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SAFETY AND HEALTH TOPIC SHEET NO. 20: CONFINED AND RESTRICTED SPACES

A safety and health 'topic sheet' aimed at raising awareness of hazards in the rope access industry. The series may be of use as a toolbox talk.

1 INTRODUCTION

1.1 A 'confined space' is a place which is:

(a) substantially enclosed (though not always entirely), **and**

(b) where one or more specified risks are present or reasonably foreseeable.

2 WHAT CAN GO WRONG …

2.1 A number of people are killed or seriously injured in confined spaces each year. This happens across a wide range of industries, from those involving complex plant to simple storage vessels. This killed include people working in the confined space and those who try to rescue them without proper training and equipment.

2.2 Confined spaces, sometimes restricted in size, necessitate particular consideration by those undertaking rope access operations, in particular the access, egress and rescue requirements.

Case study
A number of technicians were cleaning the internal walls of a bunker when the contents on one side slid down. Due to the viscosity of the material, two of the technicians were trapped partially up to and including waist/legs. The alarm was raised and the site emergency services were deployed to assist with retrieval/rescue. The technicians escaped injury and returned to work the following day.

3 WHY THINGS CAN GO WRONG …

3.1 Things go wrong when the risks have not been identified.

3.2 Some confined spaces are easy to identify, .e.g. sewers and closed tanks used to store chemicals. However, some are not so easy to identify.

3.3 A confined space **is not necessarily**:

(i) enclosed on all sides;

(ii) small and/or difficult to work in;

(iii) difficult to get in or out of; or

(iv) a place where people do not work regularly.

3.4 A place that is usually not considered to be a confined space may become one if there is a change in the conditions inside or a change in the degree of enclosure or confinement (which may occur intermittently).

3.5 **Examples of a confined space.** The following locations and places may be a 'confined space' where there is a presence of, or a reasonably foreseeable risk of, one of the **specified risks** to the health and safety of those working in the space:

(a) Ducts, culverts, tunnels, boreholes, manholes, shafts, excavations and trenches, sumps, cofferdams, etc.;

(b) Freight containers, ballast tanks, ships' engine rooms and cargo holds;

(c) Buildings, building voids;

(d) Some enclosed rooms (particularly plant rooms) and compartments within them;

(e) Enclosures for the purpose of asbestos removal;

(f) Areas used for the storage of materials that are likely to oxidise, e.g. wood pellet hopper tanks;

(g) Unventilated or inadequately ventilated rooms and silos;

(h) Structures that become confined spaces during fabrication or manufacture; and

(i) Interiors of machines, plant or vehicles.

3.6 **Specified risk.** This means a risk of:

(a) Serious injury to any person at work arising from a fire or explosion;

(b) The loss of consciousness of any person at work arising from an increase in body temperature;

(c) The loss of consciousness or asphyxiation of any person at work arising from gas, fume, vapour or the lack of oxygen;

(d) The drowning of any person at work arising from an increase in the level of liquid; or

(e) The asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.

4 WHAT YOU CAN DO …

4.1 There are a number of key duties:

(a) Avoid entry to confined spaces, e.g. by doing the work from the outside;

(b) If entry to a confined space is unavoidable, follow a safe system of work; and

(c) Put in place adequate emergency arrangements before the work starts.

4.2 You should identify the **hazards**. Examples include:

(a) Flammable substance and oxygen enrichment;

(b) Excessive heat;

(c) Toxic gas, fume or vapour;

(d) Oxygen deficiency;

(e) The ingress or presence of liquids

(f) Solid materials which can flow;

(g) Other hazards not specific to confined spaces, e.g. electricity, noise, collapse or subsidence of or within the space, loss of structural integrity, etc.

5 HOW YOU CAN DO IT …

5.1 You should assess **factors** that affect the work:

(a) General condition of the confined space, e.g. previous contents, residues, contamination, oxygen deficiency and oxygen enrichment, physical dimensions;

(b) Hazards arising from the work, e.g. cleaning chemicals, sources of ignition, increasing temperature;

(c) Hazards from outside the space, e.g. ingress of substances;

(d) Emergency rescue.

5.2 The precautions required in a **safe system of work** will depend upon the nature of the confined space and the results of a risk assessment. The main elements to consider when designing a safe system of work, and from which may form the basis of a 'permit-to-work', are:

(a) Supervision;

(b) Competence for confined space working;

(c) Communications;

(d) Testing/monitoring the atmosphere;

(e) Gas purging;

(f) Ventilation;

(g) Removal of residues;

(h) Isolation from gases, liquids and other flowing materials;

(i) Isolation from mechanical and electrical equipment;

(j) Selection and use of suitable equipment;

(k) Personal protective equipment (PPE) and respiratory protective equipment (RPE);

(l) Portable gas cylinders and internal combustion engines;

(m) Gas supplied by pipes and hoses;

(n) Access and egress;

(o) Fire prevention;

(p) Lighting;

(q) Static electricity;

(r) Smoking;

(s) Emergencies and rescue;

(t) Limited working time.

6 ACTION

6.1 Review your management system's procedures for work in confined and restricted spaces.

7 REFERENCES

7.1 Further information can be found in:

(a) IRATA International code of practice for industrial rope access (Third edition, September 2016)[1]:
- Part 2, 2.4, Risk assessment
- Part 2, 2.6.2, Rope access safety supervisors
- Part 3, Annex A, Risk assessment

(b) Training, Assessment and Certification Scheme (TACS) for personnel engaged in industrial rope access methods (Edition 3.1, October 2015)[2]:
- 6.2.3, Hazard identification and risk assessment

(c) IRATA Safety and Health Topic Sheets:
- No. 2, Near misses: Learning from failure
- No. 7, Hot works
- No. 10, Policy, procedures and permit to work
- No. 12, Hazard identification and risk assessment

7.3 For a list of current (and past) 'safety communications' by IRATA, see www.irata.org

8 RECORD FORM

8.1 An example *Safety and Health Topic Sheet: Record Form* is given below. Members may have their own procedure(s) for recording briefings to technicians and others.

9 FURTHER READING

Safe work in confined spaces, Confined Spaces Regulations 1997, Approved Code of Practice and guidance, L101, HSE (2014)[3]

1 https://irata.org/downloads/2055
2 https://irata.org/downloads/2059
3 www.hse.gov.uk/pubns/priced/l101.pdf

IRATA SAFETY AND HEALTH TOPIC SHEET – RECORD FORM			
Site:			
Date:			
Topic(s) for discussion:		Topic Sheet No. 20: Confined and restricted spaces	
Reason for talk:			
Start time:		**Finish time:**	
Attended by *Please sign to verify understanding of briefing*			
Print name:		**Signature:**	
Continue overleaf (where necessary)			
Matters raised by employees:		**Action taken as a result:**	
Continue overleaf (where necessary)			
Briefing leader *I confirm I have delivered this briefing and have questioned those attending on the topic discussed.*			
Print name:		**Signature:**	**Date:**
Comments:			