

Confined Space Entry Code of Practice

Owner	Manager, Central H&S Services		
Custodian	<u>H&S Programs & Projects</u>		
H&S Discipline	Occupational Safety		
Program	Confined Space Management		
Subject Matter Expert			
COMS	<u>See COMS Standards</u>		
Document Number	CEN-EHS034		
Version	2.0	Review Cycle	3 years
Revised Date	September 25, 2014	Issued date	March 15, 2004

Version	Description	Date	Sign Off		
			Requester	Reviewer	Owner
2.0	Major changes in include: <ul style="list-style-type: none"> • definitions • roles and responsibilities • CSE permit • classification of confined spaces • confined space inventory • vessels with radiation devices • training standard program quality assurance 	Sept 26, 2014	Batch 1 review process		

Table of Contents

1.0 Purpose 1

2.0 Scope..... 1

3.0 Process Requirements 1

 3.1 Inventory of Confined Spaces 1

 3.2 Confined Space Classification and Safeguards 1

 3.3 Warning Signs and Barricades..... 3

 3.4 Confined Space Entry Planning Process 3

 3.5 Safety Harness and Lifeline 5

 3.6 Atmospheric Testing and Monitoring 5

 3.7 Hot Work 8

 3.8 Isolation and Lockout 8

 3.9 Electrical Equipment 8

 3.10 Temporary Heating 9

 3.11 Compressed Gas Cylinders and Tools 9

 3.12 Vessels with Radiation Devices..... 10

 3.13 Performing Cleaning Work in a Confined Space..... 10

 3.14 Waste Disposal 11

 3.15 Job Completion..... 11

 3.16 Record Retention 12

4.0 Roles and Responsibilities 12

5.0 Training and Competency 15

 5.1 Training..... 16

6.0 Quality Assurance..... 17

 6.1 Performance Measurement 17

 6.2 Management of Change 17

7.0 Glossary..... 18

8.0 References..... 19

 8.1 External Documents 19

 8.2 Internal Documents..... 19

Appendix A: Determination of a Confined Space 20

Appendix B: Confined Space Inventory Template..... 21

Appendix C: Confined Space Classification22

Appendix D: Safe Limits for Working in a Confined Space23

Appendix E: Confined Space Entry Workflow.....24

Appendix F: Potential Confined Space Hazards25

List of Tables

Table 1: Roles and Responsibilities	12
Table 2: Terms and Definitions	18
Table 3: External Document References	19
Table 4: Internal Document References.....	19

1.0 Purpose

The purpose of the Confined Space Entry (CSE) Code of Practice (COP) is to support site-specific operations and procedures for confined space work, and to ensure compliance with regulatory requirements.

2.0 Scope

This Confined Space Entry Code of Practice applies to all Cenovus worksites and encompasses contracted work activities.

3.0 Process Requirements

3.1 Inventory of Confined Spaces

Each Cenovus asset must maintain an inventory of all existing and potential confined spaces within its operation. The inventory will be updated whenever new confined space locations have been identified.

Follow Appendix A to determine whether the workspace in question is classified as a Confined Space. If yes, then follow Section 3.2 to determine the appropriate Confined Space classification.

Refer to Appendix B to complete the confined space inventory.

3.2 Confined Space Classification and Safeguards

Note: The first entry into a confined space will always follow the safeguards of entering a High Hazard Confined Space.

The CSE Supervisor is responsible for classifying the confined space, and arranging for hazard controls to minimize the risks exposed to the CSE workers. The top priority in any confined space entry work is to eliminate the atmospheric hazards using mechanical means (e.g. mechanical ventilation). If the hazards cannot be reduced to zero, other methods of hazard controls will be used in conjunction (e.g. mechanical ventilation and SCBA).

See Appendix C for Confined Space Classification.

See Appendix D for Safe limits for Working in a Confined Space.

3.2.1 Low Hazard Confined Space

A confined space that has all identified hazards controlled, a low likelihood of the hazards to change, and to which **all** of the following apply:

1. Concentration of oxygen is always between 19.5% and 23.0% by volume
2. Concentration of explosive gases is less than 1% of their lower explosive limit (LEL)
3. Concentration of toxic substances is less than 50% of the occupational exposure limit (OEL)

Refer to Appendix C for minimum hazard controls or safeguards required.

3.2.2 Medium Hazard Confined Space

A confined space that has all identified hazards controlled, and:

1. The concentration of oxygen is always between 19.5% and 23.0% by volume

yet **either one** of the following exists or is likely to exist:

2. An explosive or flammable atmosphere is greater than 1% AND less than 10% of LEL
3. The concentration of toxic substances is more than 50% of OEL

Refer to Appendix C for the minimum hazard controls or safeguards required.

3.2.3 High Hazard Confined Space

A confined space that has **any** of the following characteristics:

1. The hazards within the confined space, or in its proximity, have not been determined or not controlled
2. Concentration of oxygen is less than 19.5% or more than 23.0% by volume
3. Explosive or flammable atmosphere is between 10% and 20% of LEL
4. The atmosphere exceeds the protective limits of available air purifying respiratory equipment, or is at or above the immediately dangerous to life and health (IDLH) concentration of a toxic material/substance

Refer to Appendix C for minimum hazard controls or safeguards required.

3.2.4 Reclassification of a Confined Space

Throughout the duration of the CSE work, the atmospheric hazard levels may fluctuate higher or lower. The CSE Supervisor has the discretion to reclassify the confined space, which will assist the selection of the appropriate hazard controls to protect the safety of the CSE workers.

To reclassify a confined space, the following conditions must be met:

1. Atmospheric testing has determined that the atmospheric hazard levels have either increased or decreased
2. The CSE Supervisor has confirmed the new classification by referring to Appendix C
3. A hazard assessment has been performed to describe the current hazards present and the new hazard control required
4. A new CEN256, Confined Space Entry Permit has been issued

3.3 Warning Signs and Barricades

Warning signs and barricades must be installed to prevent unauthorized entry into a confined space and to protect the worker(s) in a confined space.

Whenever a confined space is left unattended (e.g. during breaks), the entry point(s) must be barricaded and a warning sign must be hung.

3.4 Confined Space Entry Planning Process

3.4.1 Safe Work Permit and Confined Space Entry Permit

The CSE Supervisor is responsible for the completion of the Safe Work Permit (SWP) and CSE Permit.

A CEN753 – Safe Work Permit is required for all work performed within a confined space. Prior to work commencing, the CEN256, Confined Space Entry Permit must be completed and attached to the Safe Work Permit. The Safe Work Permit for confined space entry is not valid until a confined space entry Permit has been completed.

Follow Appendix E for the CSE process workflow.

3.4.2 Hazard Assessment

Before any confined space entry (CSE) can be performed, the CSE supervisor must assign a competent person to:

1. Assess the hazards that the workers are likely to be exposed to
2. Specify the type and frequency of inspections and tests necessary to determine the likelihood of worker exposure to the identified hazards
3. Perform the inspections and tests specified in (2)
4. Specify the personal protective equipment (PPE) required to perform the work
5. Specify the PPE and equipment required for the rescue operations in the event of an emergency
6. Verify the Confined Space classification and confirm all required controls have been implemented

All workers affected by the hazards identified in the hazard assessment and SWP shall be informed of the hazards and of the methods used to control or eliminate the hazards.

Refer to Appendix F for a list of potential confined space hazards.

3.4.3 Pre-Entry Safety Meeting

A pre-entry safety meeting must be held with all workers involved in the intended confined space entry work. The meeting must include, but is not limited to, the following:

1. Review the scope of work and the safe work procedures

2. Define the confined space classification and its characteristics
3. Discuss the hazards and hazard controls involved with the confined space entry
4. Identify the communication procedures, PPE, respiratory equipment, and tools needed for the work:
 - a competent worker must inspect and confirm that all equipment is in good working order and recorded as checked in the Safe Work Permit
5. Review the exposure limits and testing requirements for oxygen, carbon dioxide, toxic gas, and explosive atmospheres
6. Review the Material Safety Data Sheet (MSDS) for the product(s) that may be encountered in the confined space
7. Verify that each worker has received the training required (e.g. valid certificate in confined space entry)
8. Review the emergency and evacuation procedures, rescue procedures and resources, as well as the duties of the Safety Watch and Rescue Team
9. Review the atmospheric testing requirements and define the frequency of the testing (refer to Section 6.6)

3.4.4 Safety Meeting Requirements

The Safety Meeting must be held:

- every day, at the start of shift
- before the commencement of any confined space entry work
- after shift change
- if a change in hazard level has been identified
- after any unplanned work interruptions

3.4.5 Emergency Procedures and Protective Equipment

The emergency procedures to be followed and the protective equipment used by the Rescue Team during an incident or an emergency must be discussed prior to the commencement of CSE work. The competency and qualifications for the Rescue Team shall also be verified.

Note: When filling out CEN256, Confined Space Entry Permit, the CSE Supervisor must describe both the Rescue Plan and Method of Extrication. Both the SWP and CSE Permit are invalid, and no CSE work is allowed if no rescue plan is in place.

The emergency procedure and protective equipment requirements may include:

1. Immediate evacuation of the confined space when an alarm is activated or if there is a significant change in the concentration level of the atmospheric hazards
2. A lifeline, but if it is required, it shall be used in a manner that does not create an additional hazard
3. Emergency response equipment required for a timely rescue and appropriate to the confined space entry (CSE)
4. Provision of the necessary PPE to each worker who is granted access to a confined space. Emergency response workers who are to undertake rescue operations must be provided the required personal protective and emergency response equipment.
5. The requirement that every person who enters, exits, or occupies a confined space follow established procedures and use the required PPE
6. A communications system that is readily available to the persons in the confined space and is appropriate to the hazards identified
7. Inspection of all emergency response equipment and protective equipment by a qualified person to ensure its good working order, and documented inventory records of all equipment
8. Prior to the work commencing, an on-site practice drill conducted with the personnel who may be required to carry out a CSE rescue

3.5 Safety Harness and Lifeline

A safety harness and lifeline(s) must be readily available for a CSE rescue. The Safety Watch shall **never** enter the confined space to attempt a rescue; instead, the Safety Watch shall sound the alarm and request for help from the Rescue Team.

When the CSE work requires worker(s) to wear SCBA or SABA, causing a rescue to be more difficult, or where a worker(s) may become entrapped by materials, the worker(s) shall be provided with, and wear, an approved body harness with a lifeline attached.

Note: Where reasonably practicable, a mechanical lifting device should be ready for immediate use to assist with a rescue if the confined space entry is from the top.

3.6 Atmospheric Testing and Monitoring

All atmospheric testing must be performed by a competent person or under the direct supervision of a competent person.

The atmosphere test of the confined space must include:

1. The concentration of oxygen
2. The concentration of the toxic substance(s) (e.g. benzene)
3. The concentration of flammable or explosive substances that may be present

If any at point the atmospheric hazards are unknown, CSE workers must treat the confined space as a high hazard confined space (refer to Section 3.2)

3.6.1 Respirable Atmosphere

The confined space atmosphere is considered to be respirable if **all** the following conditions are met:

1. Oxygen content is between 19.5% and 23.0%
2. Concentration of flammable or explosive substances (LEL) is 0%
3. Concentration of hazardous substances is below the applicable OELs
4. The level of atmospheric hazards will not change during the CSE work

Upon initial testing, if any one of the criteria listed above is not met, then the CSE supervisor must arrange for mechanical means of hazard control (see Section 3.6.2), such as:

- ventilation
 - purging
 - inerting
- **Note:** the priority is always to achieve an atmosphere of 0% LEL
 - In some cases, workers are not allowed to enter and work in a confined space. Refer to Appendix D for 'Safe Limits for Working in a Confined Space.'

The following rules apply to atmospheric testing and monitoring:

1. Monitoring the atmosphere inside a confined space is required prior to entering. Atmospheric testing of a confined space should be done remotely using a calibrated, active (pumped) gas detector appropriate for the atmospheric hazards and equipped with a wand and/or sampling line.
2. The atmospheric measurements must be taken at several levels (top, middle, and bottom) to locate varying concentrations of gases and vapours
3. To conduct the initial atmospheric testing, SCBA or SABA with an egress bottle must be worn throughout the testing process, and a Safety Watch must be present
4. Always record the oxygen concentration first, as combustible gas meters using catalytic bead sensors require adequate oxygen concentrations to take accurate readings

5. If entering a confined space that is oxygen deficient (i.e., less than 19.5%), an infrared sensor must be used for LEL detection
6. The Safety Watch shall conduct the initial test within 20 minutes of initial entry and prior to re-entry following the CSE workers vacating for durations exceeding 20 minutes
7. Where the atmosphere may change, the Safety Watch must monitor continuously and record measurements at least once every 20 minutes
8. When entering lined vessels, the possibility of entrapped flammables in bulged or blistered linings must be considered
9. When entering vessels containing residual liquids or solids, the possibility of a gas release when residues are agitated must be considered
10. Continuous atmospheric monitoring is required if hot work is conducted in a confined space. The Safety Watch may conduct continuous atmospheric monitoring using a pumped four-head monitor.
11. Atmospheric test results shall be immediately available at all entry points that are in use

3.6.2 Ventilation, Purging and Inerting

If the atmospheric testing identifies that a hazardous atmosphere exists or is likely to exist in a confined space, the confined space must be ventilated, purged, or both before workers enter the confined space.

1. If ventilating or purging is impractical or ineffective in eliminating the hazardous atmosphere, workers must use the appropriate PPE for working in the confined space
2. If mechanical ventilation is needed to maintain a safe atmosphere during the work process, the CSE Supervisor must arrange that:
 - the type of mechanical ventilation chosen and the number of air changers per hour must be in accordance with the hazard assessment and atmospheric testing
 - any portable air exchangers must meet applicable H&S and electrical requirements
 - the ventilation system incorporates a method of alerting workers before the system fails, thus allowing workers sufficient time to evacuate
 - if the ventilation system fails, all workers must evacuate the confined space, or use an alternative means of protection described in the hazard assessment

5. If it is not possible to achieve a non-explosive, non-flammable atmosphere, then the confined space must be inerted to remove the hazard of fire or explosion before and during entry. Inerting creates an IDLH atmosphere and appropriate safeguards must be used. Refer to the CEN-EHS008, Cenovus Purging Practice for details.
6. If a confined space is inerted, the CSE Supervisor must confirm that:
 - every CSE worker is provided with supplied air respiratory equipment
 - all ignition sources are controlled
 - the atmosphere remains inerted while workers are inside the confined space
7. Where an explosive or flammable atmosphere may be present in the confined space, all equipment and tools must be kept safe and the work must not create an ignition source

3.7 Hot Work

Hot work shall not be performed in a confined space that contains, or is likely to contain, an explosive or flammable gas or vapour where the concentration exceeds, or is likely to exceed, 10% of the LEL of the gas or vapour.

3.8 Isolation and Lockout

1. Prior to confined space entry, the CSE Supervisor must confirm that all hazards presented by any energy, gaseous liquid, or free-flowing solid material must have adequate controls in place such as:
 - blanking
 - blinding
 - separating and plugging
 - double-block and bleed system
 - disconnecting all mechanical linkages

Note: See CEN-EHS007, Blanking and Blinding Practice. Consult the site piping and electrical drawings to confirm the system design.

2. Blanks/blinds should be installed as close as possible to the confined space. If the confined space contains any toxic gas, respiratory protective equipment must be worn while the blanks/blinds are being installed.

3.9 Electrical Equipment

In confined spaces, all cord-connected portable appliances and tools must be plugged-into an approved Ground fault circuit interrupter (GFCI) receptacles.

All electrical equipment shall be approved under the appropriate provincial legislations (Alberta and Saskatchewan) and approved for the hazardous area classification within the confined space. If the electrical equipment is not approved for use in the classified area, then use of that electrical equipment in the classified area shall be considered to be Hot Work and Hot Work Permits and mitigations shall be required.

3.10 Temporary Heating

When using heaters during cold conditions, the following rules apply:

1. Do not use direct fired heaters that discharge exhaust gases with the heated air
2. Place the heaters outside the space and run the hot air into the space through ducts
3. To prevent redirecting harmful or noxious exhaust gases into the confined space, place air intakes and exhausts in accordance with the manufacturer's instructions

The CSE Supervisor must confirm that:

1. The heaters used will not ignite a flammable substance
2. Static electricity is controlled

3.11 Compressed Gas Cylinders and Tools

1. Compressed gas cylinders are not permitted inside a confined space except for:
 - a cylinder of compressed air supplied to a respirator
 - approved fire extinguishers
 - approved hand-held aerosol spray containers
 - approved medical resuscitation equipment
 - other equipment as permitted by Alberta and Saskatchewan OH&S Regulations
2. Torches and hoses used for welding, brazing, or cutting must be removed from a confined space when not in use and when the confined space is vacated:
 - if it's impractical to remove hoses for short duration breaks (i.e. during coffee breaks), particularly where the confined space is large or where the removal of hoses may create some risk to workers, alternate methods must be adopted that comply with applicable regulations
 - an alternate method is to disconnect the hoses at the source with safe venting procedures together with procedures to confirm no inadvertent

reconnection while workers are on the break or, if this is not practical, closing and putting a tag on connections located outside the confined space

3. Electrical tools and equipment used in a confined space must be grounded or double-insulated and so marked, and, if wet or damp conditions exist inside the space, must be protected by an approved ground-fault circuit interrupter.

3.12 Vessels with Radiation Devices

Prior to entering a vessel fitted with a radiation device, the following apply:

1. The CSE Supervisor must verify that:
 - All radiation devices on or in the vessel have been identified
 - The CSE Permit specifies the presence of a radiation device
 - All radiation devices have been locked and tagged by person(s) authorized by site radiation safety officer
 - Radiation dose rate values have been measured on the radiation devices and inside the vessel and recorded by person(s) authorized by site radiation safety officer
 - The radiation dose rate values where any worker will be located inside the vessel are deemed acceptable by person(s) authorized by site radiation safety officer
2. All workers entering the vessel must be trained, which includes:
 - Nuclear gauge awareness training
 - Understanding of the specific entry procedures, and
 - Awareness of the recorded radiation dose rate values inside the vessel and
3. The Confined Space Entry Permit will serve as the specific written authorization for entry into the vessel or hopper for the proposed activity, including the date and duration of entry
4. A copy of the Confined Space Entry Permit must be retained by the site radiation safety officer, including the names of all workers entering the vessel, the dose received by each worker (calculated by the radiation safety officer) and the results of any other radiation survey

Note: Refer to CEN-EHS2216, Radiation Safety Practice and CEN - EHS2218 Nuclear Gauge Operation for details. Consult with the site radiation safety officer before performing any entry work into a vessel fitted with a radiation device.

3.13 Performing Cleaning Work in a Confined Space

1. The dead ends of a line that have been isolated must be cleaned, purged, or vented to remove any harmful substance that could present a hazard to a worker entering the confined space

2. Depending on the nature of the confined space contents, hazardous vapours and material should be removed by one or more of the following methods:
 - drained or pumped out
 - floated off
 - hot or cold water flushing
 - steaming
 - chemical neutralization
 - mechanical or natural ventilation
 - inert gas purging
3. When cleaning confined spaces, the nature of the product and its residue must be considered. Take special precautions with sludge, hydrocarbons, or pyrophoric deposits. They may cling to surfaces or hang up in such vessel internals as spargers or dip pipes.
4. All ignition sources must be controlled
5. All equipment must be properly bonded or grounded to prevent the build-up of static electricity
6. To prevent spontaneous combustion of some process material (e.g. sludge, scale, iron sulphide), special precautions must be taken such as continuous water flooding and immediate immersion in disposal containers
7. Potential discharges from disconnected lines must be collected safely

3.14 Waste Disposal

All wastes must be collected and disposed in a safe and approved manner. The method and procedures required for waste disposal and cleaning up small spills must be identified.

For guidelines towards managing specific wastes in Alberta and Saskatchewan, refer to:

- CEN-EHS-ENV-2414, Cenovus Alberta Waste Management Chart
- CEN-EHS-ENV-2416, Saskatchewan Waste Management Chart

3.15 Job Completion

At the end of a job, the CSE Supervisor or designate must conduct a thorough check, and sign-off the CSE Permit to confirm that:

- No tools, equipment, or workers have been left behind in the confined space
- All blinds have been removed and valves have returned to their correct positions

- The SWP and CSE Permit have been finalized before the space is returned to service

3.16 Record Retention

All written records related to CSE (e.g. Safe Work Permit, CSE Permit) shall be retained for a minimum of **two** years. Notwithstanding the above, other provincial regulatory requirements may apply.

4.0 Roles and Responsibilities

Roles and responsibilities specific to the Cenovus Confined Space Entry Code of Practice are described below.

Table 1: Roles and Responsibilities

Role	Description
Business Leaders and Frontline Supervisors	<ul style="list-style-type: none"> • Communicate and implement this practice at their operations or functional areas of authority • Demonstrate ownership and leadership by actively setting a positive example • Allocate and make available the necessary financial and human resources that are required to functionally implement this document • Confirm all workers are aware of their roles and responsibilities outlined in the process requirements section of this document • Confirm workers are trained, knowledgeable, experienced and competent on this subject • Coach and correct workers who do not understand or comply with the requirements of this document • Provide feedback to the document owner or representative concerning proposed changes or improvements to this document
Operations Health & Safety Field Teams	<ul style="list-style-type: none"> • Conduct worksite observations and assessments on a regular basis to verify compliance with the expectations described in this document • Assist with the implementation and communication of the documented requirements • Provide feedback to the document owner or representative concerning proposed changes or improvements to this document
Central Health & Safety Services	<ul style="list-style-type: none"> • Monitor and collect feedback related to this document to verify program effectiveness • Lead document reviews and revisions as per the expectations described in this document • Provide subject matter expertise when requested by Business Leaders or other functional teams

Role	Description
Assurance Teams (COMS Assurance and EHSR Compliance Audit)	<ul style="list-style-type: none"> • Lead, organize and conduct audits to verify compliance, identify gaps and suggest improvement opportunities
Business Support Teams	<ul style="list-style-type: none"> • Provide subject matter expertise when requested by Business Leaders or other functional teams
CSE Worker	<ul style="list-style-type: none"> • Be in possession of a valid confined space entry certification • Understand all aspects of this Code of Practice and its intent, and follow this information during work operations • Abide by all conditions of the SWP and CSE Permit • Properly use CSE equipment in accordance with the training received and the identified hazards • Recognize and report any hazards, incidents or unusual conditions that may occur during the work, and stop the work if necessary
CSE Supervisor	<ul style="list-style-type: none"> • Be in possession of a valid confined space entry certification • Understand all aspects of this Code of Practice and its intent, and follow this information during work operations • Act as the Cenovus representative who supervises CSE work • Complete the SWP and CSE Permit prior to the work activity • Confirm safe working conditions are pre-planned, prepared, and maintained for the entire duration of the confined space entry work • Arrange atmospheric testing to determine appropriate hazard controls required for the confined space entry • Verify the PPE and emergency rescue equipment required meet applicable standards • Lead, or designate a qualified person to lead, the pre-job meeting to review hazards, and discuss work procedures and emergency procedures • Confirm rescue services are available prior to and throughout the CSE work • Verify that workers are qualified, trained and competent in this Code of Practice and in site-specific procedures prior to commencing CSE work

Role	Description
CSE Monitor/Safety Watch	<ul style="list-style-type: none"> • Be in possession of a valid confined space entry certification • Be stationed at the confined spaced entrance at all times • Continuously monitor the wellbeing of the CSE Workers • Perform atmospheric testing of the confined space • Communicate any change in working conditions to the CSE Workers and CSE Supervisor • Wear all required PPE and be available throughout the CSE work • Record the names and times of the workers entering and exiting the confined space • Keep unauthorized personnel away from the confined space • Initiate the emergency alarm to request rescue services immediately in the event of an emergency • Order an evacuation of the confined space if: <ul style="list-style-type: none"> ▪ an uncontrolled hazard is detected ▪ conditions not allowed in the confined space are developing ▪ an emergency has occurred ▪ behavioural effects of hazard exposure have been observed • The Safety Watch shall never enter the confined space to attempt a rescue
Permit Issuer/Area Operator	<ul style="list-style-type: none"> • Be in possession of a valid confined space entry certification • Complete and attach the CSE Permit, Lockout Logs, and if necessary a Fire and Explosion Prevention Plan, to the SWP • In excavations or trenches that are greater than 1.2 metres deep and where there is a confined space hazard, the Permit Issuer shall decide if CEN019, Ground Disturbance Checklist is required • Confirm with the CSE Supervisor that all fuel-hydrocarbon, oxygen-air, and energy ignition sources are identified in the confined space and adjacent work area

Role	Description
Rescue Team	<ul style="list-style-type: none"> • Be in possession of a valid confined space rescue certification • Develop a written emergency response/rescue plan to enable the rescue of CSE workers in the case of an emergency • Be available throughout the duration of the CSE work and respond upon notification • Perform rescue of CSE workers from the confined space in accordance with training and developed procedures
Service Providers	<ul style="list-style-type: none"> • Comply with the Cenovus confined space expectations described within this document • If required, develop and implement a Confined Space Entry (CSE) Code of Practice and entry procedures that satisfy company-specific operational needs and align with the minimum requirements set forth in this document

5.0 Training and Competency

All work associated with confined space entry must be under the direction of the CSE Supervisor or designated responsible person for the worksite. The CSE Supervisor must be thoroughly familiar with the CSE work scope and the CSE worksite hazards. The CSE Supervisor must also be competent in the application of the CSE Code of Practice and/or any site-specific CSE procedures.

- Documented records of CSE training for each CSE worker must be kept on file and available for review.
- The CSE Worker is not allowed to participate in confined space entry work if their training certificate has expired or is not available.
- Workers who are unfamiliar with CSE work or inexperienced with the site-specific procedures must work under the direct supervision of a competent worker.

5.1 Training

Table 2: Minimum training requirements

	Confined Space Awareness (Level I)	Confined Space Entry (Level II)	Confined Space Rescue (Level III)
Who should take it?	Workers who do not enter confined spaces, but require the knowledge about confined spaces	CSE Workers, CSE Supervisors, CSE Monitors, Rescue Team and other workers who participate in confined space entry work	Rescue Team
Minimum course components	<ul style="list-style-type: none"> • Overview of applicable legislation • Confined space and restricted space classification • Confined space entry planning • Confined space hazards and controls • Understanding of atmospheric hazards and testing • Overview of energy isolation concepts 	<ul style="list-style-type: none"> • Full day training • Overview of applicable legislation • Confined space and restricted space classification • Confined space entry planning • Confined space hazards and controls • Atmospheric hazards and testing, including exposure limits • Energy isolation • Ventilation, purging, inerting • Entry authorization • Confined space signage • Written knowledge test • Practical exercises on: <ul style="list-style-type: none"> • Confined space entry • PPE: Gas monitor, SCBA, respirator, harness, tripod • Confined space rescue operations 	<ul style="list-style-type: none"> • Covers all of Level II, and • Additional practical training on confined space rescue operations

6.0 Quality Assurance

6.1 Performance Measurement

Compliance with this practice and program effectiveness shall be assessed through program assessments and internal audits, or other measurement criteria as specified in the COMS Assurance Standard.

Business functions or departments impacted by this practice must include compliance and program effectiveness verifications in their business assurance program. Performance will be monitored and reported within the responsible departments at least every three years.

6.2 Management of Change

The document owner will complete and document reviews of this practice as follows:

- at minimum once every three years
- if there is a significant regulation or industry best practice change that indicates the need for review
- if an incident investigation indicates the causes were related to unclear or inadequate written instructions described within this document

If frequent and multiple variances are required due to operational needs, the reason(s) will be investigated and the document owner will determine if there is a business need to update this document.

If submitted MOC requests indicate gaps or significant improvement opportunities, the document owner will determine if there is a business need to update this document.

Proposed changes to this practice can be directed to H&S Programs and Projects.

7.0 Glossary

Definitions and acronyms for safety documents are described in Cenovus CEN-EHS243, Definitions and Acronyms.

The following definitions and acronyms are specific to this practice:

Table 3: Terms and Definitions

Term	Definition
Approved electrical equipment	The equipment bears certification markings indicating it is suitable for use in the hazardous area, as per the requirements of the Canadian Electrical Code. Please consult with Technical Services' Electrical Engineering Services group if there are any questions pertaining to hazardous area certifications of equipment.
Confined Space	<p>An enclosed or partially enclosed space that is:</p> <ul style="list-style-type: none"> • Not intended for continuous human occupancy • Has limited or impeded means of entry or exit • May become hazardous to a worker because: <ul style="list-style-type: none"> ▪ the atmosphere is, or may be, injurious due to oxygen deficiency or enrichment, flammability, explosiveness, or toxicity ▪ a condition or changing set of circumstances within the space present a potential for injury or illness ▪ the potential or inherent characteristics of an activity that can produce adverse or harmful consequences within the space • Confined spaces are entered for the purposes of inspection, cleaning, maintenance, repair or construction. They are not sites of ongoing or regular work activity <p>Examples of common confined spaces include:</p> <ul style="list-style-type: none"> ▪ tanks/vessels ▪ exchangers ▪ crawlspace ▪ excavations ▪ sewers ▪ utility manholes ▪ pits/sumps ▪ trenches <p>Refer to Appendix A for determination of a confined space.</p>
Competent	A worker is adequately qualified, suitably trained, and with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision.
Flammable Atmosphere	An atmosphere that contains more than 10% of the lower explosive limit (LEL) of a flammable gas or vapour at ambient temperature and pressure.

IDLH (Immediately Dangerous to Life and Health)	An atmosphere is deficient in oxygen, or the concentration of a harmful substance in the atmosphere is an immediate threat to life, may affect health irreversibly, may have future adverse effects on health, or may interfere with a worker's ability to escape from that dangerous atmosphere.
LEL (Lower Explosive Limit)	The lowest concentration (percentage) of a gas or a vapour in air that is capable of producing a flash of fire in the presence of an ignition source (e.g. arc, flame, heat).
OEL (Occupational Exposure Limit)	The maximum substance exposure limit for a worker as mandated by provincial legislation. Workers must not be exposed to a substance that exceeds its listed OEL at any time.

8.0 References

8.1 External Documents

Table 4: External Document References

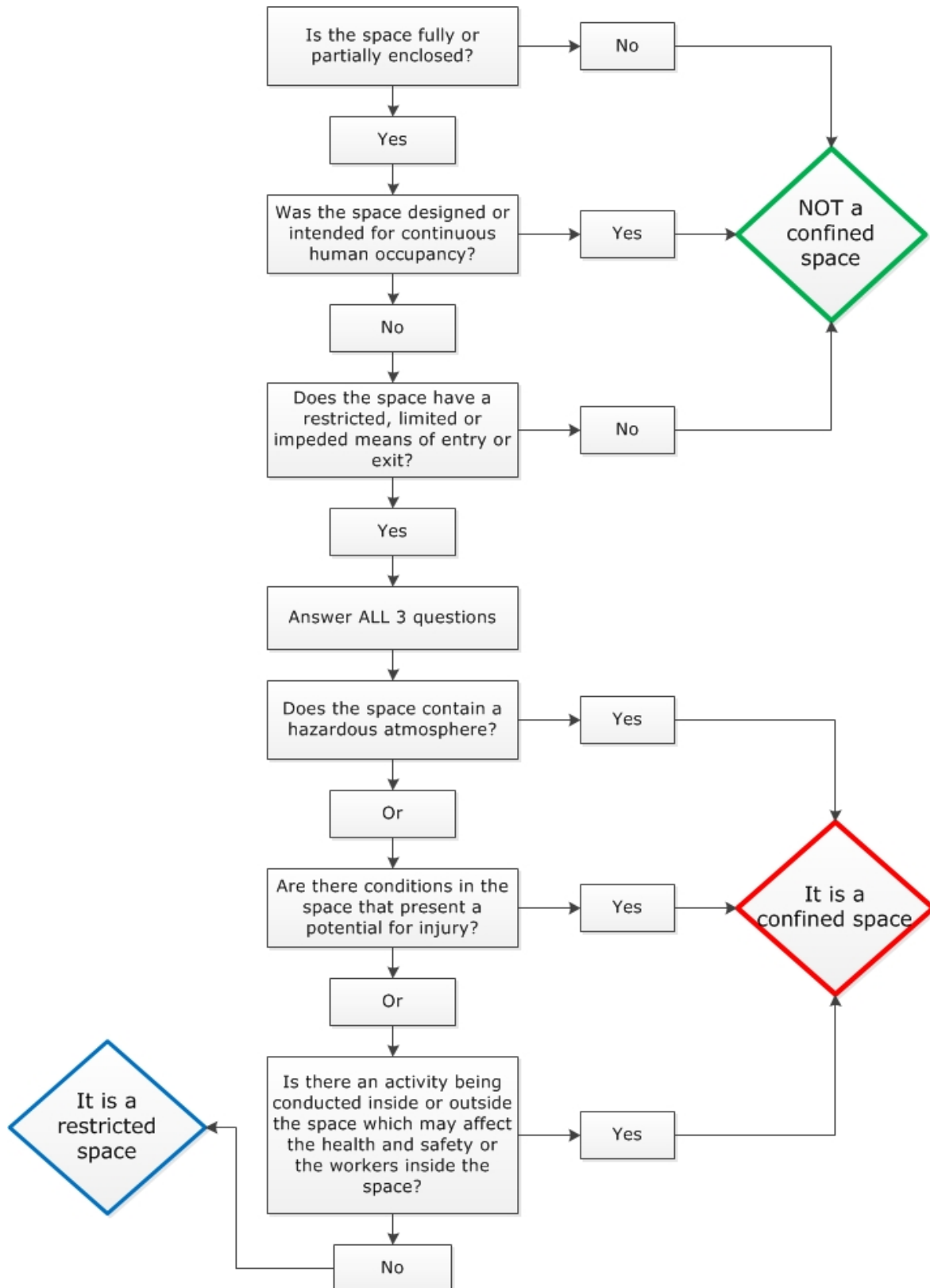
Document Type	Document Title
Regulatory	Alberta Occupational Health and Safety Code
Regulatory	Saskatchewan Occupational Health and Safety Regulations
Guideline	Work Safe Alberta – Guideline for Developing a Code of Practice for Confined Space Entry

8.2 Internal Documents

Table 5: Internal Document References

Document Number	Document Title
CEN-EHS007	Blanking and Blinding Practice
CEN-EHS019	Ground Disturbance Checklist
CEN-EHS022	EH&S/Operations Risk Management Practice
CEN-EHS039	Fire and Explosion Hazard Management Practice
CEN-EHS2216	Radiation Safety Practice
CEN256	Confined Space Entry Permit
CEN753	Safe Work Permit

Appendix A: Determination of a Confined Space



Appendix B: Confined Space Inventory Template

Confined Space Inventory

Asset:			
Building/Facility/ Location			
Last updated:		By:	
Confined Space Number	Description	Notes	

Appendix C: Confined Space Classification

		Low	Medium	High
	All confined space hazards controlled	Yes	Yes	Either: -The hazards have not been fully controlled -The hazards have not been identified
A	Concentration of Oxygen	Between 19.5% and 23.0%	Between 19.5% and 23.0%	Less than 19.5% or more than 23.0%
B	Concentration of Explosive Gases	Always less than 1% of LEL	Between 1% and 10% of LEL	Between 10% and 20% of LEL
C	Concentration of Toxic Substances	Always less than 50% of OEL	More than 50% of OEL	The atmosphere exceeds the protective limits of air purifying respiratory equipment or is at/above IDLH concentration of a toxic material/substance
	Note:	All three conditions listed above must exist in order for a confined space to be classified as Low Hazard	Either condition B or C exists for a confined space to be classified as a Medium Hazard	Any one of the conditions listed above exists for a confined space to be classified as a High Hazard
	Minimum Hazard Control Requirements	<ol style="list-style-type: none"> 1. A valid Safe Work Permit 2. An approved hazard assessment 3. A valid Confined Space Entry Permit 4. A documented Evacuation Plan 5. A documented Rescue Plan 6. A valid Entry Tag hung at each entrance 7. Confined Space signage 8. A competent Safety Watch must be in attendance at all times, and continuously monitor the well-being of the Worker(s) within the confined space 9. PPE as described in the hazard assessment 	<ol style="list-style-type: none"> 1. A valid Safe Work Permit 2. An approved hazard assessment 3. A valid Confined Space Entry Permit 4. A documented Evacuation Plan 5. A documented Rescue Plan 6. Confined Space signage 7. A valid Entry Tag hung at each entrance 8. A competent Safety Watch must be in attendance at all times, and continuously monitor the well-being of the Worker(s) within the confined space 9. Continuous atmospheric testing 10. PPE as described in the hazard assessment 	<ol style="list-style-type: none"> 1. A valid Safe Work Permit 2. An approved hazard assessment 3. A valid Confined Space Entry Permit 4. A documented Evacuation Plan 5. A documented Rescue Plan 6. Confined Space signage 7. A valid Entry Tag hung at each entrance 8. A competent Safety Watch must be in attendance at all times, and continuously monitor the well-being of the Worker(s) within the confined space 9. Continuous atmospheric testing 10. PPE as described in the hazard assessment 11. Supplied breathing air available and worn

Appendix D: Safe Limits for Working in a Confined Space

The confined space atmosphere is considered respirable (safe to enter) if all of the following conditions are met:

- Oxygen content is between 19.5% and 23.0%
- The concentration of flammable or explosive substances (LEL) is 0%
- The concentration of hazardous substances is below the applicable OELs
- The atmospheric hazards will not change during the CSE work

Upon initial testing, if any one of the criteria listed above is not met, then the CSE supervisor must arrange for mechanical means of hazard control, such as:

- Ventilation
- Purging
- Inerting

The priority is always to achieve an atmosphere of 0% LEL.

If respirable condition cannot be achieved, the CSE worker must adhere to the following:

- Oxygen content:

Oxygen content	Can I work?
Less than 19.5%	Yes, but CSE Worker must wear SCBA.
Greater than 23.0%	No, CSE work not allowed

- LEL:

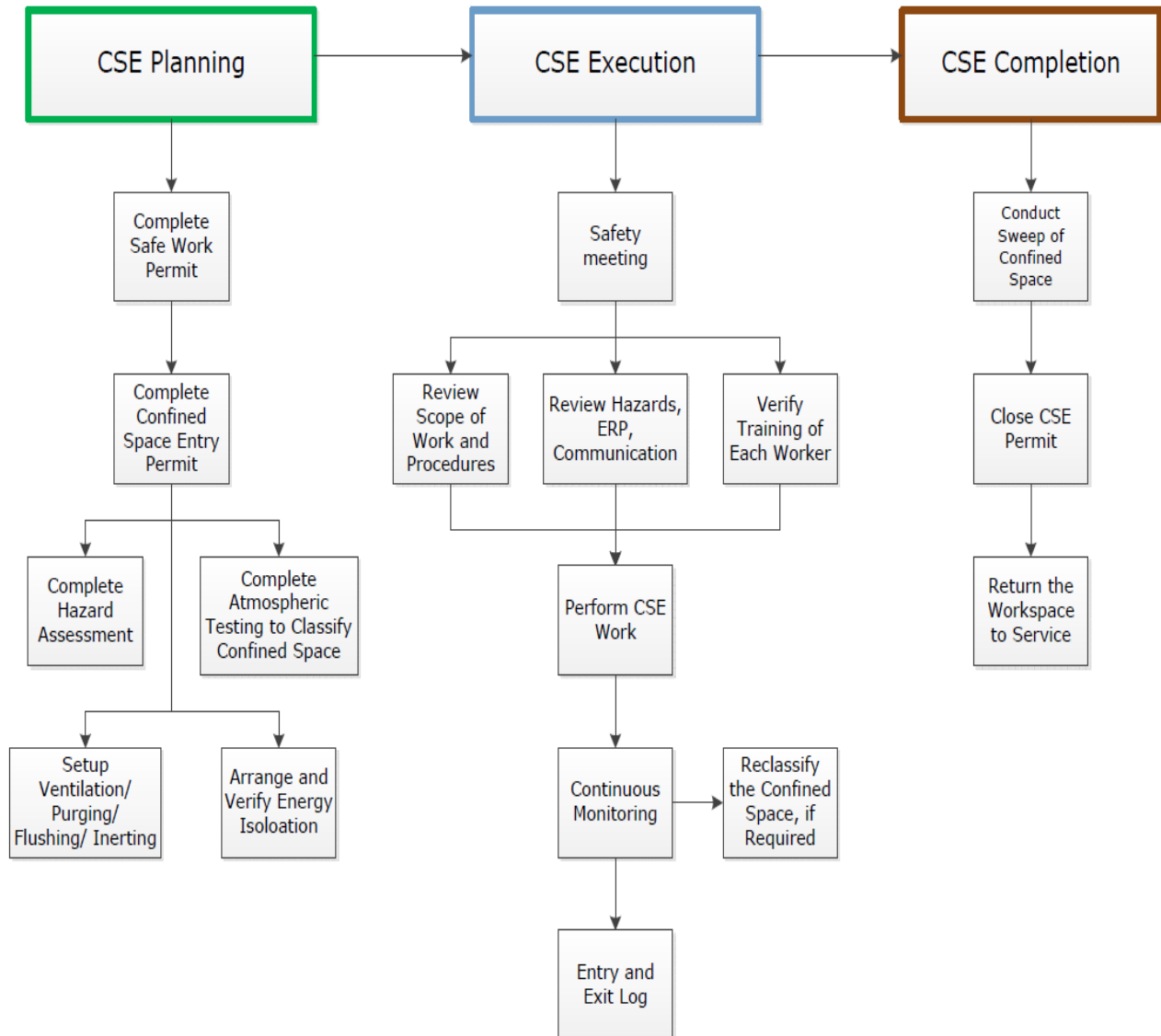
LEL content	Can I work?
Greater than 40.0%	No, rescue not allowed
Greater than 20.0%	No, CSE work not allowed
Greater than 10.0%	Yes, but hot work not allowed
Starts below 10%, but rises above 10% during hot work	No, and all hot work must be stopped

Personal gas monitors are set to alarm at the values shown below:

	Low alarm	High alarm
H ₂ S	10 ppm	15 ppm
CO	20 ppm	200 ppm
O ₂	19.5%	23%
LEL	10%	20%

Appendix E: Confined Space Entry Workflow

Confined Space Entry (CSE) Workflow



Appendix F: Potential Confined Space Hazards

When performing the hazard assessment, the CSE Supervisor or designate must account for the four main categories of Confined Space Hazards: Atmospheric, Physical, Job-related and Human-factor.

Potential Atmospheric Hazards include:

- Oxygen level
- Explosive gases or vapours
- Toxic gases or vapours
- Fumes
- Smoke
- Dusts
- Mists
- Biological contaminants (e.g. mould, animal droppings)
- Naturally occurring radioactive materials (NORMs)
- Pyrophoric deposits
- Sour fluids

Potential Physical Hazards

- Entry and exit points
- Working at heights
- Machinery
- Piping and distribution systems
- Uncontrolled introduction of steam, water, liquids or gases
- Residual chemicals
- Engulfment
- Electricity
- Visibility
- Slip and Trip
- Traffic
- Extreme temperature

- Humidity
- Vibration
- Lighting

Potential Job-Related Hazards

- Grinding
- Use of chemicals (e.g. cleaners, paint)
- Sandblasting
- Cutting
- Noise
- Ergonomics (e.g. awkward lifting positions)

Potential Human-Factor Hazards

- Phobias (e.g. claustrophobia, fear of heights)
- Medical condition of workers
- Physical condition of workers (e.g. fitness to work)