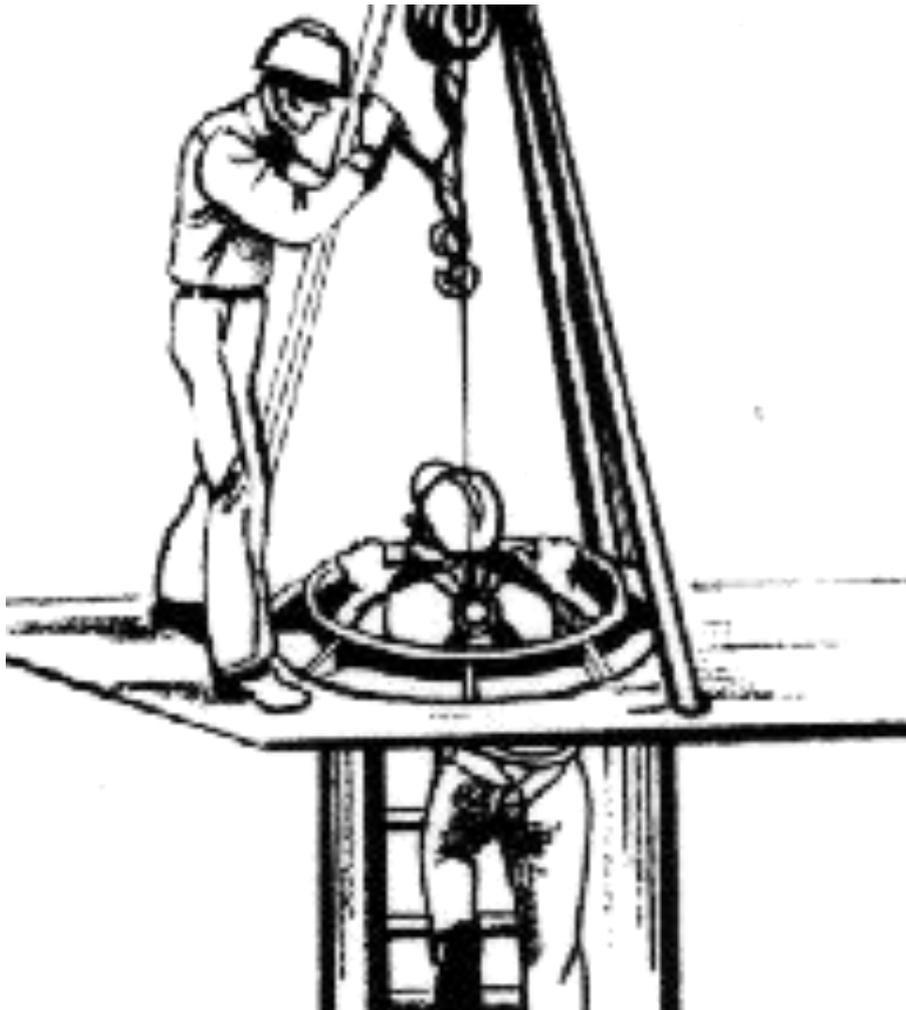


Safety Code of Practice 39

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RESTRICTED ACCESS AND CONFINED SPACES



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1 SUMMARY

This Safety Guide provides guidance on the designation and management of work in Restricted Access and Confined Spaces. It is aimed primarily at Facilities Management Directorate (FMD) and the University Farms, who need to access or manage confined spaces, but will also be useful for those Schools/ Directorates who have restricted access spaces in the buildings that they occupy.

The University's definition of a restricted access space is:

"An area where access and or egress is difficult or there is restricted working space which presents a hazard, or other risks or reasons that require the University to control access."

Examples include:

- small loft spaces
- basements or undercrofts with low ceilings and difficult escape routes
- plant rooms
- substations

Generally a restricted access space is one where there is a need to manage access for health and safety reasons, and to have good communications between the space and others who can provide assistance in an emergency.

The definition of a confined space is:

.... is a place which is substantially enclosed (though not always entirely), and where death or serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen).

- Confined spaces include, but are not limited, to:
 - Storage tanks, silos and reaction vessels
 - Enclosed drains
 - Sewers
 - Open-topped chambers
 - Vats
 - Combustion chambers in furnaces etc.
 - Ductwork
 - Unventilated/poorly ventilated rooms
- Some places may become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification.

The specific risks likely to lead to death or serious injury in confined spaces include:

- Fire or explosion
- Loss of consciousness or asphyxiation arising from gas, fume, vapour or lack of oxygen;
- Loss of consciousness arising from an increase in body temperature;
- Drowning in liquid or a free flowing solid (e.g. grain).

Within the University academic and research facilities, the introduction of compressed gases or cryogenic liquids that could result in a laboratory or store becoming a confined space due to an oxygen deficient atmosphere is not permitted. The size of container or the room and the provision of passive ventilation must ensure that the total release of the compressed gases or cryogenic liquids, under normal and emergency conditions, cannot result in a risk of asphyxia.

Working in confined spaces must be avoided wherever possible. Alternative systems that allow work to be done remotely or from outside, or in a different manner that avoids the risk of a confined space being created, must be adopted where it is reasonably practical to do so.

All work in a confined space must be risk assessed. There must be a safe system of work which gives priority to:

- eliminating any danger
- having competent persons to supervise and carry out the work, who are trained in confined space working
- adequate communications
- emergency procedures.

Atmosphere monitoring, isolation systems, permit to work systems, personal protective equipment (PPE) and other specialist equipment may be required.

2 INTRODUCTION

This Safety Guide sets out what managers, staff, students and tenants have to do to ensure that risks are minimised when carrying out any operation that involves access to or the management of restricted access or confined spaces.

It provides guidance that will be particularly relevant to Facilities Management Directorate (FMD) and the University Farm, but also those Schools/Directorates which have restricted access spaces within the buildings that they occupy.

It provides information to enable Schools/ Directorates/Units to comply with the Confined Spaces Regulations 1997 and the Management of Health and Safety at Work Regulations 1999.

3 SCOPE AND DEFINITIONS

The scope of areas covered by this document is particularly wide, given the diversity of university operations. Some examples of university areas covered by this guide are:

- Steam ducts
- Boilers
- Roof spaces
- Effluent tanks
- Silage pits
- Interceptors
- Elevator shaft pits
- Inspection pits for underground services
- Test and experimental facilities with large quantities of asphyxiating gases
- Building undercrofts and basements

The following are not covered by this guide: excavations (see Safety Guide 47); vehicles, aircraft or ships spaces; sporting activities such as caving.

A restricted access space is:

"An area where access and or egress is difficult or there is restricted working space which presents a hazard, or other risks or reasons that require the University to control access."

Typical examples within university premises include:

- plant rooms, where the controls and engineering plant for a building are housed;
- electrical distribution substations and cupboards;
- roof spaces over fragile ceilings or with narrow walkways or where building tanked water is stored;
- areas that contain asbestos that may present a risk to health if correct access or work procedures are not followed;
- basement areas where in the event of an injury or illness an individual will be out of view and unable to summon help;
- laboratory areas where delicate or technical experiments are being undertaken and deliberate or unintended interference could harm the experiment of the individual.

A confined space is...

... a place which is substantially enclosed (though not always entirely), and where death serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen).

The specific risks likely to lead to death or serious injury in a confined space include:

- Fire or explosion
- Loss of consciousness or asphyxiation arising from gas, fume, vapour or lack of oxygen;
- Loss of consciousness arising from an increase in body temperature;
- Drowning in liquid or a free flowing solid (e.g. grain).

In addition, other hazards such as electricity, mechanical equipment, noise, dust, and limited working space may be encountered.

4 RESPONSIBILITIES

4.1 Duties of managers

Heads of Schools/Directorates and other unit managers must ensure that:

- all confined spaces under their control are identified and there are systems in place to manage them;
- all confined and restricted access spaces are secured against unauthorised access;
- where entry is required, there is the correct equipment to permit safe access and egress in both normal and emergency conditions;
- all staff who need to enter confined spaces are trained to do so;
- that all confined spaces have a formal risk assessment that covers normal and emergency conditions;
- a Safe System of Work (SSOW) for confined spaces is formally agreed with Health and Safety Services (H&SS);
- for restricted access spaces, the level of controls is proportionate to the hazard and risks (advice on suitable measures can be obtained from H&SS);
- all restricted access and confined spaces must have adequate signage indicating the hazard, the responsible manager and contact telephone details;
- where the University intends to use a contractor in a confined or restricted access area, that this Safety Guide is brought to their attention and the specific Safe System of Work/risk assessment is shared with the contractor;

- any contractor who needs to do so is competent to work in the confined or restricted access area.

4.2 Duties of staff and students

All staff and students must ensure that:

- they only enter confined spaces if they have been trained to do so and all the required equipment as specified in the risk assessment is available and used;
- they only enter restricted access area if all the requirements of the risk assessment have been met;
- they only access restricted and confined space areas if they have been authorised.

4.3 Duties of tenants

All tenants must ensure that:

- any proposed changes to the demised area that will produce a restricted or confined space area are notified to the University and permission is given before work commences;
- the University is informed of any work that may take place near an existing confined space;
- any confined spaces in their control are risk assessed and control procedures logged with FMD maintenance team so that the FMD maintenance team can respond safely if out of hours emergency access is required.

5 ENTRY TO RESTRICTED ACCESS SPACES

A restricted access space is an area where due to physical constraints and/or hazardous materials or plant, there is a need to control who enters. All restricted access areas must:

- be clearly signed to indicate restricted access/authorised access only;
- where appropriate, have additional signage to warn people of the hazard e.g. low/high voltage electricity, asbestos, fragile ceiling etc.
- be kept locked when not occupied;
- have a system for identifying when someone is in the space;
- have appropriate lone working procedures so that if anyone gets into difficulty in the space, this is recognised and immediate assistance can be provided.

6 REQUIREMENTS FOR WORKING IN CONFINED SPACES

6.1 Risk assessment

Before any area is designated as a confined space an assessment of the risks and measures available to reduce them must be undertaken.

The assessment will consider:

- issues found in and around the confined space in normal and emergency conditions, including:

- excessive heat and cold;
 - oxygen deficiency;
 - toxic gases;
 - the presence of liquids or flooding;
 - solid materials that can flow such as sand, grain or powders;
 - flammable substances including any substances that may have been brought in to do work in the confined space i.e. welding gases;
 - sources of toxic gas such as carbon monoxide from the exhaust fumes of plant and machines operating in the general vicinity of the confined space, or from the decay of organic matter in soil;
 - the presence of chemical residues or scale, rust or sludge.
- options to reduce the hazard that eliminate it being a confined space, such as such as passive ventilation systems or emptying of the contents before entry;
 - engineering solutions that can be implemented to do the maximum amount of work from outside the confined space e.g. pumps mounted on the exterior that can be uncoupled from the tank to carry out work rather than entering the tank;
 - means to ensure safe access and egress, the use of built in access ladders and doors that cannot be obstructed;
 - means of isolation of the space from any hazards i.e. electricity, gas, fuel and liquids; the principle used in confined space isolation is 'air gap' i.e. for pipework a section is removed so as to prevent fluids or gases entering, even if the valves etc. are accidentally turned back on;
 - hazards from other operations in the area and vice versa whether or not the confined space work will affect other operations or personnel;
 - whether or not preparing the confined space for entry, or the act of entry, or work in the confined space, will present a hazard to other operations/personnel on the site.
 - the need for training and practice evacuation exercises to test the procedures and training of those in charge of or accessing confined spaces;
 - information and co-ordination required between the University and the local emergency services.

Priority must be given to identifying measures that will avoid working in a confined space. If it is not reasonably practicable to prevent work in a confined space, the risks to those entering or working, and anyone else in the vicinity who might be affected, must be identified.

Wherever practicable, confined spaces and those restricted access spaces which are awkward and difficult to work in should be designed out of buildings/plant.

Within the University academic and research facilities, the introduction of compressed gases or cryogenic liquids that could result in a laboratory or store becoming a confined space due to an oxygen deficient atmosphere is not permitted. The size of container or the room and the provision of passive ventilation must ensure that the total release of the compressed gases or cryogenic liquids, under normal and emergency conditions, cannot result in a risk of asphyxia.

6.2 Competence and training

A supervisor must be appointed. All staff must be trained in the safe system of work, and their role within it.

6.2.1 Records of training and CPD

Confined space access needs to be practiced in order for staff to remain competent. Records of work and training should be kept to provide evidence of effective management and worker competency.

6.3 Control measures

All work in a confined space must be planned. The risk assessment for the work should help to define a safe system of work (SSOW). The procedures to be followed must:

- be approved and agreed by all involved;
- be subject to review if any of the circumstances change;
- include arrangements for emergency response.

6.3.1 Safe system of work

The SSOW should aim to reduce the risk to the lowest level, after any engineering and design controls have been implemented.

The SSOW will cover:

- who is in control of the confined space;
- the primary hazard and how it is to be handled i.e. the substance/conditions that could make the space dangerous;
- the work to be undertaken, including the physical effort of doing that work in a confined space;
- time taken to do the work (work in a confined space will always take longer than non-confined area);
- any added hazards that are brought into the space e.g. cleaning chemicals;
- the skill set of the staff undertaking the task;
- any preconditions that need to be in place i.e. ventilation of the space for X number of hours before entry;
- any restrictions on tools to be used e.g. using power tools in a large tank will be a significant noise and possible fume hazard;
- any special requirements for breathing apparatus or escape systems;
- communications into the space and outward to any emergency response team;
- if the work site is to be left overnight, how it is to be secured from unauthorised access - consider children and animals who will not be aware of the hazards;
- any requirements that need to be addressed before the space can be put back into use e.g. a pressure tank may need formal inspection before reuse.

There may need to be more than one SSOW, for different phases/tasks within the operation. The aim is to produce clear instructions for staff that they can follow and complete the task in a safe and efficient manner.

6.3.2 Marking and fencing

All confined spaces must be secured against unauthorised entry, with signs stating who has control and any warning signs relating to the specific hazard. The signage should indicate if any work is being undertaken, and what to do if an observer sees anything wrong i.e. emergency contact number.

6.3.3 Inspections and Permits to Work

The HSE document ACOP L101, Safe Work in Confined Spaces recommends that all confined spaces are subject to permits to work. However, industry best practice often expands the area subject to a permit to cover the exterior area of a confined space as well.

Records of inspections of the confined space and permits to work must be kept by the department for a year and be available on site for inspection.

6.4 Adverse conditions

Weather can have a significant effect on confined space working. Issues such as heat can further reduce the working time of staff in the confined space. Wind and rain can create hazards to working in the space due to ingress of water etc. or damage to support equipment outside the space.

6.5 Specialist equipment

Certain types of equipment will require specialist training, including refresher training e.g. self contained breathing apparatus (SCBA), gas monitors, communication equipment and evacuation equipment such as man hoists.

Equipment must be suitable for the intended use, subject to an appropriate maintenance regime, and checked before use. Some categories of equipment, such as SCBA or lifting equipment, may require a thorough examination, testing or visual inspection – consult H&SS for more information on this aspect.

6.5.1 Mobile work/plant equipment

Where mobile work or plant equipment is required for the task in the confined space it should be secured so as to not pose a hazard to those inside and support staff outside.

Ensure the noise of any operating plant will not effect communications or be a hazard.

The location of any petrol or diesel engine plant needs to take account of the exhaust fume and refilling of the machine so the fuel or fuel vapour cannot spill into the confined space.

Lighting units, transformers and power tools must be safe for use within the confined space.

The requirements of the Manual Handling Regulations 1992 must be taken into account when moving equipment into the confined space.

Guidance:

See Safety Guide 47 for information on work in excavations, and the requirements for safe use of equipment that would prevent an excavation becoming a confined space.

6.6 Demolition works

Demolition works require special skills to ensure that the structure does not collapse, trapping workers inside. Before any demolition takes place the structure must be assessed by a structural engineer to confirm the need (or not) of supports.

6.7 Use of contractors

Where it is proposed to engage contractors to undertake work in a confined space, the contractor must provide evidence of competency and experience in the type of work to be undertaken, along with competency in confined space working. The procedures set out in this guide, such as risk assessments, method statements, and specialist training will also apply to the contractors and their personnel and must be shared with the contractor.

6.7.1 Chemical storage spaces

If the planned work is in a chemical storage unit an assessment of the hazard and any decontamination/ventilation needs must be undertaken. These operations are extremely hazardous and should only be undertaken by specialist contractors, in accordance with specific method statements.

7 EMERGENCY PROCEDURES

There must be no entry into a confined space unless there is an emergency procedure in place that is known to all involved. All emergency procedures should be suitable and sufficient for the hazards identified in the risk assessment.

Account needs to be taken not only of accidents arising from a specified risk, but also any other accident in which a person needs to be recovered from a confined space, for example, incapacitation following a fall.

Arrangements for emergency rescue will depend on the nature of the confined space, the risks identified and the likely nature of an emergency rescue.

Emergency procedures must include:

- how to raise the alarm;
- first aid and/or resuscitation if appropriate;
- the provision of suitable rescue equipment, which must be fitted and in place every time someone enters the confined space;
- training in the use of the communication system and rescue techniques

There must be sufficient staff to ensure that at least one member of the team is outside at all times. The role of that person is to raise the alarm and summon help, not to attempt a solo rescue.

8 LEGISLATION

The following legislation is relevant to confined and restricted access spaces:

- Health and Safety at Work etc Act 1974
- Management of Health and Safety at Work Regulations 1999
- Confined Spaces Regulations 1997
- The Personal Protective Equipment at Work Regulations 1992
- Provision and Use of Work Equipment Regulations 1998
- Construction (Health, Safety and Welfare) Regulations 1996
- The Construction Design and Management Regulations 2007

9 FURTHER INFORMATION

The following documents can provide further more detailed information:

- HSE guidance HS(G) 150, Safety in Construction
- HSE Approved Code of Practice L101 Safe work in confined spaces
- Civil Excavations and Tunnelling ISBN: 9780727733405
- HSE INDG258 Safe work in confined spaces

Appendix 1: Version control

VERSION	KEEPER	REVIEWED	APPROVED BY	APPROVAL DATE
X.X	H&S	Every four years	XXXXX	XX/XX/XX
X.X	H&S	Annually	XXXXX	XX/XX/XX