

STOP AND THINK TALK

A briefing tool for managers

Working in Confined Spaces

A number of people are killed or seriously injured in confined spaces each year. This happens in a wide range of industries across the UK, from those involving complex plant to simple storage vessels. Those killed include not only people working in the confined space but those who try to rescue them without proper training and equipment.

Some confined spaces are easily identified such as, powder silos, storage tanks etc. but other areas may only become confined spaces due to the activity being carried out. Examples of this would be welding a guard on a conveyor tail end roller situated in an underground pit, where the build up of fumes could present a hazard. Line management have a duty to determine what confined spaces are present on site, the activities to be undertaken and the emergency arrangements required.



View from inside a mixer drum – Does this look like a confined space?



The Confined Spaces Regulations 1997

requires employers to minimise the need for employees and others to enter confined spaces but, where it is not possible, a comprehensive Risk Assessment should be carried out and action taken to reduce risk to the lowest level reasonably practicable.

A “confined space” under these Regulations has two defining features. Firstly, it is a place which is substantially (though not always entirely) enclosed and, secondly, there will be a reasonably foreseeable risk of serious injury from hazardous substances or conditions within the space or nearby.

The regulations apply where the assessment identifies risks of serious injury from work in confined spaces and contain the following key duties:

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

If entry to a confined space is unavoidable, follow a safe system of work; and put in place adequate emergency arrangements before the work start

- A graduate engineer on work-experience entered an inspection chamber to test for seepage and collapsed. Three work colleagues attempted a rescue and as each entered the chamber, collapsed also. **All four young men died.**

- **44** people entered an underground valve house of a water transfer scheme. As part of a presentation water was to be pumped over a regulating weir into the river. Shortly after pumping commenced, there was an intense flash and followed by an explosion. The explosion was caused by an accumulation of methane and air which was pushed into the valve room when pumping commenced.

Sixteen people were killed and 28 others were injured in the explosion.

- A city worker was removing an inspection plate from a sewer line in a deep pump station when the plate blew off and sewage entered the room. Two colleagues and a policeman attempted to rescue him from the sludge filled room. **All four died.**

- A self-employed truck driver died after entering the top of a sawdust bin. He suffocated when the sawdust inside the bin collapsed and buried him.

- A worker entered a chemical degreaser to clean the bottom. He collapsed. Two colleagues entered to rescue him. **All three died.**

- A worker cleaning the bottom of a septic tank collapsed. Two colleagues who went to rescue him also collapsed. **All three died.**

- Two workers on top of a digester that had been drained opened the hatch and lowered an extension cable with an exposed 200 watt light bulb to check the sludge level. The light bulb broke and exploded the methane in the digester. **Both men died instantly.**

- A 17 year old sewer worker collapsed at the bottom of 3m manhole. Two work mates entered to rescue him and were themselves overcome. By the time they were extracted from the manhole by rescue services the young man was dead. His would be rescuers died two days later.

- **Two brothers died** whilst cleaning out a slurry tank on their farm. An inquest found that they had died from hydrogen sulphide poisoning released when the slurry was agitated.

- **Five fishermen died** on board their ship following a leak of refrigeration gas from the refrigeration unit.

STOP AND THINK TALK

Working in Confined Spaces

Preparation

This stop and think talk can be used individually or with a group of people. It could be delivered in the workplace, perhaps near a confined space that regularly needs to be accessed. Take care that the area is suitable for people to hear and see what you are doing if you are carrying out a practical demonstration. Participants should receive a copy of the talk for their CPD files as well as signing the training declaration.

Introduction (After reading out the case studies)

A confined space is a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen). Confined spaces have significant potential to kill if they are not identified and controlled properly, no one should treat the subject lightly as too many people have failed to appreciate the dangers and paid the ultimate price.

THE TALK

Use the questions below to open the discussion under each heading and then go through the lists explaining in detail each hazard / control and what is expected

Confined or Enclosed Spaces

Question 1 – What are Confined Spaces?

Powder Silos
Storage Tanks, (Fuel, Water, Oil etc.)
Pan Mixers / Reaction Vessels
Truck Mixer Drums
Material Storage/Receipt Hoppers (Open or Covered)
Underground Receipt Hopper Pits
Recovery Tunnels under Stockpiles
Ground Excavations
Road Tankers
Enclosed Drains and Sewers
Unventilated / Poorly Vented Rooms
...etc...etc

It is not possible to give a comprehensive list of confined spaces. Normal areas of work with easy access can become confined spaces if they give rise to the following hazards.

Hazards

Question 2 – What are the hazards encountered in Confined Spaces?

Lack of Oxygen
Poisonous gas, fume or vapour
Engulfment in liquids or solids
Fire and Explosion
Hot conditions
Restricted movement causing risk of injury from the work activity
Being struck by falling object/material (e.g. build up in mixer)
Striking against object (e.g. due to poor lighting)

Controls

Question 3 – How do we control work in Confined Spaces?

Safe Access & Egress / Restricting Access
Risk Assessment and Identification of Confined Spaces
Permit to Work & Safe Systems of Work
Isolation and Lock Off (e.g. to prevent mixer start up or materials entering a mixer, silo or hopper)
2nd Person in attendance at entrance/exit to assist/raise alarm
Air quality tests before and during access where required
Training of persons required to work in confined spaces
Low voltage equipment

Emergency Preparation

Question 4 – What protective equipment/procedures would you need?

Fall Arrest / Retrieval Equipment where there is risk of falling or when working over liquids or powders
Respirators / breathing apparatus where there are fumes or potential lack of oxygen
Two way communication system from inside to outside of confined space
All normal Personal Protective Equipment
Emergency Plans and Retrieval Training

AND FINALLY . . .

- Clarify any points as required.

