



Confined Spaces

The National Food and Drink
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Confined spaces

A silent killer!

What is a confined space

Typical hazards

Examples of confined space in the food and drink industry

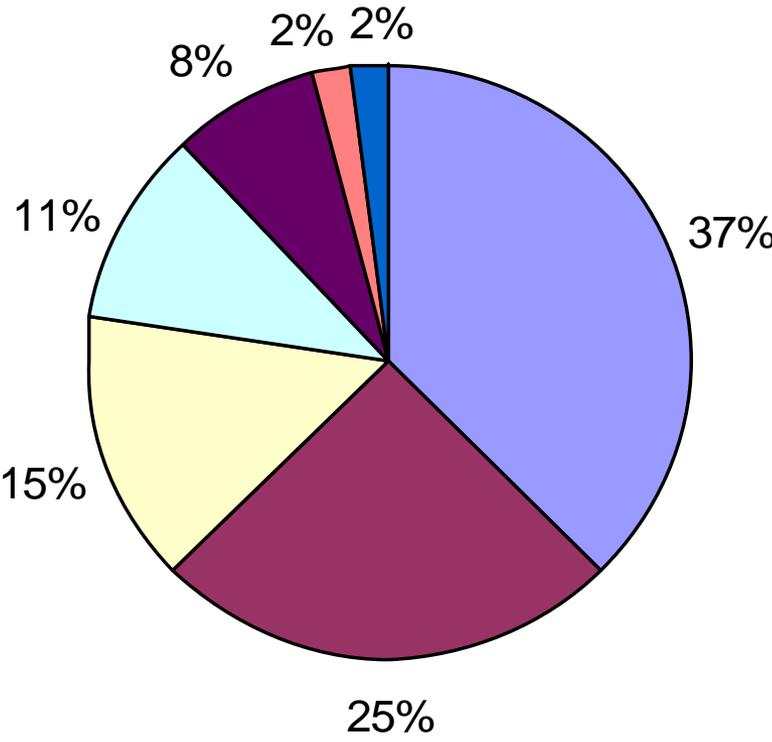
Managing confined space work

Confined spaces

A silent killer!

Around 15 people in the UK are killed in confined spaces incidents each year.

In the twelve year period April 2000 to March 2012 there were 53 fatal injuries in the food and drink manufacturing industries. (source HSE)



- machinery/plant
- workplace transport
- falls from height
- confined spaces
- struck by object
- animals
- electrocution

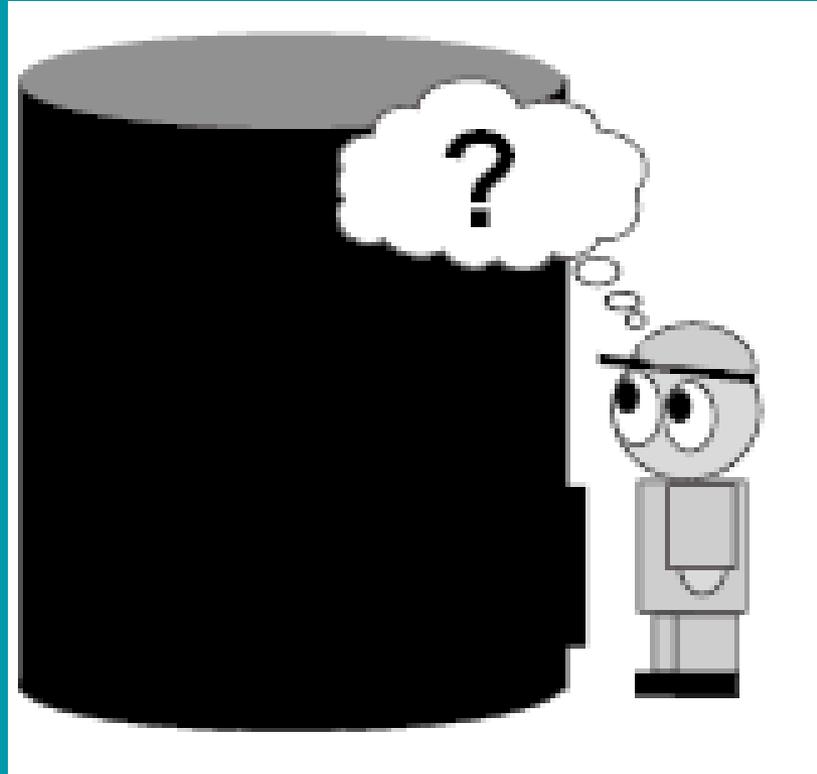
Why do confined spaces fatalities occur?

- Inability to recognise the confined space and its dangers
- Ill conceived rescue attempts - around 60% of confined spaces deaths involve people trying to rescue those already trapped or injured.
- Inadequate systems for safe working

“One man falls into a vat of slurry on a farm. Two of his colleagues try to save him. All three are overcome by fumes and die”

“The incident involved the death of two people whilst working in a confined space. They had no safe system of work, no safety equipment or protective clothing, nor were they trained in hazards associated with confined spaces”

What is a confined space?



A confined space is:

“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 space, there arises a reasonably foreseeable risk of a hazardous atmosphere or a dangerous condition”

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A photograph showing a worker in a blue jacket and jeans crouching next to a large, red, spherical object. The sphere has a white, starburst-like pattern on its top. In the background, there is a red metal scaffolding structure and other similar red spheres. The scene is outdoors on a blue tarp-covered ground. The text "Do you have confined spaces?" is overlaid in white on the right side of the image.

**Do you have
confined
spaces?**

Hazardous gases that may be in your workplace

Gas	MAIN dangers	Properties
Argon	Displaces oxygen; may accumulate at bottom	Colourless, odourless
Carbon dioxide	Displaces oxygen; toxic; may accumulate at bottom	Colourless, odourless
Carbon monoxide	Toxic — asphyxiant (causing suffocation)	Colourless, odourless
Chlorine	Toxic — lung and eye irritant; may accumulate at bottom	Greenish yellow colour; sharp pungent odour
Gasoline vapours	Fire and explosion; may accumulate at bottom	Colourless; sweet odour
Hydrogen sulphide	Flammable; very toxic — causes lung failure; may accumulate at bottom	Colourless; rotten egg odour
Methane	Fire and explosion; may accumulate at top	Colourless, odourless
Nitrogen	Displaces oxygen	Colourless, odourless
Nitrogen dioxide	Toxic — severe lung irritant; may accumulate at bottom	Reddish brown; pungent odour
Sulphur dioxide	Toxic — severe lung irritant; may accumulate at bottom	Colourless; suffocating odour
Oxygen	Low levels — asphyxiant; High levels — causes spontaneous combustion, explosion	Colourless, odourless

Other dangers in enclosed spaces

- Substances entering through piping or other openings
- Poor visibility
- Temperature extremes
- Noise
- Risk of drowning
- Restricted access and egress
- Restricted movement
- Other hazards:
 - Loose and unstable materials
 - Slip, trip, and fall hazards
 - Falling objects
 - Moving parts of equipment and machinery
 - Electrical shock

Some examples of confined spaces in the food and drink industries

- Tanks, pits, sumps
- Process and storage tanks
- Silos
- Fuel tanks
- Pressure vessels
- Pipelines
- Sewers
- Other similar spaces

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

- **O**pen-topped chambers
- **V**ats
- **C**ombustion chambers in furnaces etc
- **D**uctwork
- **U**nventilated or poorly ventilated rooms

Managing confined spaces work

Competent people:

- able to recognise a confined space
- able to enter and work in confined space
- rescue team
- permit writers
- breathing apparatus use

Managing confined spaces work – risk assessment

Can I?	How?
Eliminate	Remove the need for entry by achieving the same result in a different way?
Reduce the chance of danger by:	Cleaning / pumping out / flushing contents?
	Purging?
	Using forced air ventilation?
	Opening up confined space as much as possible - removing covers, etc?
Isolate	Incoming flows, flows through pipes, mechanical and electrical equipment?

Managing confined spaces work – risk assessment

- If you can eliminate the need for entry – problem solved
- If you still have to enter – you should have reduced the risk down to as low as reasonably practicable
- Your control measures will then depend upon the level of residual risk
- The following checklist is not intended to be exhaustive but includes many of the essential elements to help prepare a safe system of work

Managing confined spaces work – safe system of work elements

- **SUPERVISOR** – make sure someone is in charge of the job and can ensure safe systems are followed
- **PERSONS SUITABLE FOR THE WORK** – training, experience, build, risk of claustrophobia, fitness to wear breathing apparatus
- **ISOLATION** – flows, pipelines mechanical and electrical equipment. In all cases a check must be made to ensure isolation is effective.
- **CHECK THE SIZE OF THE ENTRANCE** - is it big enough to allow workers wearing all the necessary equipment to climb in and out easily, and provide ready access and egress in an emergency?

safe system of work elements

- **TESTING THE ATMOSPHERE** – testing for toxic and flammable gas before and whilst in the confined space. Remember to use a gas monitor with appropriate sensors. The gas monitor should also always have an oxygen sensor fitted
- **PROVISION OF SPECIAL TOOLS AND LIGHTING** – non-sparking tools and specially protected lighting may be required. Use low voltage tools if working in metal tanks
- **PROVISION OF BREATHING APPARATUS** - this is essential if the air inside the space cannot be made fit to breathe because of gas, fume or vapour present, or lack of oxygen



Safe system of work elements

EMERGENCY ARRANGEMENTS:

- Consider how will the alarm be raised
- Is there effective communications between those inside and outside of the space?
- What are the rescue arrangements if things go wrong?
- Capabilities of rescuers - they need to be properly trained people, sufficiently fit to carry out their task, ready at hand, and capable of using any equipment provided for rescue training and practice drills.
- Provision of rescue harnesses and first aid
- Local emergency services

Safe system of work elements

PERMIT-TO-WORK

- A permit-to-work ensures a formal check is undertaken to ensure all the elements of a safe system of work are in place before people are allowed to enter or work in the confined space.
- If confined spaces working is rare, then a permit to work for all confined space work may be appropriate.
- If you have a small number of confined spaces you may want to label them at the access points to restrict entry and make entry subject to a permit.



Summary

- Confined spaces – usually no second chances!
- Make sure people know how to recognise a confined space (training, signage)
- Competent people for supervising, working, permit writing and rescue
- Risk assessment – eliminate/reduce dangers as much as possible
- Safe system of work (including rescue arrangements) appropriate to the risk.
- If confined spaces working is infrequent, you may be better to contract it out to an expert!



Thank you. Any Questions?