

# Electricity Industry Occupational Health Advisory Group



## Guidance Note 3.2

# Working in confined spaces

The Occupational Health Advisory Group for the Electricity Industry (OHAG) is an independent body of senior occupational physicians. They all have a professional role to provide advice to individual companies in the electricity industry and they meet together three times a year to discuss matters of common interest and to promote good practice in occupational health across the industry. The main route for doing this is by the preparation of guidance notes on topics of interest to the industry. The remit of OHAG and its guidance covers all aspect of the industry from generation, through transmission and distribution to retail and supply.

Until now the promulgation of this OHAG guidance has largely been by means of paper copies of the documents circulating within individual companies in the electricity industry. OHAG recognises that there is a need to make these papers more widely available and is grateful for the support provided by the Energy Networks Association (ENA) in hosting these documents on their website, and the links to them from the websites of the Association of Electricity Producers (AEP) and the Energy Retail Association (ERA).

The guidance notes will be of interest to managers, employees and occupational health professionals within the industry. They give general advice which has to be interpreted in the light of local circumstances. Health professionals using the guidance, retain an individual responsibility to act in accordance with appropriate professional standards and ethics. This guidance is offered in good faith and neither the individual members of OHAG, the companies they support, the ENA, AEP or the ERA can accept any liability for actions taken as a result of using the guidance.



## **Working in confined spaces**

### **1. Introduction**

A number of people are killed or seriously injured in confined spaces each year and those not only include people working in confined spaces, but those trying to rescue them without proper training and equipment. The aim of the document is to provide advice and guidance to meet the requirements of the Confined Spaces Regulations 1997. Ideally working in confined spaces should be avoided, but in situations when this is not reasonably practicable it is imperative to identify the hazards present, assess the risks and determine what precautions are essential to protect individuals undertaking this type of work.

### **2. Aims of this Document**

The aims of this document:

- To identify the relevant existing legislation and guidance.
- To identify the key health hazards.
- To summarise the measures required to address the risks from these hazards.
- To describe a process for medical assessment for those carrying out this safety critical activity.

### **3. Relevant Legislation**

- The Confined Spaces Regulations 1997
- The Management of Health and Safety at Work Regulations 1999
- The Control of Substances Hazardous to Health Regulations 2002 (as amended)
- The Personal Protective Equipment at Work Regulations 1992 (as amended)
- The Provision and use of Work Equipment Regulations 1998
- Electricity at Work Regulations 1989
- Work Place (Health, Safety & Welfare) Regulations 1992



#### **4. Relevant Guidance**

- Safe work in confined spaces. Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and Guidance L101.
- Guidance on Permit to Work Systems; a guide for the Petroleum, Chemical and Allied Industries HSG250.
- Steps of Risk Assessment INDG163(REV2).

#### **5. Definition of Confined Space**

This can be any space of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions (e.g. lack of oxygen). Some confined spaces are fairly easy to identify e.g. enclosures with limited openings.

- Storage tanks
- Silos
- Sewers
- Trenches

Others may be less obvious, but can be equally dangerous, for example

- Duct work
- Unventilated or poorly ventilated rooms
- Combustion Chamber in furnaces etc.
- Below ground working

It is not possible to provide a comprehensive list of confined spaces. Some places may become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification.

#### **6. Principal Hazards**

Dangers can arise in confined spaces because of

##### **a. A lack of Oxygen**

This can occur in situations where there is a reaction between some soils and the oxygen in the atmosphere;

- i. Inside steel tanks and vessels when rust forms and following the action of ground water on chalk and limestone which can produce carbon dioxide and displace normal air.



- ii. Poisonous gas, fume or vapour these can build up in sewers and manholes and pits connected to the system, residues left in tanks, vessels etc. or remaining on internal services can give off gas, fume or vapour. Hot conditions leading to a dangerous increase in body temperature.

Some of the above situations may already be present in the confined space. However, some may arise through the work being carried out, or because of ineffective isolation of plant nearby e.g. leakage. Enclosure and working space may increase other dangers arising from work being carried out, for example gas, fume or vapour can arise from welding, or by the use of volatile and often flammable solvents, adhesives etc.

## 7. Risk Assessment

A suitable and sufficient risk assessment, carried out by a competent person is required prior to any work being carried out in a confined space (the Management of Health and Safety at Work Regulations 1999, Regulation 3). In most cases the assessment will include consideration of

- The task
- The working environment
- Working materials and tools
- The suitability of those carrying out the task
- Arrangements of emergency rescue

## 8. The Confined Spaces Regulations

The Confined Spaces Regulations and ACOP provide a definition of a “confined space” and set out an Employers duties in the following areas

- Avoid entering confined spaces
  - Safe systems of work
  - Capabilities of rescuers
  - Emergency procedures
- i. Avoid entering confined spaces  
An assessment should be undertaken to determine whether it is necessary to work in a confined space. This assessment could include;
    - Modification of the confined space so that entry is not necessary
    - Working from outside the space
    - Inspection, sampling and cleaning operations undertaken from outside the space using appropriate equipment and tools
    - Remote cameras for internal inspection of vessels etc.



ii. Safe systems of Work

If it is not possible to avoid entering the confined space to undertake essential tasks, then it is important to have a safe system of working inside the space. The following check list is not intended to be exhaustive but includes many of essential elements to help prepare a safe system of work

- Appointment of Supervisor
- Suitability of Employee to work in confined space
- Isolation
- Cleaning before entry
- Checking the size of the entrance
- Provision of ventilation
- Testing the air
- Provision of special tools and lighting
- Provision of breathing apparatus
- Preparation of emergency arrangements
- Provision of rescue harnesses
- Communications
- Establishment of emergency procedure and testing
- Establishment of permit to work

## 9. Emergency Procedures

Effective arrangements for raising the alarm and carrying out rescue operations in an emergency are essential. Contingency plans will depend on the nature of the confined space, the risks identified and consequently the likely nature of an emergency rescue. Emergency arrangements will depend on the risks

- Communications
- Rescue and Resuscitation
- Capability of Rescuers
- First Aid Procedures
- Local Emergency Services

## 10. Health Assessment

Employers have a duty of care to ensure that their employees are fit to carry out tasks assigned to them. This is particularly important when activities are defined "safety critical". It is recommended that individuals required to work in confined spaces should have health assessments prior to commencing the work and at intervals thereafter. The frequency of these health assessments should be based on the hazards encountered and the level of risk. These should be conducted under the supervision of experienced Occupational Health professionals. The assessment should be tailored to the specific requirements of the task and the hazards encountered.



The format for this assessment might include a risk health based questionnaire plus a baseline clinical examination, e.g. height, weight, pulse, blood pressure, urinalysis, visual acuity. Audiometry, lung function testing and physical fitness testing e.g. step test, may also be required along with evaluation of suitability to use breathing apparatus. Individuals should be advised at the time of the assessment that they should notify their Occupational Health provider if their medical circumstances change substantially before their next assessment.

In determining a person's fitness to conduct work activities, the following factors should be considered

i. Work Factors

- The method of access/egress
- The physical requirements of the task
- The nature of the hazards encountered and their potential health effects
- The details of risk assessments carried out and control measures in place
- The need for and the type of personal protective equipment (PPE) to be used
- First Aid requirements in the event of an accident

ii. Medical Factors

The following is a list of medical factors/conditions that could have implications for fitness to work in confined space

- Obesity/ poor physical fitness
- Cardiovascular disease
- Respiratory disease
- Gastrointestinal disease
- Visual impairment
- Deafness
- Psychiatric disorders
- Diabetes(insulin dependent, treatment with Sulphonylureas)
- Drug or alcohol misuse/ dependency

Blanket restrictions should be avoided and individual risk assessments/ work – site visits conducted where significant problems exist. Consideration should always be given to reasonable adjustments that would enable a disabled employee to continue working in a confined space.



## **11. Summary**

This document is designed to provide guidance on assessing working in confined spaces. It is important that prior to commencing work a risk assessment is undertaken. If it is essential to work in a confined space a safe system of working must be established, and the results of the risk assessment used to identify the necessary precautions to reduce the risk of injury. The guidance is not intended to be exhaustive but includes many of the essential elements to help prepare a safe system of work.