

SECTION	III.	Occupational Safety
Chapter	2.	Confined Spaces
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WORK IN CONFINED SPACES

INTRODUCTION

PURPOSE

The Confined Space Entry program is designed to eliminate the occurrence of loss incidents while entering or working in confined spaces. This program applies to all operations in the Duke University System that requires university or contractor employees to enter or work in confined spaces. It is the policy of Duke University to maintain a progressive Confined Space Entry Program to ensure the identification and control of confined space hazards. The procedures in this program shall be followed prior to any entry into confined spaces by Duke University or Contractor employees.

DEFINITIONS

Confined Space - A space that, by design, is large enough and so configured so that an employee can enter and perform work; has limited openings for entry and exit; and which is not intended for continuous employee occupancy. Confined spaces include any space that has an open top enclosure of more than four feet in depth which restricts the natural movement of air and enclosures with extremely limited openings for entry or exit. Confined spaces include (but are not limited to) storage tanks, process vessels, opened top spaces more than four feet in depth such as pits and vaults, silos, vats, degreaser vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, and pipelines.

Engulfment - The surrounding and effective capture of a person by liquid or a finely divided 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 act by which a person intentionally passes through an opening into a permit required space, and includes ensuing work activities in that space. The entrant is considered to have entered the space as soon as any part of the entrant's body breaks the plane of an opening into the space.

Hazardous Atmosphere - An atmosphere which exposes employees to a risk of death, incapacitation, impairment of ability to self rescue, injury, or acute illness from one or of the following conditions:

- A flammable gas, vapor, or mist in excess of 10 percent it's lower flammable limit (LFL or LEL).
- An airborne combustible dust in a concentration that obscures vision at a distance of five feet or less.
- An atmospheric oxygen concentration below 19.5 % or above 23.5 %.
- An atmospheric concentration of any substance for which a permissible exposure limit (PEL) is published in 29 CFR 1910 which could result in an employee's overexposure to that substance.
- Any atmospheric condition recognized as immediately dangerous to life or health (IDLH).

Immediately Dangerous to Life and Health (IDLH) - Any condition which poses an immediate threat of loss of life; may result in irreversible or immediate-severe health affects; may result in eye damage; irritation or other conditions which could impair unaided escape from the permit space.

Permit Required Confined Space - A confined space which has one or more of the following characteristics:

- Contains or has a known potential to contain a hazardous atmosphere.
- Contains a material with a potential for engulfment.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazard.

RESPONSIBILITIES

Departments with employees who are required to enter or work in confined spaces shall:

- Provide necessary equipment and resources to perform work in confined spaces.
- Develop and implement a departmental Confined Space Entry Plan.

Departmental Safety Coordinators shall:

- Inventory all confined spaces.
- Evaluate and classify all confined spaces to identify hazardous conditions and determine permit requirements, using the Duke University Confined Space Hazard Evaluation Survey Form.
- Obtain all required sampling and safety equipment.
- Label all Permit-required confined spaces with appropriate warning labels.
- Schedule department employees required to work in confined spaces for training and certification with the Occupational and Environmental Safety Office.
- Notify the Occupational and Environmental Safety Office of employees required to wear and use respirators.
- Issue confined space entry permits in accordance with the departmental Confined Space Entry Plan.
- Ensure that adequate supervision is present during confined space entries.
- Audit departmental personnel periodically while performing confined space work to ensure employee performance.
- Ensure that confined space entry by Contractors is managed as described below.

Employees shall:

- Follow safe work procedures while working in confined spaces.
- Report to supervision any unsafe conditions concerning confined spaces.
- Ask supervisors for assistance or clarification of work procedures as necessary.

The Occupational and Environmental Safety Office shall:

- Develop and implement the Duke University Confined Space Entry Program.
- Approve all sampling methods and equipment.
- Approve all safety equipment.

- Assist departmental heads and coordinators with their departmental confined space entry plans.
- Approve departmental confined space entry plans.
- Audit, on an annual basis, the Confined Space Entry Program to ensure Program effectiveness and compliance with applicable standards.

PROCEDURES

CONFINED SPACE ENTRY PLANS

A Confined Space Entry Plan is a document which describes specific safety procedures for each department having confined space work areas. The intent of the Confined Space Entry Plan is to ensure that employees are protected from safety and health hazards associated with such work. Individual plans are to be prepared for each department. Shop specific procedures may be developed based on the needs of the department, however, all such sub-plans must be approved by the departmental representative. See Supplement F for an example of a Confined Space Entry Form.

Elements of the Plan must include:

- The identity of the department and the name of the departmental representative.
- An inventory of all confined spaces and a description of the identification scheme for labeling such spaces.
- The departmental criteria for permitting entry into confined spaces.
- A description of the pre-entry and periodic atmospheric testing required for each category of space.
- An inventory of all confined space equipment and its location.
- A description of required training and qualification of personnel.
- A description of isolation/lockout/tagout procedures.
- A description of the entry sequence, to include emergency and rescue procedures.

CONTRACTORS

Contractors who must perform work involving entry of permit confined spaces will be informed of the following in the contract documents:

- A description of the hazards which may be present.
- The Duke University safety requirements for confined space work.
- The requirement to coordinate all confined space entries with the cognizant Confined Space Coordinator.

Contractors are required to provide a confined space entry plan meeting the requirements of 29 CFR 1910.146 prior to the start of work. Following a confined space entry, Contractors are required to debrief the cognizant Confined Space Coordinator of any hazards encountered or created during the operation.

TRAINING

The following training courses are required for all employees who work in departments which require a written Confined Space Entry Program.

- IH131 Confined Space Entry Procedures - All authorized entrants and attendants not in Telecommunications.
- IH132 Confined Space Entry Procedures for Tel-com - All Telecommunications authorized entrants and attendants.
- IH232 Confined Space Entry lead worker training - For confined space lead workers.
- IH031 Confined Space Hazards Awareness - All other maintenance employees not covered in above training.

REFERENCES

Code of Federal Regulations, Title 29, Part 1910.146 (OSHA), *Permit Required Confined Spaces*

National Institute for Occupational Safety and Health (NIOSH), Publication No. 87-113, *A Guide to Safety in Confined Spaces*

American National Standards Institute (ANSI), Z117.1, *Safety Requirements for Confined Spaces*

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