

## **1. Introduction**

The Confined Spaces Regulations 1997 were made under the Health and Safety at Work etc. Act (HSW Act) 1974 and came into force on 28th January 1998 and was updated in 2008. The Regulations apply in all premises and work situations in Great Britain subject to the HASAW Act, with the exception of diving operations, and below ground in a mine (there are specific legislation dealing with confined spaces in these cases). The Regulations also extend outside Great Britain in a very limited number of cases. This policy explains the duties, responsibilities and procedures to be followed by the production crew members for safe working in areas defined as confined spaces.

## **2. Scope of the Policy**

This policy will examine the hazards, risks and control measures relating to confined spaces for crew members and contractors. This policy aims to offer the production guidance on how to identify confined spaces, and to examine the hazards, risks and control measures relating to them. Depending on the nature and scale of the work being undertaken in the confined a variety of significant hazards may be present.

Each department inside the production must conduct their own assessments and produce their own safe systems of work in confined spaces, within the context of the production risk assessment and any training and knowledge required to work in the spaces. This policy will be reviewed for its currency and accuracy every year. The production H&S department will be responsible for overseeing the review and any decision for revision or amendment. The H&S department may decide that a full or partial review is required within this period.

## **3. Significant Hazards and Risks.**

### **Definitions**

The Confined Space Regulations 1997 define a confined space as:  
“any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, flue, well or other similar space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk.”

A ‘specified risk’ is further defined as a risk of:

- Serious injury to any person at work arising from a fire or explosion
- Loss of consciousness of any person at work arising from an increase in body temperature
- Loss of consciousness or asphyxiation of any person at work, arising from gas, fume, vapour or lack of oxygen
- Drowning of any person at work arising from an increase in the level of liquid
- Asphyxiation of any person at work arising from a free flowing solid, or the inability to reach a breathable environment due to the entrapment by a free flowing solid.

Under the Regulations, a confined space has two defining features:

- It is a space which is substantially (but not always entirely) enclosed.
- There is a reasonably foreseeable risk of serious injury.

**Hazards**

The hazards in a confined space arise by the combination of the confined nature of the workplace and the possible presence of substances or conditions which could increase the risk to the health and safety of personnel. The department undertaking the work must consider the possibility that a hazard could be introduced to a confined space during an incident such as water.

**Toxic gas: fume, vapour, or CO<sub>2</sub>**

- Fumes may remain in a confined space from previous usage, or arise from the disturbance of sludge or deposits contained within it,
- Hydrocarbon vapour may be present under scale or rust, even after cleaning,
- Fumes may enter a confined space from adjoining plant that has not been thoroughly isolated,
- Gas and/or fumes may leak from behind coatings or linings,
- Gas and/or fumes may build up in sewers; manholes; access shafts; or contaminated ground,
- Fumes and vapours can be produced by work inside the confined space such as during flame cutting or welding,
- A buildup of CO<sub>2</sub> can accumulate through personnel working in a confined space,
- Fumes and/or vapours caused by spraying and painting,
- Fumes and/or vapours caused by the use of glass reinforced plastics; adhesives and solvents.

Gas, fumes and vapours can occur inside a confined space as a result of activities taking place outside the confined space. For example, hot work to the exterior and exhaust gases entering from vehicles or plant adjacent to the confined space.

**Oxygen deficiency**

Oxygen deficient atmospheres may result from:

- Purging of the confined space with an inert gas to remove flammable gas; fume; vapour or aerosols,
- Naturally occurring biological processes which consume oxygen (aerobic) such as sewers; storage tanks; storm drains and wells etc,
- Storage vessels or feed hoppers which contain wood fuel pellets can degrade and displace the oxygen in the compartment,
- Gases can be produced as a result of fermentation in sealed silos where crops have been or are being stored; fermentation vessels in brewing processes, cargo holds carrying timber products; vegetable products; grain coal etc displacing the oxygen,
- The action of rusting takes oxygen from the surrounding atmosphere. Leaving a steel vessel completely closed for some time can lead to an oxygen deficient atmosphere. Newly fabricated carbon (mild) steel vessels which have been shot blasted are particularly vulnerable to rusting,
- Carbon dioxide levels may increase when limestone chippings used in drainage in the base of trenches get wet through rain water ( water reacts chemically with limestone to produce CO<sub>2</sub>,
- Flame cutting (burning), welding and grinding which consume oxygen,
- Air displacement when using liquid nitrogen to freeze pipes,
- The gradual depletion of oxygen as personnel breathes where the replenishment of air is inadequate.

**Flammable substances and oxygen enrichment**

A risk of fire and explosion can arise from the presence of a flammable substance; an excess of oxygen in the atmosphere; or the ignition of airborne substances. It can also be caused by leaks from adjoining plant that has not been effectively isolated.

**Liquids**

Liquids can flow into the confined space and drown personnel, or lead to other serious injuries dependent on the nature; toxicity; or corrosiveness of the liquid. Liquids can also hinder access/egress and cover other hazards contained within the confined space. Prolonged submersion in cold liquids can create hypothermic symptoms for personnel within the confined space.

**Solid materials which can flow**

Free flowing solids are substances consisting of solid particles that are capable of being in a flowing or running consistency, Examples include flour; sand; grain; coal dust. Free flowing solids can flow into the confined space and submerge a person, causing asphyxiation

**Contamination and biological / chemical hazards**

Biological hazards, in particular waterborne diseases, must be expected to be present if there is any standing liquid and there are a number of infections that can be encountered, including:

- Salmonella,
- Amoebic dysentery,
- Tetanus,
- Typhoid,
- Polio,
- Hepatitis,
- Legionnaires disease,
- Weil's disease (leptospirosis).

**Extremes of temperature**

Hypothermia is a physical condition that occurs when the body's core temperature falls below a normal 37° C to 35° C or cooler. Cold water dangerously accelerates the onset and progression of hypothermia since body heat can be lost 25 times faster in cold water than in cold air. Hypothermia affects the body's core – the brain, heart, lungs, and other vital organs. Even a mild case of hypothermia diminishes a victim's physical and mental abilities and can lead to a loss of dexterity and the ability to carry out simple tasks, thus increasing the risk of accidents. Severe hypothermia may result in unconsciousness and possibly death.

Hyperthermia is an elevated body temperature due to failed thermoregulation and is defined as a temperature greater than 37.5–38.3° C, Hyperthermia occurs when the body produces or absorbs more heat than it can dissipate. Heat stroke is an acute condition of hyperthermia that is caused by prolonged exposure to excessive heat and/or humidity. The heat-regulating mechanisms of the body eventually become overwhelmed and unable to effectively deal with the heat, causing the body temperature to climb uncontrollably.

**Working at height**

When gaining access personnel risk falling into the confined space, equipment may fall onto personnel or a casualty while they are in the confined space causing serious or fatal injuries. Further information on safe working at heights is contained in the Working at Height standards, and department risk assessments.

**Musculoskeletal injuries**

Body positioning, force of movement and pace of work can all impact on personnel working within a confined space environment. These issues may also be compounded by the range of operating temperatures personnel may work in, as a cold environment will make the body less flexible and more susceptible to strains and other injury. Difficulty in adopting the correct body posture and the additional loads incurred by working within a confined space environment must also be considered.

**Other non-specific hazards**

Some other hazards may be present which are not specific to confined spaces but must be considered prior to committing crews into the confined space:

- Electrical hazards which may lead to electrocution,
- Mechanical hazards, such as stirrers and drills,
- Service supplies,
- Potential to collapse – eg trench collapse or void exploration,
- Limited access and egress.

**4. Responsibilities**

HoD's will:

- Ensure that every effort is made to avoid entry into a confined space. Where entry into any confined space cannot be avoided, a suitable and sufficient assessment of the risks to health must be carried out,
- Ensure that, prior to entry into a confined space, a written safe system of work, including emergency procedures, has been developed and a confined space permit to work issued by the production H&S department,
- Ensure that all staff involved in entry into confined spaces are aware of this policy, understand its content and comply with all procedures and safe systems of work,
- Ensure all staff who will enter a confined space are fit to do so,
- Ensure that all staff that enter confined spaces and those who issue permits to work have appropriate information, instruction, training and supervision in confined spaces working.

The production H&S department shall:

- Only issue confined space permits when they have received all relevant risk assessments and paperwork for work that is being undertaken in the confined space,
- They shall not issue permits for work they are going to carry out themselves unless this has been countersigned by another member of the department,
- Assess all associated risks involved in the entry into a confined space, develop a safe system of work and issue a confined space permit, ensuring all necessary precautions, including emergency procedures, are taken,
- Oversee the issue of any permit and its cancellation and check safety at each stage of the work.

Crew members, contractors shall:

- Assist with the assessment of risks and comply with any safe system of work developed through risk assessment and comply with any requirements of a confined space permit to work,
- Inform their HoD of any known health issues that may preclude them from working in a confined space.
- Inform their HoD if they suspect that the system of work in place, or planned, could be ineffective or inadequate.
- Report all incidents, including near misses, procedural failures or equipment defects to the production H&S department as soon as possible,

## **5. Risk Assessment Guidance**

Guidance and help in completing a risk assessment can be sought from the production H&S department. The key stages to risk assessment are;

- The analysis of tasks to be performed,
- The identification of hazards associated with those tasks,
- A determination of who is at risk and how,
- A judgment will subsequently be made regarding the severity and probability of the harm being realized,
- What practical control measures are necessary to reduce the risk to an acceptable level.

Please see section 3 of this policy to help identify any hazards that may be present when undertaking work in a confined space.

## **6. Safe Systems of Work / Emergency Procedures.**

Where a member of the crew is to undertake any work / task within a confined space they are required to produce a job specific risk assessment which will provide the necessary information for them to form a safe systems of work (SSOW) document detailing the use of any control measures required to significantly reduce the risk.

The SSOW may include the following:

- The isolation of services, e.g. gas, electric, water,
- The shutdown of machinery,
- The closure of mechanical valves or drains controlling gases or fluids,
- Removal or identification of substances hazardous to health,
- The provision of PPE such as dust masks, respirators, gloves, torches, gas testers, safety harnesses, communications equipment and hard hats,
- The ventilation or purging of the space prior to,
- Atmospheric / gas monitoring of the space,
- Continuous atmospheric/gas monitoring with readings taken at regular intervals depending on risk,
- Restricting the duration of access,
- Provision of lighting,
- Barriers and warning signage,
- Plan of space clearly indicating access routes, working area and escape routes,
- Minimum number of persons in entry teams, (Supervisor and 2 Operatives),
- Trained confined spaces and first aid trained supervisors / operatives,

- The use of self-rescue packs,
- Emergency procedure and rescue plan which as a minimum must include for the following events:
  - o In the event of an external emergency to the confined area, e.g. fire in the adjacent building.
  - o If the gas detector alarms within the confined area.
  - o In the event of an injured operative in the confined area.
  - o In the event that the gas detector alarms within the confined area and an operative is injured or becomes injured.

Other foreseeable risks or specialist works will require additional measures and equipment to reduce risk and as a consequence may well add to the list of control measures. This could directly affect what work can be carried out or the duration of access to the confined space.

At all times effective communications should be maintained between the crew members/contractors within the space and the supervisor outside by means of a radio link or similar. Should this communications link break down, operatives should leave the space as soon as it is practical to do so.

Similarly means of communication is required by the supervisor in the event of an emergency to raise the alarm to the production H&S department and also the emergency services. The emergency procedure and rescue plan should allow for the safe attendance to and removal of a casualty from within the space.

All crew members/contractors connected with the work/task to be carried out should be thoroughly familiar with the SSOW, accompanying rescue plan and trained for the use of the designated safety equipment. Safety equipment must be inspected by the user for visible defects on each occasion prior to use. This inspection should be formally recorded by the supervisor. Calibration and test certificates should be made available for inspection by the production H&S department upon completion.

## **7. Permit to Work**

Prior to accessing a confined space all personnel are required to have obtained a permit to work (PTW) from the production H&S department. Prior to issuing the PTW the production H&S department is to satisfy themselves that all required documentation has been provided to demonstrate that a reasonable assessment of the works and the working environment has been done.

Confined Spaces Page 13 of 52 October 2011 Code of Practice This “documentation” will normally include a risk assessment, SSOW, method statement and training certification, (certificates required for confined spaces training and first aid training where applicable).

The documentation is required to have been submitted five working days prior to the date access is required to the confined space, in order to allow time for the necessary procedures to have been put in place by the H&S department.

Where four days’ notice is not possible, the production H&S department will do their utmost to assist the crew member/contractor to obtain access on the required date however this will not be guaranteed.

Notwithstanding the above, it remains the crew member/contractor's responsibility to ensure that their assessment and the subsequent SSOW put in place by them is sufficient for the needs of the confined space / working environment, whilst taking into consideration the works being undertaken.

Prior to issue the production H&S department must check that there are no current permits outstanding for the confined space in question and that the confined space key is available, (only one key available for confined spaces). Under no circumstances should two separate permits be issued for the confined space and/or a duplicate key be sought. A copy of the competent person's documentation should be attached to the permit.

Once the works are complete, the confined space has been secured and the confined space key returned the permit should be signed off.

## **8. Emergency Procedures**

In the event of an emergency all workers should leave the space as quickly as possible; members of the work party should proceed to the nearest exit.

The supervisor of the works should then proceed to the relevant assembly point together with their team and call 999 plus the H&S department PTW issuer, to inform them of the emergency plus that escape has been affected. It is the responsibility of the supervisor to ensure that all members of the confined spaces team are present at the assembly point.

The confined space emergency procedures form must be considered and completed by the competent person prior to a PTW being issued. The form is then to remain live throughout the confined spaces access and updated as necessary by the supervisor.

**Document Check Sheet**

<b>1 RISK ASSESSMENT</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	<b>DETAILS</b>
<b>Received</b>				
<b>Job Specific</b>				
<b>2 SAFE SYSTEMS OF WORK</b>				
<b>Received</b>				
<b>Job Specific</b>				
<b>Control Measures – To Be Considered:</b>				
Service isolation:				
Gas supply				
Water supply				
Electrical supply				
Steam valves shut				
Mechanical machinery shutdown				
Drainage/Ventilation:				
Space drained				
Ventilated/purged before entry				
Precautions:				
Continuous atmospheric/gas test				
Lighting on				
Signage/barriers in place				
Warnings given:				
Low ceilings				
No smoking or naked flames				
Encapsulated asbestos material				
High voltage present				
Low voltage present				
Substances hazardous to health present				
Personal Protective Equipment(PPE):				
Hard hats required				
Disposable gloves/overalls				
RPE required				
Torches for each operative				
Safety harness required				
General Safety/ Rescue plan:				
2 Person team only				
First aider present				
Trained supervisor present				
Firefighting equipment available				
Resuscitation equipment available				
Communication link with workers				
<b>3 METHOD STATEMENT</b>				
<b>Received</b>				
<b>Job Specific</b>				