

An LPB toolbox talk

Improving process safety by sharing experience



Confined space entry: follow procedures

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The toolbox

- Entry into confined spaces:
 - Can be UNFORGIVING;
 - Any errors can be FATAL;
 - There are more than 10 fatalities per year in the UK alone.



Confined spaces

- Safety must be based on:
 - A sound management system;
 - A risk assessment based on a full understanding of all the hazards;
 - Thorough training;
 - Rigorous adherence to procedures;
 - Tested emergency procedures.
- This toolbox outlines cases where there was **failure to follow procedures.**

Case study 1

- Operators were attempting to unplug a blockage at the base of a tank used to convert hazardous waste into cement kiln fuel.
- One operator decided to enter the tank, contrary to the instructions of the supervisor.
- He used a canister mask and protective clothing.
- Soon after entering the tank he was overcome.
- Despite being rescued he died.



Case study 1

What went wrong?

- The operator had been overcome by benzene vapour.
- The canister respirator was unsuitable for high concentrations.
- The acute toxic hazards of benzene and other hydrocarbons had not been appreciated.
- ***There was no permit to enter the vessel.***

Case study 2

- A supervisor from a contract company had been provided with a copy of the site rules.
- He was asked to prepare an estimate of the cost of cleaning a tank.
- The tank had been isolated but not tested or certified as safe to enter.
- The supervisors body was found in the tank.

Case study 2

- What went wrong?
 - Fumes within the tank overcame the supervisor.
 - It had NOT been made clear that a vessel entry permit was required even for inspection.
 - Just passing over a copy of the site rules was insufficient.



Case study 3

- A 40m³ tank used to store a vinyl coating was being cleaned.
- A contractor was using a pressurised lance to apply solvent through a hatch in the tank roof.
- At some point the contractor entered the tank and was overcome.
- Both the operator and two others who attempted rescue were overcome and died.

Case study 3

- What went wrong?
 - A permit for vessel entry was not in place.
 - The contractor had not been instructed to enter the vessel.



Confined spaces

- Why did the workers make these mistakes?
- Was everyone properly trained?
 - In the hazards;
 - In the importance of following the safety precautions;
 - What to do in an emergency.
- Had they been reminded of the above at the start of work?

Confined spaces

- BP Process Safety Series, *Confined Space Entry*, ISBN 978 0 85295 479 9
- Confined Spaces Regulations 1997.
- Safe Work in Confined Spaces, Approved Code of Practice, ISBN 07176 1405 0 (HSE Books).
- Loss Prevention Bulletin issue 154, Confined Spaces Special Issue (IChemE).

Disclaimer

- Whilst the Institution of Chemical Engineers has made every effort to ensure the accuracy of the information contained in this training presentation, it remains the responsibility of those responsible for the operations to ensure that the regulations and guidance issued by the authorities are consulted, that an appropriate risk assessment is carried out and that appropriate procedures are stipulated and followed.