



<b>Health and Safety Executive</b>		<b>Operational Circular</b>	
		<b>OC 288/7</b>	
<b>Review Date</b>	29/05/2008	<b>Open Government Status</b>	Fully Open
<b>Version No &amp; Date</b>	1: 29/05/1998	<b>Author Unit/Section</b>	North West Safety Unit

Target Audience:  
All Inspectors

### THE CONFINED SPACES REGULATIONS 1997

This OC introduces the Confined Spaces (CS) Regulations 1997 and highlights the key inspection and enforcement issues.

#### INTRODUCTION

1 The CS Regulations (SI 1997, No 1713) came into force on 28 January 1998. The Regulations are supported by L101 *Safe work in confined spaces: approved code of practice, regulations and guidance*, and also a free leaflet IND(G) 258 *Safe work in confined spaces*. The SI, L101 and IND(G) 258 are all in file 288.

#### BACKGROUND AND SCOPE

2 The CS Regulations stem from HSC's Review of Regulation and apply across all sectors of employment, (but see para 4 below). They repeal the Factories Act, s.30 and revoke some sector-specific law, such as, the Docks Regulations 1988, reg.18, and the Shipbuilding and Ship-repairing (SS) Regulations 1960, regs.48-52 and 54. Regs 59-66 of the SS Regulations have been revoked by the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002. (These SS Regulations dealt with the special circumstances surrounding hot work on oil tanks on ships. Such work now needs to comply with DSEAR and CS Regulations (The revoking of the SS regs 59 to 66 affect the advice given in para 14 of the ACoP)).

3 Both employers and the self-employed have duties under the CS Regulations, and it will often be necessary for them to liaise and co-operate with other people (eg contractors) to ensure compliance.

4 The CS Regulations do not apply to:

- 1) diving projects as defined in the Diving at Work Regulations 1997; (However, they do apply to work associated with the commissioning of

compression chambers, diving bells and therapeutic hyperbaric chambers.)

2) offshore installations, except where the installation is "stacked" in territorial waters, eg to carry out maintenance;

3) work aboard ship where this is being carried out solely by the ships' crew under the direction of the Master; (The CS Regulations do apply to an operation in confined spaces involving shoreside workers and ships' crew working together.)

4) any place below ground in a mine.

## DEFINITIONS

### **Confined space**

5 Two features are necessary to make a place a 'confined space'; namely an element of enclosure coupled with the creation of a reasonably foreseeable "specified risk". Examples of confined spaces are given in paras 6-8 of the ACoP.

### **Specified risk**

6 This is a defined term within the CS Regulations and means a risk of:

- 1) serious injury from fire or explosion;
- 2) loss of consciousness arising from an increase in body temperature (ie from working in hot conditions);
- 3) loss of consciousness arising from exposure to gas, fume, vapour or the lack of oxygen;
- 4) drowning as a result of engulfment by liquids;
- 5) asphyxiation or entrapment as a result of engulfment by solids.

7 An 'increase in body temperature' becomes a "specified risk" only when loss of consciousness is reasonably foreseeable. These Regulations are not intended to cover heat stress, which is a more complex subject and has other associated health effects. Nevertheless, if work in a confined space is likely to give rise to heat stress, the risk assessment required by the Management of Health and Safety at Work (MHSW) Regulations 1999 reg.3, should determine the appropriate precautions. Similarly, exposure to low temperatures on their own are not within the scope of these Regulations (eg entering a cold store or freezer for normal purposes).

8 Drowning is a "specified risk" only when it arises from an increase in the level of liquid. The intention is to include events such as flooding of the space (eg a surge of water in a sewer system following heavy rainfall upstream of the work to be done). Risks such as tripping or falling into liquids

(eg when wading through water), will not attract the requirements of the CS Regulations.

9 A "specified risk" is unlikely to be present where persons have to enter basements or compartments for the purpose of reading meters, or obtaining stores, because the risk of serious injury from the occurrences in para 6 above, are not likely to be present. Similarly, placing materials in, or taking materials from, a flammable liquids store would not be subject to the CS Regulations.

10 The CS Regulations do not apply to all risks encountered when working in a confined space, eg falls from height or the use of portable electrical equipment. In particular, risks from scalding are not covered by the Regulations.

### Free flowing solid

11 A 'free flowing solid' is a substance that is capable of flowing like a liquid when disturbed (eg when a silo is being emptied). Even if the substance agglomerates, it can easily break up when disturbed (eg bridging in silos). In confined spaces containing free flowing solids, the contents may appear stable, but in reality, can become unstable and flow without warning, leading to entrapment or asphyxiation. Common free flowing solids are grain, flour and sugar, although any granular material is capable of becoming a free flowing solid. The "specified risk" from free flowing solids normally arises if people are trapped or submerged to such an extent that they cannot breathe.

### RISK ASSESSMENT

12 Although the CS Regulations do not **specifically** require a risk assessment, there is a **specific** duty to provide a safe system of work (reg.4(2)). In practice, the preparation of a safe system of work will flow from the outcome of the risk assessment required by the MHSW Regulations 1999 reg.3. A suitable and sufficient risk assessment should cover the following factors: (see para 27 of the ACoP).

- 1) previous contents of the confined space, including any residues;
- 2) oxygen deficiency and oxygen enrichment;
- 3) physical dimensions;
- 4) hazards arising directly from the work to be undertaken, such as welding or solvent-based paint spraying;
- 5) hazards arising from conditions outside of the confined space, such as rising groundwater or methane from nearby landfill;
- 6) emergency rescue procedures (see para 24 below). Note that calling in the emergency services is a contingency measure used when other controls have not worked. Where the work in a confined space is assessed as being particularly hazardous, or rescue is likely to be particularly difficult then prior liaison and consultation with the appropriate emergency service may be justified as a control measure arising out of the risk assessment.

13 Generic risk assessments are appropriate where a number of confined spaces are broadly the same, **and** there are similar risks and precautions, for example:

- 1) manhole entry points to tunnels;
- 2) emergency responses by the fire service;
- 3) security checks of sewers and ships by the Police and Customs and Excise officers;
- 4) entry into fermentation vats in breweries; and
- 5) entry into underground slurry stores and silos on farms and in industry.

However, the use of generic risk assessments will need to be carefully monitored to ensure that changing conditions do not invalidate the assessments (see ACoP para 23).

14 The risk assessment should only be carried out by a competent person. A competent person is someone with sufficient experience of the relevant processes, plant and equipment to enable them to understand the risks involved. Further information is given in paras 22(b), 79 and 113 of the ACoP. In addition to considering the processes, plant and equipment, the competent person will also need to consider the suitability of individuals for work in confined spaces. Inspectors can obtain advice on suitable physical and medical characteristics from EMAS.

#### PREVENTING THE NEED FOR ENTRY

15 The principal duty under reg.4(1) is to prevent people working in a confined space so far as is reasonably practicable. Practical examples of modified work practices to achieve this requirement are given in para 30 of the ACoP.

16 Tunnelling, as a construction technique, actually creates a confined space. However, the CS Regulations do not impose restrictions on the extent to which tunnelling is chosen by architects, engineers, contractors or others who design, construct or modify buildings, structures etc. This is because, in many cases, it will be possible to confirm, through the risk assessment, that tunnelling presents the best option for reducing overall risk.

17 There is no exemption in the CS Regulations for the work of the emergency services. The definition of a confined space brings the activities of the emergency services within their scope, not just in attending rescues in confined spaces, but also in attending compartment fires (eg rooms in domestic or industrial buildings). For the fire service, the requirements of reg.4(1) should not affect the way they respond to fires, or remove the need for realistic operational training. This is because it will not normally be reasonably practicable to rescue occupants, or investigate the causes of fires without entering the premises. Where firefighting and confined-space hazards co-exist, safe systems of work should be established. Safe systems of work should be based on risk assessments and other guidance, eg technical bulletins and Dear Chief Officer Letters issued by the Home Office, the Scottish Office or the Chief and Assistant Chief Fire Officers Association. Commercial companies operating a fire service will also need to follow established safe procedures, and should not need to make any operational changes when responding to fires in order to comply with reg.4(1).

18 Where inspectors consider that existing fire service procedures could be improved, they should take up the issue with the employer in the usual way. Guidance may need to be sought from the Public Services Sector or the relevant inspector of fire safety.

### WORK IN CONFINED SPACES

19 If the work cannot be done from outside the space, then reg.4(2) requires any activity in a confined space to be carried out following a safe system of work. The safe system will need to take account of:

- 1) supervision and training requirements;
- 2) pre-entry checks (gas testing, gas purging etc);
- 3) safe working methods, including consideration of risks introduced by the work to be done, and methods of safe access and egress;
- 4) methods of communication; and
- 5) emergency arrangements.

20 Further details of the essential requirements of a safe system of work are contained in paras 35-79 of the ACoP. In some circumstances, the requirement to follow the safe system of work for egress from a confined space, may need to be abandoned, in favour of a more direct emergency evacuation procedure (see ACoP paras 64-66).

21 Where there is a reasonably foreseeable risk of serious injury, the safe system should be supported by a permit-to-work (see ACoP para 75). Further information on the contents of permits is contained in the Oil Industry Advisory Committee publication *Guidance on permit-to-work systems in the petroleum industry* (file 449), and in a free leaflet INDG98(rev3) *Permit-to-work systems* (file 430). A permit should be assumed to be necessary for most confined space work, unless the assessed risks are low and easily controlled. For example, entry to pub cellars for normal purposes will not require a permit, if the risks presented by a leaking carbon dioxide gas cylinder are assessed as low and capable of being dealt with through a simple safe system. This may be nothing more than ensuring provision of adequate ventilation before anyone can enter.

### EMERGENCY PROCEDURES

22 The safe system of work for any activity in a confined space will also need to cover emergency procedures (see ACoP paras 80-92). The emergency procedures should be included in the permit (ie detailing how the job should be controlled or abandoned in an emergency).

23 Occasionally, ambulance service paramedics may need to enter confined spaces to provide urgent medical assistance before a casualty can be removed. In most cases the police would not be expected to enter a confined space for the purposes of rescue, but they may need to enter confined spaces for other purposes, eg to carry out security checks in sewers or tunnels. In **all** cases, members of the emergency services should only enter a confined space in accordance with a safe system of work.

24 Regulation 5 requires emergency rescue arrangements to be in place before work commences in a confined space. Account needs to be taken not only of accidents arising from "specified risks", but also of accidents arising from other causes, eg incapacitation as a result of being struck by a falling object. This means that the rescue arrangements should cover **all** foreseeable risks, not just "specified risks". Paragraphs 81 to 92 of the ACoP give advice as to what should be covered by the rescue arrangements.

25 Whilst reg.5(1) refers to emergency arrangements to be prepared "... in respect of that confined space", HSE Solicitors' opinion is that this wording does not prevent the use of generic risk assessments to derive suitable and sufficient rescue arrangements. In other words, rescue arrangements have to be suitable and sufficient in the final judgement, and not necessarily specific to a particular confined space. In practical terms, this means that generic risk assessments leading to generic rescue arrangements are acceptable.

26 The training of emergency rescue personnel is dealt with fully in paras 92, 113-116 of the ACoP.

### PLANT AND EQUIPMENT

27 The CS Regulations do not impose specific restrictions on the size of openings to confined spaces. Typical sizes of openings for some different types of confined space work are given in paras 93-96 of the ACoP. In determining an acceptable safe size, it will be necessary to check that a person wearing or carrying the necessary equipment can readily pass through the opening. Account should be taken not only of any breathing apparatus but also of additional equipment needed for the emergency procedure, eg stretchers and resuscitation equipment. The size of the opening itself may indicate that air-line breathing apparatus is a safer alternative to bulkier self-contained apparatus.

28 Respiratory protective equipment for use in confined spaces normally means breathing apparatus. Examples of other types of RPE which may be suitable are given in para 101 of the ACoP. Further details on all types of breathing apparatus are given in HS(G)53 *Respiratory protective equipment, a practical guide for users* (file 282) and BS 4275:1997 *Guide to implementing an effective respiratory protective device programme* (available from Bootle Information Centre).

### ACTION BY INSPECTORS

29 The principal requirement of these Regulations is to prevent entry into confined spaces, unless it is not reasonably practicable. Therefore, inspectors should consider whether entry into a confined space is avoidable, before considering whether a safe system of work is in place. They should use improvement or prohibition notices to ensure that measures are taken to prevent avoidable entry into confined spaces.

30 In circumstances where entry into a confined space is unavoidable, inspectors should ensure that a safe system of work, (including emergency arrangements) has been prepared and that it is being followed. Where this is not the case, and there are significant risks, prohibition notices or prosecution should be considered.

29 May 1998

(220/FOD/1004/1998)

Disc: J:\Editors\CA1\OCFILES\288\_7.sam

ASI headings

Ambulance(s): confined spaces: Confined Spaces Regulations 1997: fire authorities: permits-to-work: police: safe systems of work: tunnels.

