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SAF-361 PERMIT REQUIRED CONFINED SPACE PROGRAM

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1.0 Introduction

1.1 Purpose

The purpose of this program is to provide guidance in the protection of all employees from hazards associated with entry into permit-required confined spaces as prescribed by the Occupational Safety and Health Administration's (OSHA's) Permit-Required Confined Space Standards – 29 CFR 1910.146 and 29 CFR 1926.1200. While some entities and/or divisions of Emory may have additional or more stringent guidelines, the guidelines outlined in this document shall serve as the minimum requirements for all.

1.2 Scope

This program is inclusive of all Emory employees, including healthcare, faculty, staff, student employees, contractors, and other people whose work activities require them to enter permit required confined spaces at Emory.

1.3 Definitions

Combustible gases. A flammable gas or vapor in excess of 10% of its lower explosive limit yet still remaining below the upper explosive limit.

Lower Explosive Limit (LEL). The lowest concentration at which a gas can ignite. Concentrations below this limit are too lean to burn.

Oxygen deficient. An atmospheric oxygen concentration below 19.5%.

Oxygen enriched. An atmospheric oxygen concentration above 23.5%.

Toxic gases. An atmospheric concentration of any toxic compound above the permissible exposure limit established.

Upper explosive limit (UEL). The highest concentration at which a gas can ignite. Concentrations above this limit are too rich to burn.

1.4 Responsibilities

Environmental Health and Safety Office (EHSO) and applicable Hospital and Clinic Safety Management

As the administrative department for the Permit-Required Confined Space Program, EHSO and applicable hospital and clinic safety management are responsible for:

- Development, implementation, and administration of the Confined Space Program;
- Conducting assessments of confined spaces to determine which are permit-required confined spaces;
- Assisting supervisors with the development of specific confined space permit procedures;
- Reviewing, updating, and evaluating the overall effectiveness of the Confined Space Program;
- Development and implementation of the Confined Space Training Program; and
- Ensuring that Confined Space training is provided to all Emory employees

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required to work in permit-required confined spaces.

Directors, Supervisors, and Managers

Directors, supervisors, and managers have primary responsibility for the management and enforcement of the Confined Space Program in their areas. They must:

- Enforce compliance with the Permit-Required Confined Space Program in their areas;
- Ensure that authorized entrants, attendants, and entry supervisors complete required training;
- Inform all outside contractors, entering permit-required confined spaces at Emory University, of this Permit-Required Confined Space Program;
- Inform all outside contractors of the location and hazards associated with all permit-required confined spaces that the contractor may enter;
- Ensure that any problem encountered during an entry operation is noted on the respective entry permit and a copy of the cancelled permit is forwarded to EHSO or applicable hospital and clinic safety management group, as appropriate, for review;
- Inform EHSO or applicable hospital and clinic safety management, as appropriate, when a new employee is assigned to work in confined spaces;
- Inform EHSO or applicable hospital and clinic safety management, as appropriate, whenever a potential permit-required confined space is introduced into the work area so an assessment can be conducted;
- Ensure that all required records are retained for at least one (1) year.

Authorized Entrants

The authorized entrants are those that are authorized by the entry supervisor to enter the permit-required space. Authorized entrants are responsible for:

- Participating in all required training;
- Knowing the hazards that may be faced during entry into a permit-required confined space;
- Recognizing the possible behavioral effects of exposure to confined space hazards;
- Knowing how to use all required equipment properly;
- Communicating with the attendant as necessary to enable the attendant to monitor entrant status;
- Alerting the attendant whenever:
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation; or
 - The entrant detects a prohibited condition.
- Exiting the space whenever:
 - An order to evacuate has been given by the attendant or entry supervisor;
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation; or
 - The entrant detects a prohibited condition.

Attendants

The attendant remains outside of the permit-required confined space during the entry process and is responsible for:

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- Participating in all required training;
- Ensuring that only authorized entrants enter the permit space;
- Knowing the hazards that may be faced during a confined space entry;
- Recognizing the possible behavioral effects of exposure to confined space hazards in authorized entrants;
- Continuously maintain an accurate count of authorized entrants in the space;
- Knowing how to use all required equipment properly;
- Remaining outside the permit space during entry operations until relieved by another attendant;
- Communicating with authorized entrants as necessary to monitor entrant status;
- Monitoring the activities both inside and outside of the confined space;
- Ordering authorized entrants to evacuate the space if necessary; and
- Performing non-entry rescue and summoning emergency personnel, should the need arise.

Entry Supervisors

The entry supervisor is the lead for the permit-required confined space entry and is responsible for the following:

- Participating in all required training;
- Knowing the hazards that may be faced during entry, including mode, signs or symptoms and consequences of the exposure;
- Verifying, by checking that the appropriate entries have been made on the permit, that 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;
- Terminating the entry and canceling the permit as required;
- Verifying that rescue services are available and that the means for summoning them are operable;
- Removing unauthorized individuals who enter or who attempt to enter the permit space during entry operations; and
- Ensuring that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained whenever responsibility for a permit space entry operation is transferred.

Employees

All employees are responsible for complying with the rules set forth by this Program.

Contractors

Whenever a contractor performs work in an Emory Permit-Required Confined Space, the Emory representative responsible for the project will:

- Inform the contractor that access to the permit-space is allowed only through compliance with a Permit-Required Confined Space Program that meets the requirements of both OSHA and Emory;
- Apprise the contractor of the elements of the Emory confined space entry procedures;
- Coordinate entry operations with the contractor when both Emory personnel and contractors will be working in or near permit spaces; and

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- Debrief the contractor at the end of the entry operations regarding the permit-required confined space program followed and any hazards confronted or created in permit spaces.

1.5 Training Requirements

- Training is given upon initial assignment and annually thereafter;
- Additional training is conducted when:
 - A new space is introduced into a work area;
 - When there is a change in the permit-space operations that presents a hazard which an employee has not previously been trained;
 - When there is reason to believe that there are deviations from the permit-space entry procedures required under OSHA; and
 - When there are inadequacies in the employee's knowledge or use of the procedures.
- The training includes the following:
 - The requirements of 29 CFR 1910.146;
 - Types of Confined Spaces;
 - Hazards Associated with Confined Spaces at Emory;
 - Responsibilities of Entrants, Attendants, and Entry Supervisors;
 - Confined Space Entry Procedures; and
 - Demonstration of how to use Confined Space Equipment.

1.6 Recordkeeping Requirements

- EHSO and applicable hospital and clinic safety management will maintain documentation of training (including employee's name, signature or initials of the trainer, and the dates of the training) for training they provide their employees.
- Training records are retained for two years and contain employee's name and date of training.
- Cancelled confined space permits are retained by the area supervisor for one year.
- All monitoring and calibration records are retained by the area supervisors indefinitely.
- Records may be retained electronically.

2.0 Types of Confined Spaces

2.1 Confined Space

A confined space is defined as a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means of entry or exit (i.e. tanks, pits); and
- Is not designed for continued employee occupancy.

2.2 Permit-Required Confined Space

Confined Space Entry Permits are required for entry into confined spaces which have one or more of the following characteristics:

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- Contains or has the potential to contain a hazardous atmosphere (i.e., oxygen enriched or oxygen deficient, contains combustible gases above the lower explosive limit (LEL) or contains toxic gases);
- Contains a material that has the potential to engulf or surround an entrant, such as a liquid or finely divided solid substance, that could be aspirated to cause death by filling or plugging the respiratory system or exert enough force on the body to cause death by strangulation, constriction, or crushing;
- 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.
- Contains any other recognized serious safety or health hazard (i.e. mechanical, electrical, thermal, etc.).

2.3 Alternative Procedures

Alternative procedures may be used to enter a space if all of the following conditions are met:

- The only hazard posed by the permit-space is an actual or potential hazardous atmosphere;
- Continuous forced air ventilation alone is sufficient to maintain that space safe for entry; and
- The air supply for the forced air ventilation is from a clean source that does not increase the hazards in the space; and
- There is documented monitoring and inspection data that supports the assertions required in first two bullets of this section;
- The following requirements apply to entry into permit spaces using Alternative Procedures:
- Any conditions making it unsafe to remove an entrance cover shall be eliminated prior to entry;
- The entry team tests the air within the space every thirty (30) minutes to ensure continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
- If a hazardous atmosphere is detected during entry:
- Each employee evacuates the space immediately;
- The supervisor contacts EHSO to re-evaluate the space to determine how the hazardous atmosphere developed; and
- Measures are implemented to protect employees from the hazardous atmosphere before subsequent entries take place.

2.4 Non-Permit Required Confined Space

A permit required space may be reclassified as non-permit required under the following conditions:

- The space poses no actual or potential atmospheric hazard, and all hazards within the space are eliminated without entry into the space;
- If it is necessary to enter the space to eliminate the hazards, the permit procedures are applied until the hazards have been eliminated;
- If hazards arise within the reclassified space, each employee in the space evacuates immediately;
- The supervisor contacts EHSO to re-evaluate the space to determine how the

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- hazardous atmosphere developed; and
- Measures are implemented to protect employees from the hazardous atmosphere before subsequent entry takes place.

3.0 Confined Space Rescue

- In the event of an emergency of any type in the confined space, entrants in the space will evacuate as quickly as possible.
- If non-entry rescue is possible, utilize the tripod retrieval system
- If rescue from within the confined space requires entry, the attendant will:
 - Immediately call 911
 - Inform the operator that rescue is needed from a confined space;
 - Provide the emergency service the location, the type of confined space, and the hazards associated with the space.

4.0 Permit Requirements

- The *Confined Space Permit* is required for entry into confined spaces which have one or more of the characteristics from Section 2.2.
- The *Confined Space Atmospheric Testing Form* is only used for entry into confined spaces when following the Alternative Procedures listed in section 2.3.

5.0 Completing the Permit

5.1 General Information for Permit

- Identify the department conducting the entry and the location/identity of the space to be entered.
- Enter the purpose for the entry.
- Enter the date and time issued - as well as the date and time the permit expires.
- Identify the person assigned as the Entry Supervisor. Identify all Entrants and the Attendant.

5.2 Atmospheric Testing

- Conduct atmospheric testing using an intrinsically safe, properly calibrated, direct reading instrument prior to entry into any permit-required confined space and continuously as long as entrants are within the space to ensure a hazardous or harmful atmosphere is not present when personnel enter or occupy the permit-space.
- Prior to atmospheric testing, bump test the monitoring equipment and record the date, time, and results of the monitoring on the Confined Space Monitor Calibration Form.
- Perform atmospheric testing in the following order and record the results, including the concentration and time of the reading, on the permit under the heading "Pre-Entry Test, 2nd Test, 3rd Test, etc.":
 - Oxygen content;
 - Flammable gases and vapors; and
 - Potential toxic air contaminants.
- When monitoring for entries involving a descent into atmospheres that may be stratified:

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- The atmospheric envelope is tested a distance of approximately 4 feet (1.22 m) 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.
- Continuously conduct atmospheric testing as long as entrants are within the space.
- Document atmospheric readings periodically (at least every 30 minutes) throughout the entry.
- Record the name of the person conducting the atmospheric monitoring.

5.3 Working Conditions

- Document the working conditions in the space by indicating whether:
 - Hot work is required;
 - Ventilation is provided;
 - Electrical sources are isolated;
 - Pumps or lines are blinded, disconnected or blanked;
 - Instructions are provided to personnel entering the space; and
 - Lockout/tagout procedures are followed.

5.4 Equipment Required for Entry

Document the equipment that is required for entry into the space on the permit.

6.0 Program Evaluation

The written Permit-Required Confined Space Program is re-evaluated annually and revised as necessary.

7.0 References

- OSHA Standard – [Permit-Required Confined Spaces](#) (29 CFR 1910.146).
- OSHA Standard – [Confined Spaces in Construction](#) (29 CFR 1926.1200).

8.0 List of Associated Documents

- Alternative Procedures Confined Space Atmospheric Testing Form
- Confined Space Atmospheric Testing Form
- Confined Space Monitor Calibration Form
- Confined Space Permit
- Confined Space Permit for Heat Stress