



National  
Operational  
Guidance

# Hazard

## Confined space environment



**NFCC**  
National Fire  
Chiefs Council

Developed and maintained by the NFCC

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## Hazard - Confined space environment

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### Knowledge and understanding

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Hazard	Learning outcome
Confined space environment	Understand all associated hazard knowledge



## Control measure - Identify a confined space

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### TRAINING SPECIFICATION

### Knowledge and understanding

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Control measure element	Learning outcome
Common types of confined spaces	Understand: <ul style="list-style-type: none"><li>• The most common types of confined spaces</li><li>• Why it is not always easy to identify a confined space</li></ul>
Regulations	Understand: <ul style="list-style-type: none"><li>• The relevant Confined Spaces Regulations</li></ul>
Decision-making and risk assessment	Understand: <ul style="list-style-type: none"><li>• How to use decision-making for confined spaces</li><li>• How to use appropriate risk assessments for confined spaces</li></ul>
Information gathering	Understand: <ul style="list-style-type: none"><li>• How to identify a confined space in industrial contexts</li></ul>



**Control measure element**

**Learning outcome**

Joint on-site training

Understand:

- The benefits of using joint on-site training to identify potential confined spaces in an industrial context

**Practical application**

**Control measure element**

**Learning outcome**

Identify whether work is within an enclosed space or confined space and inform personnel if appropriate

Demonstrate the ability to:

- Determine whether the work environment is an enclosed space or a confined space
- Inform personnel if the work environment is a confined space

Liaise with the responsible person or on-site staff to obtain details about the confined space

Demonstrate the ability to:

- Gather information about a confined space from the responsible person or on-site staff



## Control measure - Avoid entry: Confined space

### TRAINING SPECIFICATION

#### Knowledge and understanding

**Control measure element**

**Learning outcome**

Achieving objectives while avoiding entry to a confined space

Understand:

- The relevant Confined Spaces Regulations
- What action to take if a risk assessment indicates that personnel should not be deployed into a confined space



## Practical application

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### Control measure element

### Learning outcome

Incident commanders must:

- Evaluate the range of options that avoid committing personnel to work in a confined space

Consider requesting specialist advice or assistance if the nature of the confined space is unsafe for personnel to enter

Demonstrate the ability to:

- Evaluate options that avoid the need for personnel to enter a confined space

Demonstrate the ability to:

- Request appropriate specialist advice or assistance for an incident involving a confined space



## Control measure - Confined space: Risk assessment

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## TRAINING SPECIFICATION

### Knowledge and understanding

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#### Control measure element

#### Learning outcome

Fire and rescue service policies and resources

Understand:

- The service's policy on:
  - What type and complexity of confined space incidents can be dealt with by initial non-specialist personnel
  - How more complex confined space incidents will be handled
  - Details of the specialist resources and equipment that may be required

Identify potential hazards

Understand:

- How to gather information about the hazards present in a confined space



**Control measure element**

**Learning outcome**

Risk assess the benefits of entering the confined space

Understand:

- How to carry out a risk assessment for confined space working

Safe system of work

Understand:

- What elements should inform the safe system of work
- The need for emergency arrangements

**Practical application**

**Control measure element**

**Learning outcome**

Incident commanders must:  
Ensure that personnel do not enter a confined space prior to carrying out a risk assessment

Demonstrate the ability to:

- Risk-assess the confined space prior to committing personnel when entry is unavoidable

Incident commanders must:  
Establish a safe system of work and emergency arrangements prior to personnel entering a confined space

Demonstrate the ability to:

- Establish a safe system of work for personnel entering a confined space
- Establish emergency arrangements when personnel are entering a confined space

Adhere to their service's policy when responding to confined space incidents

Demonstrate the ability to:

- Adhere to service policy when:
  - Deploying personnel to a confined space incident
  - Attending a confined space incident
  - Deploying personnel to a confined space



**Control measure - Confined space: Supervision, resourcing and communication**

## TRAINING SPECIFICATION

### Knowledge and understanding

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#### Control measure element

#### Learning outcome

Supervision	<p>Understand:</p> <ul style="list-style-type: none"> <li>• The need for competent supervision during a confined space incident</li> <li>• The role of a confined space supervisor</li> <li>• The role of dedicated safety officers at a confined space incident</li> <li>• The need for appropriate breathing apparatus (BA) entry control supervision for a confined space incident</li> </ul>
Competent personnel	<p>Understand:</p> <ul style="list-style-type: none"> <li>• The necessary safeguards for confined space incidents, including:             <ul style="list-style-type: none"> <li>- Deploying only competent personnel</li> <li>- Using appropriate equipment</li> <li>- Having appropriate supervision</li> <li>- Using appropriate PPE</li> </ul> </li> </ul>
Communications	<p>Understand:</p> <ul style="list-style-type: none"> <li>• The need for an effective communication system at a confined space incident</li> <li>• The need for fallback arrangements for communications failure at a confined space incident</li> <li>• The impact on communications of other equipment being used in a confined space</li> <li>• The need for appropriate communication equipment if there is a risk of explosive atmospheres in a confined space</li> <li>• What alternative equipment can be use for communications in a confined space incident</li> </ul>

### Practical application



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**Control measure element**

**Learning outcome**

Use only communications equipment that meets the appropriate ATEX classification when personnel enter any potentially explosive atmosphere

Demonstrate the ability to:

- Ensure that only communications equipment that meets the appropriate ATEX classification is used in a potentially explosive atmosphere; this could include:
  - Fire and rescue service communications equipment
  - Communications equipment that belongs to other organisations
  - Personal communications equipment

Conduct regular checks to ensure communication equipment continues to function

Demonstrate the ability to:

- Check the functionality of communications equipment at appropriate intervals

Implement fallback arrangements if there is a failure in the communications equipment

Demonstrate the ability to:

- Implement fallback arrangements if communications equipment fails

Consider requesting and appointing a confined space supervisor

Demonstrate the ability to:

- Establish appropriate supervision and safety precautions during confined space work

Apply the most appropriate level of BA entry control supervision for a confined space incident

Demonstrate the ability to:

- Establish appropriate BA entry control supervision

Commit competent personnel to work in a confined space only following a risk assessment

Demonstrate the ability to:

- Carry out a risk assessment before committing competent personnel to work in a confined space

Commit competent personnel to work in a confined space only following a risk assessment

Demonstrate the ability to:

- Carry out a risk assessment before committing competent personnel to work in a confined space





**Control measure element**

**Learning outcome**

Confined space supervisors should:  
Liaise with the incident commander to establish or verify the safe system of work

Demonstrate the ability to:  
• Liaise with the incident commander to establish or verify the safe system of work

Confined space supervisors should:  
• Ensure an analytical risk assessment is carried out

Demonstrate the ability to:  
• Review the risk assessment and safe system of work at appropriate intervals

Confined space supervisors should:  
Regularly update the incident commander of progress or concerns

Demonstrate the ability to:  
• Provide the incident commander with updates on progress or concerns at appropriate intervals



## Control measure - Safe system of work: Atmospheric conditions

### TRAINING SPECIFICATION

#### Knowledge and understanding

**Control measure element**

**Learning outcome**

Atmospheric testing equipment

Understand:  
• The types of atmospheric testing equipment  
• What the testing equipment in use can check the atmosphere for

When atmospheric testing and monitoring may be required

Understand:  
• The environments and types of incidents that may require atmospheric testing and monitoring  
• That it may be necessary to request specialist advice or assistance for atmospheric testing and monitoring



**Control measure element**

**Learning outcome**

Exposure limits

Understand:

- Workplace exposure limits

Testing and monitoring atmospheric conditions

Understand:

- When atmospheric testing should be carried out
- How atmospheric testing should be carried out
- Who should carry out atmospheric testing
- The need for regular atmospheric monitoring
- The difference between active monitoring and passive monitoring of atmospheric conditions

Ventilation

Understand:

- When the use of ventilation may be beneficial
- What types of ventilation can be used

Removal of residues or materials

Understand:

- When the removal of residues or materials may be beneficial
- The potential risks of removing residues or materials

Monitoring equipment alarm actuation

Understand:

- How the monitoring equipment functions
- What actions to take if the monitoring equipment alarm actuates

Limited capability of atmospheric monitoring equipment

Understand:

- The capabilities and limitations of atmospheric monitoring equipment
- The regional detection, identification and monitoring (DIM) capability that is part of the National Resilience response

**Practical application**



**Control measure element**

**Learning outcome**

Carry out testing and monitoring of the atmosphere and use the results to inform the incident plan

Demonstrate the ability to:

- Carry out testing and monitoring of the atmosphere
- Use results of testing and monitoring of the atmosphere to inform the incident plan

Consider requesting specialist advice or assistance for atmospheric detection, identification and monitoring

Demonstrate the ability to:

- Request appropriate specialist advice or assistance for atmospheric testing and monitoring

Consider ventilation to improve internal conditions

Demonstrate the ability to:

- Determine the benefits of ventilation
- Use the appropriate type of ventilation

Isolate or limit all ignition sources before ventilating if flammable gases may be present

Demonstrate the ability to:

- Identify potential ignition sources
- Control identified ignition sources

Identify the presence of materials that may release gases in a confined space, especially if disturbed

Demonstrate the ability to:

- Consider whether there are substances present that may release gases
- Gather information to determine the potential impact of gases being released

Consider the controlled removal of materials, to reduce the quantity of gases being released

Demonstrate the ability to:

- Determine the benefits of removing residues or materials
- Risk assess the impact of removing residues or materials
- Remove residues or materials if this will improve the atmospheric conditions



## Control measure - Confined space: Isolation of



# hazards

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## TRAINING SPECIFICATION

### Knowledge and understanding

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Control measure element	Learning outcome
Control the confined space environment	Understand: <ul style="list-style-type: none"><li>• The need for awareness of:<ul style="list-style-type: none"><li>- The environment</li><li>- Any processes that may affect the confined space</li><li>- Any ingress of substances that could be hazardous to people in the confined space</li></ul></li><li>- How to gather information about substances present</li></ul>
Isolation from gases, liquids, and other flowing materials	Understand: <ul style="list-style-type: none"><li>• Methods for controlling ingress of substances into the confined space</li><li>• Methods for removing or diverting liquids from the confined space</li><li>• The limitations of and precautions to apply when using these methods</li></ul>



**Control measure element**

**Learning outcome**

Isolation from electrical or mechanical equipment

- Understand:
- Methods for controlling:
    - Electrical equipment
    - Mechanical equipment
    - Power sources
  - The impact of stored energy that may activate equipment
  - Why it may be beneficial to not isolate power sources
  - How to secure isolation of power sources
  - That it may be necessary to request specialist advice or assistance to isolate hazards

**Practical application**

**Control measure element**

**Learning outcome**

Refer to information provided by SSRI, site working plan or the responsible person, about the storage or use of gases, liquids or flowing materials in confined spaces

- Demonstrate the ability to:
- Obtain and consider information about the presence of gases, liquids or flowing materials in the confined space provided by the:
    - SSRI
    - Site working plan
    - Responsible person

Investigate the possibility of ingress from gas, liquids or flowing materials into the confined space, including surface water

- Demonstrate the ability to:
- Gather information about all potential sources of gas, liquids or flowing materials that may affect the confined space
  - Consider the potential impact of rainwater, water supplies and sewerage systems on the confined space



**Control measure element**

**Learning outcome**

Isolate the confined space or sources to prevent the ingress of gas, liquids or flowing materials

Demonstrate the ability to:

- Investigate the possible ingress of substances into a confined space
- Establish appropriate actions to prevent ingress of a substance into a confined space

If isolation or removal of electrical or mechanical equipment is possible, ensure that it occurs before personnel are committed to the confined space

Demonstrate the ability to:

- Determine if it is appropriate to isolate or remove electrical or mechanical equipment
- Use appropriate methods to isolate or remove electrical or mechanical equipment
- Ensure there is no stored energy that could activate equipment
- Use appropriate safeguards to prevent reactivation of isolated electrical or mechanical equipment



## Control measure - Confined space: Health and safety considerations

### TRAINING SPECIFICATION

#### Knowledge and understanding

**Control measure element**

**Learning outcome**

Selection and use of suitable equipment

Understand:

- The need for equipment to be appropriate to the environment, especially if there is an explosive atmosphere
- The need to appropriately select and secure equipment when it is being used in a confined space



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Control measure element	Learning outcome
Personal protective equipment and respiratory protective equipment	Understand: <ul style="list-style-type: none"><li>• Ensure the PPE and RPE used in confined spaces takes into account:<ul style="list-style-type: none"><li>- Limited space and movement</li><li>- High temperatures</li><li>- The potential need for emergency evacuation of responders</li></ul></li></ul>
Access and egress	Understand: <ul style="list-style-type: none"><li>• The need to identify and monitor access and egress routes</li><li>• The need to identify alternative routes and when they may need to be used</li><li>• The importance of maintaining the access and egress routes</li><li>• Why it may be necessary to increase the size of openings to, or in, confined spaces</li><li>• The benefits of appointing a confined space supervisor</li></ul>
Lighting	Understand: <ul style="list-style-type: none"><li>• The need for lighting equipment to be appropriate to the environment, especially if there is an explosive atmosphere</li></ul>
Be aware of electrostatic build-up	Understand: <ul style="list-style-type: none"><li>• What causes electrostatic build-up</li><li>• What hazards are presented by electrostatic build-up</li></ul>
Establish arrangements to deal with firefighter emergencies	Understand: <ul style="list-style-type: none"><li>• The legislative requirements for establishing arrangements to deal with firefighter emergencies</li><li>• The need for recovery systems</li></ul>
Limiting working time	Understand: <ul style="list-style-type: none"><li>• Why there may be a need to limit the time period that personnel are allowed to work in a confined space</li></ul>



## Practical application

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### Control measure element

### Learning outcome

Incident commanders must:

Establish and maintain a recovery system for personnel deployed into confined space environments

Demonstrate the ability to:

- Ensure there is a recovery system in place for all personnel entering the confined space hazard area

Incident commanders must:

Ensure that emergency arrangements are maintained and resourced for the duration that personnel are committed to confined spaces

Demonstrate the ability to:

- Ensure there are suitable and sufficient arrangements for the rescue of personnel from the confined space in an emergency

Use only ATEX approved equipment in confined spaces if there is a risk of an explosive atmosphere

Demonstrate the ability to:

- Ensure only ATEX approved equipment is used in a confined space, if there is the risk of an explosive atmosphere

Appropriately select and secure equipment used in a confined space to prevent it causing harm

Demonstrate the ability to:

- Ensure equipment is appropriately selected and secured when it is being used in a confined space

Identify the appropriate PPE and RPE for confined space work

Demonstrate the ability to:

- Ensure personnel use appropriate PPE and RPE when working in a confined space





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**Control measure element**

**Learning outcome**

Ensure that access and egress is appropriate for the operations being undertaken within the confined space and include contingencies for restricted access and egress

Demonstrate the ability to:

- Identify and monitor access and egress routes
- Identify alternative routes to be used in the event of the original access and egress presenting intolerable risks or becoming unsuitable during the incident
- Maintain the access and egress route so that all personnel working in the confined space are able to withdraw as quickly as possible if required
- Consider increasing the size of openings to, or in, confined spaces if they are not sufficient
- Use a confined space supervisor to provide updates on hazards and operational requirements

Ensure that lighting equipment being used in a confined space is appropriate to the environment and hazards present

Demonstrate the ability to:

- Ensure any lighting equipment used in a confined space is appropriate to the environment

Consider seeking advice from specialist rescue teams, confined space supervisors or on-site staff about the hazard of electrostatic build-up

Demonstrate the ability to:

- Consider the presence of and seek advice on the hazard of electrostatic build-up

Eliminate or isolate sources of ignition if there is a risk of flammable gases in or near to a confined space

Demonstrate the ability to:

- Control the impact of sources of ignition through the use of cordons
- Ensure smoking and vaping are not allowed in or near to a confined space

Account for extended times in the incident plan due to difficulties operating in a confined space

Demonstrate the ability to:

- Factor extended travel and access times into the incident plan



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**Control measure element**

Consider limiting the time personnel can be committed to working in a confined space

**Learning outcome**

Demonstrate the ability to:

- Control the duration time for working in a confined space