the space, and
  - (3) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
- (i) To perform non-entry rescues as specified by that rescue procedure and entry supervisor; and
  - (j) Not to perform duties that might interfere with the attendant's primary duty to monitor and protect the entrants.

## **E. Entrants**

### **(1) General**

All entrants must be authorized by the entry supervisor to enter permit spaces, have received the required training, use the proper equipment, and observe the entry procedures and permit. The following entrant duties are required:

- (a) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- (b) Properly use the equipment required for safe entry.
- (c) Communicate with the attendant as necessary to enable the attendant to monitor the status of the entrants and to enable the attendant to alert the entrants of the need to evacuate the space if necessary;
- (d) Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or any prohibited condition is detected; and
- (e) Exit the permit space as quickly as possible whenever:
  1. the attendant or entry supervisor gives an order to evacuate the permit space,
  2. the entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
  3. the entrant detects a prohibited condition,
  4. or an evacuation alarm activated.

## **F. Entry Supervisors**

### **(1) General**

Entry supervisors are responsible for the overall permit space entry and must coordinate all entry procedures, tests, permits, equipment and other relevant activities. The following entry supervisor duties are required:

- (a) Know the hazards that may be faced during entry, including information on the mode, signs, or symptoms, and consequences of the exposure;
- (b) Verifies, by checking that the appropriate entries have been made on the permit, all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin;
- (c) Terminate the entry and cancel the permit when the entry is complete or there is a need for terminating the permit.
- (d) Verify that rescue services are available and that the means for summoning them are operable.
- (e) Remove unauthorized persons who enter or attempt to enter the space during entry operations; and
- (f) Determine, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with the permit terms and that acceptable entry conditions are maintained.

## **G. Testers and Monitors**

### **(1) General**

The accuracy of testing and monitoring equipment may be significantly affected under certain conditions of humidity, pressure, or temperature or by the presence of interfering chemicals. However, if the equipment is properly selected, calibrated, and maintained and operated by well trained employees, the confined space testing and monitoring needs can be effectively met. All persons performing tests and monitoring for permit space entry have been properly trained in the use of and limitations of the following testing and monitoring equipment.

The college does not own monitoring equipment. The proper type of equipment must be obtained prior to any permit being issued. All employees are to be trained in the proper use and maintenance before being assigned to use the equipment.

**(2) Procedures for Atmospheric Testing:** Atmospheric testing is required for two distinct purposes: evaluation of the hazards of the permit space and verification that acceptable entry conditions exist for the confined space.

- (a) **Evaluation Testing:** The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or

arise, so that a appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the entry procedure, is performed by, or reviewed by, a technically qualified professional (e.g., certified industrial hygienist, registered safety engineer, certified safety professional, etc.) based on evaluation of all serious hazards.

- (b) **Verification Testing:** The atmosphere of a permit space which may contain a hazardous atmosphere is tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) are recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.
- (c) **Duration of Testing:** Measurements of values for each atmospheric parameter are made for at least the minimum response time of the test instrument specified by the manufacturer.
- (d) **Testing Stratified Atmospheres:** When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope is be tested a distance of approximately 4 feet in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress is slowed to accommodate the sampling speed and detector response.

## H. Permit System

### (1) General

The entry permit is a vital part of the permit space entry program, which documents that the required measures have been taken to ensure entrant safety. All pertinent safety requirements must be recorded on the permit including the isolation, ventilation, tests and monitoring, personal protective equipment and other equipment necessary for entrant safety.

### (2) Requirements

The following requirement must be recorded (documented) on the entry permit. See Appendix D for the permit form.

- (a) The identity of the permit space, purpose of the entry, and the date and authorized duration of the entry permit;
- (b) Names of authorized entrants (or other suitable tracking system),
- (c) Current attendants' names,
- (d) Entry supervisor's name (signature), including original authorizing supervisor,

- (e) Hazards of the space,
- (f) Measures used to isolate the space and to eliminate or control the space hazards, before entry,
- (g) Acceptable entry conditions,
- (h) Results of initial and periodic tests accompanied by the names, or initials, of the testers and time of the tests,
- (i) Available rescue and emergency services and how to summon them,
- (j) Communication procedures used by entrants and attendants to maintain contact during entry,
- (k) Equipment, such as personal protective equipment, alarm systems and rescue equipment, to be provided,
- (l) Any other pertinent information necessary to ensure entrant safety; and
- (m) Additional permits, such as hot work permits that have been issued to authorize work in the space.

### **(3) Contractors**

All contractor entry into permit spaces must comply with all sections of this procedure.

## **I. Training**

### **(1) General**

All entry supervisors, attendants, and entrants are properly trained initially and refresher training provided when duties and space hazards change or whenever an evaluation determines inadequacies in the employees' knowledge. The training provides employees with the necessary understanding, skills and knowledge to safely enter, work in and exit permit spaces. All training is documented with the employees' names, signature or initials of the trainer and training date.

### **(2) Requirements**

Specific training requirements include, but are not limited to:

- (a) Each affected employee is trained,
- (b) Training is provided:
  - (1) Before employee is first assigned permit space entry duties;
  - (2) Whenever there is a change in permit space operations that present a new hazard unknown by the employee,

- (3) Whenever there is reason to believe either there are deviations from the entry procedures or inadequacies in the employees' knowledge or use of the procedures.
- (c) The training establishes employee proficiency in the required duties and introduces new or revised procedures, as necessary.
- (d) The training is certified and contains each employee's name, signatures or initials of the trainers, and training dates.
- (e) The training certification is available for inspection by employees and their authorized representatives by contacting their supervisor, personnel officer, or safety coordinator.

## **J. Rescue and Emergency Services**

### **(1) General**

Rescue and emergency services are provided off-site. Descriptions of the services are provided below.

Jackson County EMS (WestCare) and Rescue Squad with the assistance of the Town of Sylva Fire Department will respond to any emergencies within a permit-required confined space. Both departments will be notified when entry is made into a permit required confined space. This will enable response within 4 to 6 minutes.

### **(2) On-Site Rescue Services**

There will be no On-Site Rescue Services. All services will be provided by Jackson County with the secondary assistance from the Town of Sylva Fire Department. If response cannot be within the 4-6 minute time frame, arrangements will be made to have a rescue squad team on site during entry.

### **(3) Off-Site Rescue Services**

The following off-site rescue and emergency services have been contacted and approved to provide rescue and emergency services for permit required confined spaces.

The Jackson County Rescue Squad is located in Sylva.

The Town of Sylva Fire Department is located in Sylva.

- (a) The following has been provided the off-site rescue service:
  - (1) Information concerning the hazard they may confront when called to perform rescues; and

- (2) Access to all permit spaces from which rescue may be necessary so they can develop appropriate rescue plans and practice rescue operations.
- (3) Training by the Southwestern Community College Safety Director (Charles J. Reece) in proper use of the proper gas monitor (to be obtained).

#### **(4) Non-Entry Rescue**

Retrieval systems and methods have been developed for entrants to use when entering permit spaces, when the equipment does not increase the overall risk of entry and would not contribute to the rescue of the entrant. The systems are:

- (a) Tripod & winch with lifelines to use with full body harnesses for vertical entries.
- (b) Each authorized entrant uses a full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head.
- (c) Retrieval lines are attached to a mechanical device or a fixed point outside the space so rescue can begin immediately after the rescuer becomes aware that rescue is necessary.
- (d) Mechanical devices are available to retrieve entrants from vertical type permit spaces more than 5 feet deep.
- (e) Material Safety Data Sheets (MSDS) or similar written information is kept at the worksite when entrants are exposed to substances requiring such information so it can be made available to the medical facility treating exposed entrants.

#### **K. Permits and Forms**

1. Appendix A - Permit-Required Confined Spaces Inventory
2. Appendix B – Confined Space Entry Checklist
4. Appendix C - Confined Space Entry Permit

## **VI. REFERENCES AND SOURCES OF INFORMATION**

- U.S. Department of Labor. Occupational Safety and Health Administration. Directorate of Policy. "Selected Occupational Fatalities Related to Toxic and Asphyxiating Atmospheres in Confined Work Spaces as Found in Reports

of OSHA Fatality/Catastrophe Investigation”, Washington, D, July 1985 (Ex. 13-15).

- National Safety Council, Accident Prevention Manual, 10th Edition, Part 1, Pages 7 and 8, Part 4, Page 91, and Part 14, Page 431
- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Standards for the construction Industry, 29 CFR 1926.20 (b)(6)(i) and (ii).
- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Standards for general industry, 29 CFR 1910.147.
- North Carolina Department of Labor, Division of Occupational Safety and Health, A Guide to Safety in Confined Spaces, July 1995

DO NOT ENTER A CONFINED SPACE UNTIL ALL QUESTIONS HAVE BEEN CONSIDERED, AND HAVE DETERMINED THE SPACE TO BE SAFE.

Use the following checklist to evaluate the confined space.

\_\_\_\_ Yes \_\_\_\_ No Is the entry necessary?

**TESTING**

\_\_\_\_ Yes \_\_\_\_ No Are the instruments used in atmospheric testing properly calibrated?  
\_\_\_\_ Yes \_\_\_\_ No Was the atmosphere in the confined space tested?  
\_\_\_\_ Yes \_\_\_\_ No Was oxygen at least 19.5% and not more than 23.5%  
\_\_\_\_ Yes \_\_\_\_ No Were toxic, flammable, or oxygen-displacing gases/vapors present?  
\_\_\_\_ Hydrogen Sulfide  
\_\_\_\_ Carbon Monoxide  
\_\_\_\_ Methane  
\_\_\_\_ Carbon Dioxide  
\_\_\_\_ Other (list) \_\_\_\_\_  
\_\_\_\_\_

**MONITORING**

\_\_\_\_ Yes \_\_\_\_ No Will the atmosphere in the space be monitored continuously while work is going on?  
\_\_\_\_ Yes \_\_\_\_ No Will the atmosphere in the space be monitored periodically while work is going on? (if yes, give the interval: \_\_\_\_\_)

**REMEMBER ATMOSPHERIC CHANGES OCCUR DUE TO THE WORK PROCEDURE OR THE PRODUCT STORED. THE ATMOSPHERE MAY BE SAFE WHEN YOU ENTER, BUT IT CAN CHANGE VERY QUICKLY.**

**CLEANING**

\_\_\_\_ Yes \_\_\_\_ No Has the space been cleaned before entry is made?  
\_\_\_\_ Yes \_\_\_\_ No Was the space steamed?  
\_\_\_\_ Yes \_\_\_\_ No If the space was steamed, was it allowed to cool?

**VENTILATION**

\_\_\_\_ Yes \_\_\_\_ No Has the space been ventilated before entry?  
\_\_\_\_ Yes \_\_\_\_ No Will ventilation be continued during entry?  
\_\_\_\_ Yes \_\_\_\_ No Is the air intake for the ventilation system located in an area that is free of combustible dusts and vapors and toxic substances?

\_\_\_ Yes \_\_\_ No If the atmosphere was found unacceptable and then ventilated, was it retested before entry?

### **ISOLATION (Lockout/Tagout)**

\_\_\_ Yes \_\_\_ No Has the space been isolated from other systems?  
\_\_\_ Yes \_\_\_ No Has electrical equipment been locked out?  
\_\_\_ Yes \_\_\_ No Have disconnects been used where possible?  
\_\_\_ Yes \_\_\_ No Has mechanical equipment been blocked, chocked, and disengaged where necessary?  
\_\_\_ Yes \_\_\_ No Have lines under pressure been blanked and bled?

### **CLOTHING/EQUIPMENT**

\_\_\_ Yes \_\_\_ No Is special clothing required (boots, chemical suits, glasses, gloves, etc.) If so, specify: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_ Yes \_\_\_ No Is special equipment required (for example, rescue equipment, communications equipment, etc.) If so, specify: \_\_\_\_\_  
\_\_\_\_\_

### **RESPIRATORY PROTECTION**

\_\_\_ Yes \_\_\_ No Is respiratory protection required (for example, air-purifying, supplied air, self-contained breathing apparatus, etc.) If so, specify: \_\_\_\_\_  
\_\_\_ Yes \_\_\_ No Are NIOSH - approved respirators of the type required available at the worksite?  
\_\_\_ Yes \_\_\_ No Can you get through the opening with a respirator on? (If you don't know, find out before you try to enter.)  
\_\_\_ Yes \_\_\_ No Has qualitative/quantitative fit testing been performed?

### **TRAINING**

\_\_\_ Yes \_\_\_ No Have you been trained in proper use of a respirator?  
\_\_\_ Yes \_\_\_ No Have you received first-aid training?  
\_\_\_ Yes \_\_\_ No Have you been trained in confined space entry and do you know what to look for?

### **STANDBY/RESCUE**

\_\_\_ Yes \_\_\_ No Will there be a standby person on the outside in constant visual or auditory communication with the person on the inside?

- Yes  No Will the standby person be able to see and/or hear the person inside at all times?
- Yes  No Has the standby person been trained in rescue?
- Yes  No Will safety lines and harnesses be required to remove a person?
- Yes  No Are rescue procedures available to be followed in the event of an emergency?

**standby/rescue continued**

- Yes  No Are you familiar with emergency rescue procedures?
- Yes  No Do you know who to notify and how in the event of an emergency?

**PERMIT**

A confined space entry permit is an authorization in writing that states that the space has been tested by a qualified person and that the space is safe to entry; what precautions, equipment, etc. are required; and what work is to be done.

- Yes  No Has a confined space permit been issued?
- Yes  No Does the permit include a list of emergency telephone numbers?
- Yes  No Is a Hot Work Permit required for this work?
- Yes  No Is the Hot Work Permit attached to the confined space permit?

**RECLASSIFYING PERMIT REQUIRED CONFINED SPACE**

Permit-required confined spaces are reclassified to non-permit confined spaces only as follows:

- Yes  No Does the space pose no actual or potential atmospheric hazard, and all hazards eliminated without entry, as long as, the non-atmospheric hazards remain eliminated?
- Yes  No If entry is required to eliminate hazards, are the requirements of permit-required confined space entry followed? If testing and inspection demonstrates the hazards were eliminated, the space may be reclassified as a non-permit confined space as long as the hazards remain eliminated (control through forced air ventilation is not used to eliminate hazards).
- Yes  No Has the basis for determining all hazards have been eliminated documented by certifying the date, location of the space, and signature of the person making the determination and making it available to employees entering the space?

\_\_\_\_ Yes \_\_\_\_ No If hazards arise within a permit space declassified to a non-permit space, each employee in the space exits the space and it is reevaluated and determined if it should be reclassified a permit required space.  
 For pits, trenches, deep excavations, manholes, vaults, tanks, wells, pits, etc.

**IDENTIFICATION OF SPACE:** \_\_\_\_\_  
**PURPOSE OF ENTRY:** \_\_\_\_\_  
**LOCATION:** \_\_\_\_\_  
**DURATION:** \_\_\_\_\_

**DATE:** \_\_\_\_\_ **TIME: starting** \_\_\_\_\_, **completed** \_\_\_\_\_

**Name of all employees working this job:** \_\_\_\_\_  
 \_\_\_\_\_

**Name of authorized entrants:** \_\_\_\_\_  
 \_\_\_\_\_

**Name of current attendants:** \_\_\_\_\_  
 \_\_\_\_\_

**Name of Entry Supervisor:** \_\_\_\_\_

**How long to purge system with air flow before entry:** \_\_\_\_\_

<u>Test Monitored</u>	<u>Results</u>	<u>Time</u>	<u>Results</u>	<u>Time</u>
a. Oxygen Deficiency	_____	_____	_____	_____
b. Flammable vapors (Methane)	_____	_____	_____	_____
c. Toxic Vapors (Hydrogen Sulfide)	_____	_____	_____	_____
( Carbon Monoxide)	_____	_____	_____	_____

Were procedures for entry of a confined space followed? \_\_\_\_\_yes \_\_\_\_\_no

Was Confined Space Entry Checklist completed? \_\_\_\_\_yes \_\_\_\_\_no

Can Permit Required Confined Space be downgraded to Non-Permitted Confined Space? \_\_\_\_\_ yes \_\_\_\_\_ no

**Emergency Telephone Numbers:** \_\_\_\_\_

I have verified or made the above tests: inspected for overall safe conditions and procedures; and the safe condition of lifelines, safety harnesses, mechanical hoist and other appropriate equipment.

\_\_\_\_\_ Supervisor

\_\_\_\_\_ Qualified Person