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Purpose

Primary Objectives

1. Maintain, as a minimum standard, compliance with all relevant statutes, regulations and standards of regulatory authorities representing occupational health and safety.
2. Ensure that safety and accident prevention are an integral part of planning, operations and University activities.
3. Promote safe working practices and awareness through training, education and the implementation of general safety policies and workplace specific procedures, including an Occupational Health and Safety Program.

Operational Objectives

1. To provide information on where confined spaces exist on the University campus.
2. To provide information on the level of hazard that exists in the identified confined spaces as a result of space restrictions, design, location, contents or work activities that create a dangerous atmosphere.
3. To implement procedures that will prevent unauthorized entry into confined spaces.
4. To protect the health and safety of those who must enter confined spaces on University property.

Legislation

Adherence to these procedures ensures compliance with the:
Occupational Health and Safety Act and *Occupational Health and Safety Regulations*.

Sections 266 through 274 apply to confined spaces. The legislation can be located on-line at <http://www.qp.gov.sk.ca/documents/English/Regulations/Regulations/O1-1R1.pdf>

Definitions

Confined Space

Pursuant to *The Occupational Health and Safety Regulations, 1996*, “**confined space**” means an enclosed or partially enclosed space that:

- (i) is not primarily designed or intended for human occupancy, except for the purpose of performing work; and
- (ii) has restricted means of entrance and exit.”

Examples of confined space include spaces that can only be entered or exited:

- through a hatch,
- by a ladder,
- by a spiral staircase with a tight radius such that a standard sized stretcher could not be used to remove an injured employee, or
- by crawling.

Hazardous Confined Space

Certain confined spaces are particularly hazardous and are subject to strict regulations that prohibit entry into the spaces except under very specific conditions. These confined spaces are called “**hazardous confined spaces**”.

The regulations define “hazardous confined space” to mean “a confined space that is or may become hazardous to a worker entering the confined space due to;

- (i) the design, construction or atmosphere of the confined space;
- (ii) the materials or substances in the confined space;
- (iii) the work activities or processes used in the confined space;
- (iv) any other conditions relating to the confined space.

Some of the hazards that may be present which may render a confined space a hazardous confined space, include:

- pipes (sewer, steam, gas, etc.) that can make the space hazardous if they burst;
- unexpected atmospheric hazards (methane, hydrogen sulphides, or oxygen deprived environment) resulting from soil conditions, leaks, or inadequate ventilation,
- insulated pipes in poor condition which may contain asbestos or pose a burn hazard,
- high voltage conductors,
- moving parts of machinery
- stacked or stored material that pose a crushing/engulfment hazard

A confined space that has no apparent hazards may become a hazardous confined space because of the work activity taking place within the confined space. For example, welding, painting or work with substances that produce toxic fumes or pose a risk of explosion.

Train means to give information and explanation to an employee with respect to a particular subject matter and require a practical demonstration that the employee has acquired knowledge or skill related to the subject matter.

Employee Trained in Confined Space Entry means a University employee who has successfully completed a training course in confined space entry.

Competent means possessing knowledge, experience and training to perform a specific duty.

Bump test means a functional test of a gas monitor that involves a brief exposure of the monitor to a concentration of gas(es) in excess of the lowest alarm set-point for each sensor for the purpose of verifying sensor and alarm operation.

Hot Work means any activity that creates sparks, or involves heat, or open flames. Among the activities covered by the hot work procedure are welding, braising, soldering, abrasive wheel cutting, paint burning, tarring and thermal bonding.

Entry (vb) means the entry of any part of a person’s body into a confined space.

Supervisor means a person who is authorized by the University to oversee or direct the work of employees.

Responsibilities

1. Vice-President (Administration) will:
 - 1.1 ensure that adequate resources are available to implement appropriate measures.
 - 1.2 require that the procedures are communicated to employees.
 - 1.3 require compliance with the procedures.
2. Associate Vice-President (Facilities Management) will:
 - 2.1 require that an up-to-date inventory of the University's confined spaces is maintained and, to the extent possible, categorize the space in accordance with the Categorization of Spaces Section.
 - 2.2 ensure all persons authorized to issue a hazardous confined space entry permit are competent to do so.
 - 2.3 ensure contractors performing confined space entry operations at the University are provided with a copy, and provide written assurance that their employees are trained in Confined Space Entry and will comply with the University's confined space entry program.
 - 2.4 ensure a central registry is maintained of all issued confined space entry permits and written entry plans.
 - 2.5 ensure confined spaces are adequately identified.
 - 2.6 ensure the Confined Spaces Procedures are implemented, maintained, and reviewed at intervals not greater than 3 years, and whenever there is a change of circumstances that may affect the health and safety of employees.
3. Facilities Management Managers will:
 - 3.1 ensure that employees who are required to participate in a confined space entry are trained in confined space entry procedures, and such other matters necessary to ensure their health and safety (e.g., the use of a respirator, safe work procedures).
 - 3.2 ensure that Hazardous Confined space entry is not permitted until such time as a Confined Space Entry Work Plan is complete.
 - 3.3 ensure a copy of all issued confined space entry permits and written entry plans are filed in the central registry with Facilities Management.
4. Supervisors will:
 - 4.1 remain at the University of Regina during a hazardous confined space entry.
 - 4.2 conduct a pre-job meeting with all hazardous confined space entry participants prior to commencing the entry operation.
 - 4.3 ensure that the written entry plan and entry permit is readily available at the entrance of the hazardous confined space during the entry operation.
 - 4.4 ensure compliance with the written entry plan and the entry conditions set out in the confined space entry permit.
 - 4.5 at the conclusion of the entry, complete the confined space entry permit and return it to the person who issued it.
5. University of Regina employees will:
 - 5.1 comply with the University's confined space entry program.
6. Facilities Management staff will:
 - 6.1 maintain precautions against unauthorized entry into confined spaces.

7. Contractors and their employees will:
 - 7.1 comply with the University's confined space entry program.
 - 7.2 notify the Project Manager, or other person designated by the Project Manager, prior to commencing work in a confined space.
8. Health, Safety & Environment (HSE) will:
 - 8.1 provide technical services and advice on confined space entry.
 - 8.2 audit the Confined Spaces Procedures.

Categorization of Confined Spaces

The University of Regina has categorized the types of restricted and confined spaces into the following two categories.

1. Category I – Non-Hazardous Confined Space

- Limited entrance or exit
- Adequate ventilation to maintain safe atmospheric conditions
- No physical atmospheric hazards and the work activity will not create physical hazards or change the atmosphere within the space
- Examples of a Non-Hazardous confined space include crawl spaces, passages through ceilings or spaces accessed through circular stairs or half doors
- The locations of all Non-Hazardous Confined spaces are identified in **yellow** on the confined spaces maps

ALL Category I – Non-Hazardous Confined Spaces have the potential to become a Category II “Hazardous Confined Space” depending upon the work activity being carried out in the space.

2. Category II – Hazardous Confined Space

- Risks are the presence of one or more of the physical hazards described below; or
- An atmosphere that does pose or has the potential to pose a threat to health or safety. It includes spaces whose atmosphere is only kept safe through mechanical ventilation.

The types of physical hazards or hazardous activities present in a Category II Hazardous Confined Space include:

- Exposed high voltage.
- Equipment with exposed moving parts.
- Stacked or stored material that has the potential to release, leak or collapse, so that an employee could be crushed or engulfed.
- Hot work.
- Work with any flammable or combustible substance such as paint, paint thinners or solvents.
- Rescue challenges.
- Vessels.
- Manholes.

The location of all Category II Hazardous Confined Space spaces have been mapped by Facilities Management, Production and are identified in **Red** on the confined spaces maps.

Entry Requirements and Safe Work Procedures

A summary of the Entry Requirements for each Category of Space is contained in Appendix 2.

1. CATEGORY I – Non-Hazardous Confined Space

Only Facilities Management staff, contractors, University employees that are trained in Confined Space Entry may enter a Non-Hazardous Confined space.

Where entry is for the sole purpose of travel through or brief inspection or routine adjustment, then the following procedures must be employed when entering or traveling through the confined space:

- Carry a two way radio or cell phone.

When an employee is concerned that the atmosphere in a non-hazardous confined space may not be safe, it may be required that, prior to entry, the air be tested by a competent person using a properly calibrated and bump tested Multi-Gas Monitor.

2. CATEGORY II – Hazardous Confined Space with Safe Atmosphere

No person may enter a Category II - Hazardous Confined Space unless a Hazardous Confined Space Entry Permit that meets the requirements of **Appendix 3** has been issued by a Facilities Management Manager or other person designated by the AVP (Facilities and Planning) as being competent to issue a Hazardous Confined Space Entry Permit.

In order to issue a Hazardous Confined Space Entry Permit:

- **A written entry plan** must be prepared that meets the requirements of section 272 of *The Occupational Health and Safety Regulations, 1996*; (see Written Entry Plan section for plan requirements).
- An adequately trained attendant is stationed and remains at the entrance to the confined space unless replaced by another adequately trained attendant. The attendant must be equipped with a suitable alarm or means to summon assistance and be trained in the applicable rescue procedures.
- All persons who participate in the confined space entry, including outside attendants, must be trained in the confined space entry program AND the written entry plan.
- A Supervisor must be designated who is responsible to ensure that the written entry plan is implemented.
- Employees are equipped with and trained in the use of appropriate respiratory protection when respiratory protection is required.

Where a permit cannot be issued to University staff to perform work in a Hazardous Confined Space because the atmosphere may require the use of an SCBA for the work or rescue, the University will contract the services of a competent contractor.

Prior to commencing work, the contractor shall provide the University with a copy of its written entry plan that meets the requirements of sections Part XVIII and 369 of The Occupational Health and Safety Regulations, 1996.

A copy of the written entry plan must be readily available at the entrance of the confined space. A copy of the plan must also be centrally filed with Facilities Management.

Written Entry Plan

Section 272 of *The Occupational Health and Safety Regulations, 1996* requires that where an employee will be required or permitted to enter a hazardous confined space, a written confined space entry plan must be implemented that is readily available at the entrance of the hazardous confined space. The regulation requires that the entry plan include nine separate items.

The items are:

- “(a) the tests or measurements necessary to monitor any oxygen deficiency or enrichment or the presence and hazardous concentration of flammable or explosive substances;
- (b) the identification of any other hazards that may be present in the hazardous confined space and may put the health and safety of employees at risk;
- (c) the means, if any, of isolating the hazardous confined space;
- (d) the means, if any, of ventilating the hazardous confined space;
- (e) the procedures to enter, work in and exit from the hazardous confined space safely;
- (f) the availability, location and proper use of personal protective equipment;
- (g) the means to maintain effective communication with an employee who has entered the hazardous confined space; and
- (h) the availability, location and proper use of any other equipment that an employee may need to work safely in the hazardous confined space.”

At the University of Regina, this means that a written entry plan must be prepared for entrance into any Category II hazardous confined space.

Education and Training

All University employees who are required to work in confined spaces, as well as those University supervisors who authorize work performed in confined spaces shall receive appropriate training. Instruction shall include the following:

1. Responsibilities under the Confined Space Program
2. Potential Confined Space Hazards
3. Identification and Classification of Confined Spaces at the University
4. Confined Space Entry Permit System (Employee Permit and Contractor Permit)
5. Lock-out and Tag-out
6. Purging and Ventilating
7. Air Monitoring
8. Respiratory Protection
9. General Procedures for Confined Space Entry Work and Emergency
10. Identification of Need for Specific Entry Work and Emergency Procedures
11. Right to refuse Unusually Dangerous Work pursuant to The Occupational Health and Safety Act, 1993.

Hazard Assessment and Controls

Prior to any entry into a High Hazard Restricted Space or a Moderate to High Hazard Confined Space, a written Hazard Assessment must first be completed by a competent person that identifies the potential hazards in the space. Written Hazard Assessments must also be completed when work (other than inspection) is to be performed in a confined space.

Non-Compliance

Failure to meet the Confined Space requirements shall be grounds for disciplinary action or immediate termination of the contract at the discretion of the University.

Injuries/Exposures

If during the performance of assigned duties anyone becomes injured or suspects an occupational exposure occurred, an Incident/Accident Report must be submitted to HSE within 24 hours of occurrence.

Written Entry Plan Requirements

Eight Required Elements of a Hazardous Confined Space Entry Plan

1. *The tests or measurements necessary to monitor any oxygen deficiency or enrichment or the presence and hazardous concentration of flammable or explosive substances:*

The written plan should describe how the atmosphere is to be tested and measured, prior to entry and prior to any re-entry. The plan must also describe how the atmosphere will be monitored and tested during the entry.

The regulations require that where ventilation is required to reduce or eliminate a hazard the testing must take place:

- before a worker enters the space.
- where all workers have vacated, before a worker re-enters the space.
- on the request of a worker required to enter the space; and
- continuously when any condition in the confined space may change and put the worker's health or safety at risk.

2. *The identification of any other hazards that may be present in the hazardous confined space and may put the health or safety of workers at risk:*

Completion of the Confined Space Entry Work Plan (Appendix 3) will help identify the hazards within the confined space, including those generated by the work activity.

When a Hazard has been identified on the Confined Space Entry Work Plan, a description of the Hazard and the measures in place to control that hazard must appear on the Entry Plan.

The completion of the Confined Space Entry Work Plan and the assessment and selection of the hazard controls in place to address the Hazard must be completed by a competent person. In the case of the University of Regina staff, a competent person is an employee trained in confined space entry.

3. *The means, if any, of isolating the hazardous confined space:*

Isolate means to physically interrupt or disconnect pipes, lines and sources of energy from a confined space.

All equipment, energy sources and piping systems in a confined space must be locked out or isolated if not doing so would put a worker at risk.

The plan should identify all equipment; pipes, lines or energy sources that must be locked out or isolated and provide a description of the lock out procedures.

The plan should also describe barriers and other devices used to protect the space and others from persons or other activities in the area that may interfere or be at risk as a consequence of the confined space entry.

4. *The means, if any, of ventilating the hazardous confined space:*

Where toxic or combustible substances are present the plan should describe the method for purging the substance from the space.

5. *The procedures to enter, work in and exit from the hazardous confined space safely:*

Procedures should include:

- a description of the entry space and how workers may safely enter and exit while wearing the PPE required.
- how and when equipment will be carried in and out of the space.
- safe work process for work being performed in the space. (e.g., hot work)
- required PPE.

6. *The availability, location and proper use of personal protective equipment.*

7. *The means to maintain effective communication with a worker who has entered the hazardous confined space:*

The University of Regina requires that an attendant will be stationed at the entrance of a hazardous confined space during entry. The plan should describe how communication will be maintained between the attendant and the entrants. Means of communication include voice, hand signals, radios or other electronic means.

8. *The availability, location and proper use of any other equipment that a worker may need to work safely in the hazardous confined space:*

The equipment needed will be dependent upon the circumstances of the space and the work being performed and other hazards identified in the Confined Space Entry Work Plan.

A copy of the written entry plan must be readily available at the entrance of the confined space. A copy of the plan must also be centrally filed with Facilities Management.

Summary of Non Hazardous & Hazardous Confined Space Entry Requirements

Space type	Activity	Minimum Communication Requirements	Written Entry Plan* Y/N	Potential Hazards
Category I Non-Hazardous Confined Space	*Travel Through/ Inspection **Work	Cell/Radio Required	No	Awkward entry and exit, which may require specialized rescue plans. Task Generated Hazards.
Category II Hazardous Confined Space	Any Purpose	Notify Supervisor on entrance/exit Trained and equipped attendant outside	Yes Yes	<ul style="list-style-type: none"> - Atmospheric Hazards requiring respiratory protection or purging & ventilation - Hot Work - Exposed High Voltage - Exposed Moving Parts - Engulfment - Rescue challenges - Vessels - Sewage Lift Pit - Manholes - Chlorine Room

*Only Facilities Management staff, contractors authorized to enter certain spaces, or University staff authorized and trained to enter Category 1 Non-hazardous Confined Space and then only in the areas they are authorized to enter.

**Work, for the purposes of this document, includes any use of equipment, tools, protective equipment or special procedures (e.g. Lock-out), while in the process of inspecting, maintaining, or repairing equipment.

Confined Space Entry Work Plan

This form must be filled out:

1. Prior to the entry into a confined space.
2. When there is a deviation from the original scope of work from the original entry.
3. For each entry point, if there is more than one on any vessel.
4. If the point of entry changes from the original.
5. Complete both Section A and B for all Category II Hazardous Confined Space Entry.

Note: This document must be posted at the point of entry and remain in place until the work is complete, or points 2 or 4 above occur. If the job exceeds one shift this form is to be given to the next supervisor who will review it with the crew coming on.

Section A

**To be completed for all Category II Hazardous
Confined Space Entry when work is performed.**

Date: _____ day shift night shift
dd/mmm/yy

Worksite: _____ Jobsite: _____

Supervisor: _____ Work Order #: _____

Emergency Phone Numbers

Medical: 911

Fire: 911

Police: 911

Security: (585) 4999

First Aid Kit Location: _____

First Aid Facility: _____

Safety Shower/Eyewash: _____

First Aid Designate

Crew: _____

Other: _____

Classification of Work

Maintenance

Cleaning

Inspection

Other: _____

Basic Scope of Work

Tools and Equipment: _____

Communication

- Radio
 - Voice
 - Horn signals
 - Hand signals
 - Other: _____
- Cell phones (list numbers) _____

Authorized Entrants

Section B**To be filled for all Category II Hazardous Confined Space Entry****Atmospheric Testing**

- N/A
 Test frequency: Continuous 30 minutes
 1 hour 2 hours 4 hours

If the confined space is vacated for a period of time greater than 30 minutes, an atmospheric test must be completed before re-entry.

**See attached atmospheric testing log for contaminant levels.*

Ventilation Procedure: _____

Procedure for Entry: _____

Procedure for Work Inside: _____

Procedure for Exit _____

Procedure for Decontamination: _____

Safety Watch Attendance P.P.E. (if different from above): _____

