Safety Alert

Collapse of floating roof in storage tank

This Alert highlights the risks associated with maintenance work in a confined space, such as a storage tank that has an internal floating roof, and suggests control measures to address these risks.

December 2016

Background

In a recent incident at a major hazard facility (MHF), the internal floating roof of a storage tank collapsed down to the support leg stop position while a maintenance task was being carried out. The support leg stop position is designed to support the internal floating roof at a predetermined rest height just above the storage tank floor.

To allow for maintenance work within the tank, the roof can be "jacked up" to a set maintenance height and pins placed through the top of the support legs to safely secure the internal floating roof.

In this incident, the internal floating roof became wedged against the side wall at approximately the maintenance height position. The roof subsequently collapsed down onto the lower support leg stop position while maintenance work was being carried out.

Persons who work in a storage tank fitted with an internal floating roof are at risk of serious crush injuries if the roof is not secured.

Contributing factors

- site policies and procedures for storage tank maintenance did not include the requirement to confirm that the internal floating roof was resting on the lower support leg stop position prior to persons entering the confined space
- the Safe Work Method Statement (SWMS) did not identify the requirement to confirm that the internal floating roof was resting on the lower support leg stop position prior to persons entering the confined space
- the permit to work did not include the requirement to confirm the internal floating roof was safely secured prior to authorising entry to the confined space
- the persons entering the tank failed to confirm the upper support leg pins were installed ensuring the floating roof was secure and the area safe prior to entry.

Recommended risk control measures

Employers must ensure:

- that all hazards to health and safety associated with work in a confined space, such as a storage tank with an internal floating roof, are identified and controlled
- that site policies and procedures for inspection and maintenance work within storage tanks fitted with an internal floating roof include the requirement to confirm that the internal floating roof is located on the support leg stop position prior to entry
- the permit to work includes the requirement to confirm the internal floating roof is safely secured prior to carrying out maintenance tasks.

Safety duties of Major Hazard Facility Operator

The operator of a MHF has a duty to establish and implement a Safety Management System (SMS) for the MHF. The SMS must be documented and provide a comprehensive and integrated management system for all aspects of risk control measures. This should include the management and control of risks associated with the conduct of inspection and maintenance tasks within storage tanks.

Further information

Occupational Health and Safety Act 2004

Occupational Health and Safety Regulations 2007

WorkSafe Guidance Note - Safety Management Systems for major hazard facilities

WorkSafe Compliance Code – Confined spaces

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