

Health and Safety Commission Paper		HSC/04/121	
Meeting Date:	7 December 2004	Open Gov. Status:	Fully open
Type of Paper:	Below the line	Paper File Ref:	
Exemptions:	None		

HEALTH AND SAFETY COMMISSION

Review of the Confined Spaces Regulations 1997

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Issue

1. The Confined Spaces Regulations (CSR) were made in 1997 and came into force on 28 January 1998. The paper reports on a review undertaken by HSE, as requested by the then Minister and makes recommendations for future action.

Timing

2. Routine

Recommendation

3. That the regulations and Approved Code of Practice (ACoP) are fit for purpose and need no alteration. However, HSE needs to continue to work with industry to raise awareness of the risks of working in confined spaces and ways of promoting good safety practice to prevent deaths and injuries.

4. That the Commission send the draft letter at Appendix 1 to the Minister.

Background

5. Work in confined spaces is a high-risk activity. The current CSR sought to overcome the shortcomings identified by the "Review of Health and Safety Regulations in 1994". These were that existing regulations did not cover all sectors of industry where confined spaces risks were encountered; did not cover the principal risks in confined spaces (fire or explosion; being overcome by gas and fumes; suffering from lack of oxygen; drowning in free flowing solids or water, danger from being trapped); and, that some were too detailed and prescriptive. The 1998 regulations apply consistently to all sectors of industry except three (offshore, mining and diving) for which satisfactory sector specific cover already existed. The regulations are short and goal setting in nature.

6. Angela Eagle (the minister who signed the regulations) was keen to see an evaluation of these regulations after 2 years and asked for a report on that evaluation. HSE carried out a preliminary review of the regulations and found that the regulations had met the requirements set for them and that no complaints about them had been received

(HSC/00/220). However as the regulations had only been in force for 2 years, there was not enough information on accident trends. In the light of this, the subsequent Minister Lord Whitty agreed to HSE's request to continue to monitor the situation and for HSE to carry out an evaluation of their effectiveness in four years time when sufficient statistical information was available.

7. In order to carry out the evaluation, two pieces of work were undertaken. First, in Spring 2003, HSE produced a questionnaire to ascertain the views of key stakeholders on the effectiveness of the legislation and guidance produced by HSE. Secondly, during 2004 a full analysis of accident data from the Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) reports was carried out by Bomel Ltd.

8. The initial questionnaire together with an analysis of the responses is given in Appendix 2. The questionnaire was sent to approximately 3000 contacts, including those who had purchased a copy of the Regulations, ACoP and Guidance "L101 Safe Work in Confined Spaces" over the previous 2 years. This included: unions, large and small firms, training companies, fire brigades, local authorities etc. In addition, Water UK, large chemical companies and the Transport and General Workers Union (who distributed copies to their members) were identified and contacted directly. A total of 133 responses were received and a summary is at Appendix 2. Overall, the ACoP / Guidance to the Regulations were found easy to follow. They emphasized the hazards associated in working in a confined space and set out clearly the methods of minimising the risk of these hazards.

9. From the Bomel analysis, accident figures are set out in Appendix 3, together with some background. Whilst there are difficulties obtaining reliable robust figures, the evidence is that the Regulations have had no discernable impact on accident figures. The Chair's letter to the Minister on 13 October 2000 set out that an early analysis of the accident trend was very encouraging and there had been a marked reduction in the number of major and over three day accidents (Appendix 4). However that early analysis did not include accident figures, which involved exposure to a hazardous gas or solvent. For example painters being overcome by paint fumes when applying a solvent-based paint in a confined space had not been counted. These accidents had previously been recorded against the regulations specific to hazardous substances (Control of Substances Hazardous to Health [COSHH] regulations). These types of incident make up a sizeable number of injuries and needed to be included in the statistics, in order to get accurate figures. Accident figures are not available for this reporting year, but fatalities will be high. Already this reporting year (2004/05) we are aware of the following fatalities - 3 people died in East Anglia when an employee fell into a tank containing abattoir waste and two employees attempting rescue were drowned after they had been overcome by carbon dioxide; 2 people died in Hereford after inhaling argon gas in a pit, and 2 firemen died at a fire in Bethnel Green.

Argument

10. Evaluation of the consultation exercise indicated that there are no serious shortcomings with the Regulations/ACoP and in line with the HSC/E strategy there would be little benefit from considering new Regulations/ ACoP. However as there is no discernible downward trend in the accident figures, HSE remains concerned. What

appears common to most deaths is the lack of awareness of risks related to working in confined spaces. For example, a person died of trichloroethylene poisoning when cleaning out a tank of the substance. He had no respiratory protective equipment and an employee of the company said "in previous jobs when he felt unwell he would climb out and get some fresh air and then would go back in again". HSE will continue to work with industry to raise awareness of the risks of working in confined spaces and the need for safe systems of work, with specific emphasis placed on those industries that do not regularly encounter confined spaces.

11. With this in mind and following the 3 deaths in East Anglia, the East & South East Division of the Field Operations Directorate are proposing a project to prevent deaths from accidental and deliberate entry into confined spaces used to store/transport/ process organic waste. Haulage contractors in Norfolk, Suffolk and Essex will be identified who are involved in this activity. The aim is to invite them to a seminar(s) to raise their awareness of the risks of entering confined spaces and improve compliance with the CSR. These seminars will be evaluated and if deemed successful will be replicated throughout the East and South East Region and then possibly throughout the country.

12. There have been various initiatives in raising awareness. For example in 2002, HSE worked with the British Beer and Pub Association in drawing up detailed confined space risk assessments for pub owners regarding the dangers of carbon dioxide in cellars; and last year HSE worked with Water UK on training competences for confined space entries in the water industry. This latter initiative resulted in published guidance in January 2004 from Water UK rationalising and standardising the approach to confined space entries and training requirements specified by Water UK to its contractors. In March 2003 HSE issued a press release (Appendix 5) which reminded employers who encounter confined spaces of the dangers involved following four tragic deaths in four weeks.

13. In addition to HSE guidance "L101" there is a free HSE leaflet INDG258 aimed at employers and the self-employed who carry out work in confined spaces.

Consultation

14. Paragraph 8 above sets out who was consulted on the review. The questionnaire was drawn up in connection with inspectors in HSE's Hazardous Installations Directorate and Field Operations Directorate, who have also been consulted in the preparation of this paper.

Presentation

15. N/A

Costs and Benefits

16. N/A

Financial/Resource Implications for HSE

17. Any costs in working with industry to produce sector specific guidance and raise awareness etc will come from existing resources.

Environmental Implications

18. None

Other Implications

19. None

Action

20. To agree the recommendations set out in paragraphs 3 and 4.

Document2

Appendix 1 (Draft letter to Minister)

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Department for Work and Pensions
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London WC2

Review of the Confined Spaces Regulations 1997

The Confined Spaces Regulations (CSR) were made in 1997 and came into force on 28 January 1998. I am reporting to you on a review undertaken by HSE, as requested by the then Minister

As this was one of the first sets of Health and Safety Regulations signed by the new Labour government, Angela Eagle the Minister who signed the Regulations was keen to see an evaluation of these after two years. The Regulations are short, goal setting in nature and apply consistently to all sectors of industry except three (offshore, mining and diving) for which there are satisfactory sector regulations. The Regulations, Approved Code of Practice (ACoP) and guidance address the principal hazards of working in confined spaces (fire or explosion; being overcome by gas and fumes; suffering from lack of oxygen; drowning in free flowing solids or water, danger from being trapped).

On 13 October 2000 I wrote to the then Minister responsible for health and safety, Lord Whitty indicating that as the new Regulations had only been in force for two years, there was not enough information on their effectiveness and on accident trends, to undertake an evaluation. I proposed that HSE should continue to monitor the situation and carry out a full review in four years time when sufficient statistical information would be available. In his reply on 31 October 2000, Lord Whitty gave his approval to this request and for HSE to carry out an evaluation by 2004.

In order to carry out the evaluation, HSE produced a questionnaire in Spring 2003 that was circulated to key stakeholders to ascertain their views on how well the Regulations were working. In addition, Bomet Ltd conducted a full analysis of accident data from Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) reports from 1996/97 to 2002/2003. A summary of the responses to the questionnaire and accident figures is given on the attached annexes.

The findings from the questionnaire indicated that there were no serious shortcomings with the regulations/ACoP/ guidance. The regulations require no person at work to enter a confined space unless it is not reasonably practicable to carry out that work without doing so. That when entering a confined space it is done in accordance with a safe system of work and that there are suitable and sufficient arrangements for the rescue of persons in the event of an emergency. The majority who responded to the questionnaire found the regulations easy to follow and the HSE guidance to the regulations clearly set out the hazards and the methods of minimising risks from working in a confined space.

However, the analysis of the accident data indicates that the introduction of the Regulations has had no discernable impact on accident figures. Apart from a significant rise in 1998/99, which is likely to have been caused by an increase in awareness as the Regulations came into force during the previous reporting period and a fall in provisional figures for 2002/2003, figures have remained fairly stable. In addition, fatalities will be high for this reporting year as we are aware of at least seven fatalities in three separate incidents.

The figures do not match the information provided to Lord Whitty, when I wrote to him in October 2000. This is because these initial figures did not include accidents which involved exposure to a hazardous gas or solvent, for example painters being overcome by paint fumes when applying solvent based paint in a confined space. Those accidents had previously been recorded against the regulations specific to hazardous substances (Control of Substances Hazardous to Health (COSHH) regulations). In order to get a true picture, these types of accidents needed to be included in the figures, as they constitute a significant number of confined space injuries. Also, figures are hard to obtain, as there is no clear coding under RIDDOR to indicate whether the case relates to work in a confined space in the terms of the Regulations. Consequently we asked a consultant, Bomel to analyse RIDDOR reports and information from inspectors' records on accident reports using key word searches to ensure that the data was robust. The Bomel analysis provided the figures I now enclose.

In light of the findings from the questionnaire and in line with our strategy the Commission is advising that no changes are required to the Regulations/ACoP. However we remain concerned about the accident figures and thus need to encourage better compliance by duty holders.

HSE will continue to monitor the situation and remind stakeholders of the dangers of working in confined spaces. We will continue to work with the industry sectors which deal with confined space workings. Last year HSE collaborated with Water UK on training competences for confined space entries in the water industry. This initiative resulted in published guidance (Water UK January 2004) rationalising and standardising the approach to confined space entries and training requirements specified by Water UK to its contractors. We believe a similar approach with the rest of industry is the way ahead and will help raise awareness and reduce accident figures in due course.

Bill Callaghan
Chair

Appendix 2

Question 1 - Is the definition of a confined space used in the Regulations adequate? Does it cover all instances of similar hazards? Is it clear and widely understood?

Response - 83% of those who responded thought the definition of a confined space used in the Regulations was adequate and 84% considered that the definition was clear and widely understood. Those who responded negatively on this question considered there was some level of ambiguity in the definition and not clear when the regulations apply in every given situation.

Question 2 - Are the types of hazard associated with working in a confined space clearly laid out? Are there any hazards missing from the guidance? Is it clear and widely understood ?

Response - 93% considered that the hazards associated with working in a confined space were clearly laid out. Hazards that warranted mention or greater detail included humidity, dangers of electricity, biological agents, asbestos and danger from wildlife. Most of these are already covered by other HSE legislation and guidance.

Question 3 - Do the methods of minimising risks from work in confined spaces mentioned in L101 adequately protect those working in confined spaces?

Response - 95% considered that the methods of minimising risks from work in confined spaces set out in L101 adequately protected those working in a confined space. It was stated that there could be more practical details on how some risks could be reduced in the guidance.

Question 4 – Is the guidance that HSE produces adequate? Is it easily understood? Would more or different guidance improve safety for those working in confined spaces?

85% considered the guidance was adequate and easily understood. Those who thought otherwise thought the language could be clearer for ease of understanding. There could be more specific sector guidance in this area. Also more detail could be given on the physical fitness of those working in confined spaces and on emergency and rescue issues.

Question 5 - How well do the Confined Spaces Regulations fit with other health and safety requirements? How easy are the Regulations to operate in your workplace?

Response - 95% considered the Regulations were easy to operate and did not conflict with other health and safety requirements.

Question 6 – In your opinion, are the safety implications of work in confined spaces given due consideration by duty holders?

Response - Only 38 who responded answered this question. Of these almost a half considered that the risks from working in a confined space were not taken seriously enough by duty holders, especially small firms.

Appendix 3 (Accident Figures)

Number of Confined Space Accidents Identified from investigated cases in workplaces enforced by HSE's Field Operations Directorate (FOD)

Year	Fatalities	Major Injuries	Over 3 day injuries	Total
1996/97	6	10	6	22
1997/98	5	11	6	22
1998/99	6	24	15	45
1999/00	2	12	12	26
2000/01	5	13	6	24
2001/02	5	13	8	26
2002/03 (provisional)	4	5	2	11

Notes

1) The source of data came from RIDDOR notified accidents and the additional information stored by HSE Inspectors in their Field Operations Computer System database. The basic RIDDOR notifications are coded, for example in relation to accident kind, nature of injury etc. Supplementary information from inspectors provides a summary of investigation findings and a specific categorisation of any legislative breaches. Unfortunately in neither respect is there a clear coding nor terminology, which indicates whether the case relates to work in a confined space in the terms of the Regulations. [The Regulations 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. Specified risks include (fire or explosion; being overcome by gas and fumes; suffering from lack of oxygen; drowning in free flowing solids or water, danger from being trapped)].

2) In order to appraise the trends in confined spaces accidents it has therefore been necessary to identify coded fields or free-format terminology that might suggest an association with confined space working. Examples include the accident kind code "Drowning/Asphyxia" or use of terms for example "fume" in an Inspector's investigation report. From that several thousand accident records were identified and were then read through to identify confined space cases. Bommel's criteria for determining confined space cases were validated by HSE. In addition further checks were conducted to ensure known prosecutions and/or confined spaces breaches had been picked up by the approach.

3) The method places reliance on the quality of description provided in accident reports. It was judged that the most consistent year on year analysis was obtained by focusing on investigated accidents in FOD enforced workplaces for which coded fields and HSE Inspector findings were available. However, not all accidents are investigated and the proportions vary by year and with accident severity. The work was further complicated by changes in HSE systems with time. Therefore a degree of uncertainty in the figures must be recognised.

4) Around 20% of confined spaces incidents involve more than one person.

5) The number of accidents identified within the investigated cases sample peaks in 1998/99. Given the introduction of the Regulations in January 1998, it is likely that this reflects a particular emphasis on investigating confined spaces cases and therefore bias in the sample, rather than an exceptional level of accidents.



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CC EXECUTIVE
Clive Norris
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Dear Larry.

Review of The Confined Spaces Regulations 1997

When these Regulations were approved it was agreed that the impact would be evaluated 18 months to 2 years after they came into effect. Angela Eagle asked for a report of that evaluation.

HSE has carried out a preliminary review of the Regulations, and has found that the Regulations meet the requirements set for them at the time, and that no complaints about them have been received. Moreover, an early analysis of the information that we do have is very encouraging. It shows that already there has been a marked reduction in the number of major and over three day accidents. The picture for fatalities is less clear, but also shows lower levels than were typical in the preceding few years. I have attached a table, (Appendix 1), to illustrate this.

Nevertheless, the Regulations have only been in effect for a short time, and we cannot be sure that this is the beginning of a consistent downward trend. HSE is concerned that there is not yet enough statistical information available for a valid evaluation to be done and has advised the Commission that for a proper comparison of the position before and after the implementation of the Regulations we would need to allow more time. HSE believes that such a comparison could be made in four years.

As you will appreciate, to evaluate fully the impact of a set of Regulations the sectors of industry affected by them must be fully consulted. Such a consultation places significant costs on industry and the Commission is loath to ask for such expenditure in a case where it believes it is too early for there to be a clear outcome.

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Reducing risks - protecting people

Work in confined spaces is a high risk activity. The current Regulations define this work as having the foreseeable risks of drowning - in water or free flowing solids such as grain; being overcome by gas and fumes; and, suffering from lack of oxygen. Added to these there is always the danger of becoming trapped or being hurt in a fire or an explosion. These are important Regulations, and the Commission is concerned that they should be the subject of a proper and rigorous review.

In the light of this, the Commission is seeking your agreement for HSE to continue to monitor the performance of these Regulations and to carry out a full evaluation of their effectiveness in four years' time.

Yours etc

Bill Callaghan

**Bill Callaghan
Chair**

Appendix 5

HSE press release E048:03 - 26 March 2003

HSE ALERTS EMPLOYERS TO THE DANGERS OF CONFINED SPACES FOLLOWING FOUR DEATHS IN FOUR WEEKS

The Health and Safety Executive (HSE) has reminded all employers who may encounter confined spaces of the dangers involved, following four tragic deaths in four weeks. These deaths follow a series of other confined space incidents in recent months. Three of the deaths, which occurred in two separate incidents all involved an oxygen deficient atmosphere. The other death involved the use of a highly flammable liquid.

HSE inspector Graham Watson commented:

"It is believed the fatalities occurred soon after entering the confined spaces. This serves to emphasise that the dangers of confined spaces can be lethal no matter how brief the entry is expected to be."

The low oxygen levels have been attributed separately to the process of rust formation within a previously sealed vessel, and the use of an inert gas in a welding process. As well as considering other possible causes of an oxygen deficient atmosphere, employers must also consider all the other hazards associated with confined spaces, including:

- flammable substances and oxygen enrichment;
- toxic gases, fumes or vapour;
- the danger that people could be harmed by liquids getting into the space; and
- the flow of solid materials such as grain.

Other recent confined space incidents have included: two employees of a construction firm being overcome by carbon monoxide fumes when using a petrol powered road cutter in a tented enclosure; and two painters being overcome by paint fumes when applying a solvent-based paint by brush in a confined space.

Graham Watson added:

"Recent incidents highlight the need to fully consider the impact that any work within a confined space may have on the atmosphere within that the space and the resulting risks to health and safety."

Under the Confined Spaces Regulations 1997 employers must first try to avoid the need to enter a confined space. Where this is not possible, they must:

- carry out an assessment of the risks associated with entering a confined space and draw up a safe system of work;
- limit entry to the confined space to employees who are competent for confined space work and who have received suitable training;
- verify, prior to entry, that the atmosphere in the confined space is safe to breathe; provide any necessary ventilation; and
- make sure suitable rescue arrangements are in place before anyone goes in to the confined space. These rescue arrangements should not involve risks to the safety of the people intended to carry out the rescue.

Notes to Editors

1. Guidance on the asphyxiation hazards in welding and allied processes is available on the HSE website at: http://www.hse.gov.uk/fod/infodocs/288_6R.pdf For further guidance on confined spaces see Safe work in confined spaces – Confined Spaces Regulations 1997 – Approved Code of Practice, Regulations and Guidance L101 ISBN 0-7176-1405-0 available from HSE Books.

PUBLIC ENQUIRIES: Call HSE's InfoLine, tel: 08701 545500, or write to: HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

PRESS ENQUIRIES relating to this press release: Journalists only: 020 7717 6918