



FUELS INDUSTRY
Association of South Africa

LEARNING FROM INCIDENT

LOSS OF CONTAINMENT



INCIDENT INVESTIGATION

Background

On the 02 August 2025, the Field Operator returning from tanker loading area spotted spillage at the temporal loading area for Alcohol slops. At that time there was no activity taking place of loading the Alcohol slops tanker. The last activity of loading the Alcohols slops tanker had happened on the 29 July 2025. Flexible hose was being used for temporal loading activities and the flexible hose coupling/union failed resulting in a loss of product containment of about 32 m³.





INCIDENT ROOT CAUSE

The cause of the incident was analyzed in terms of the operating mode, direct cause and underlying risk control

Operating Mode

The tankers are normally loaded through the gantry. Due to the partial operation of the Blending & Storage area, the business task is on reducing plant risks to minimize potential safety incidents. Therefore, residual saleable inventory stock that is not lined up via gantry is loaded onto the tankers using flexible hose. The operating mode of the system was regarded as an abnormal routine operation due to modified loading of tankers using flexible hose.

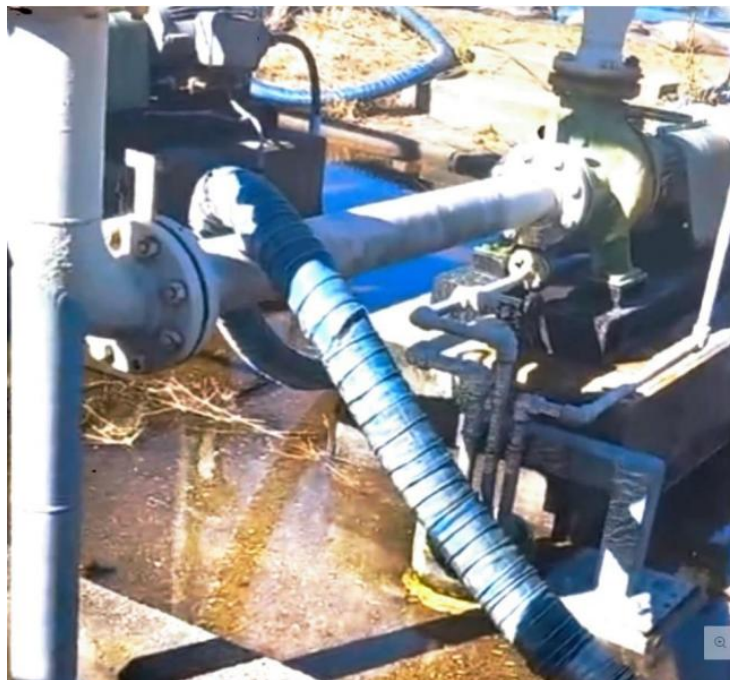
Direct Cause

Making use of flexible hose to move product results in vibration of the hose due to the ergonomics of the set up. The flexible hose coupling failed in position due to a vibration stress/fatigue where gravity caused an imbalance in operating pressures resulting in a loss of product containment of about 32 m³.

Risk Control

The change in loading tankers using a modified piping was communicated through management of change. The supervision was identified as a contributing factor that failed to adequately manage hazards that comes with change. It was established that Field Operators did not follow the operating procedures in isolating product flow after the 29 July tanker loading activity. The Operators relied on the non-breaking coupling fitted at the end of a flexible hose as the only isolation method and ignored the shut-off block valve upstream the flexible hose connection.

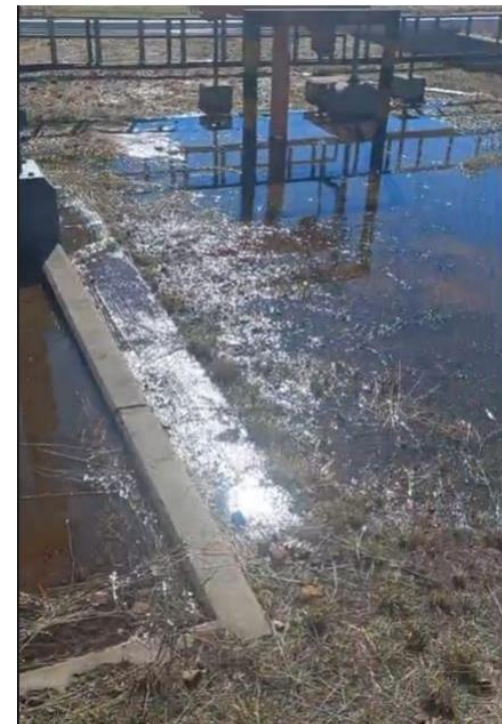
The set up of the flexible hose connection was poorly assessed as the connection point was slightly outside the secondary containment bund. The release product went outside the bund into the storm water sewer system and contaminated the ground.



Flexible hose ergonomics



Flexible hose connection
point slightly outside the
bunded area



Product spilling over the bund
into the ground and storm
water sewer system



INCIDENT CLASSIFICATION

Substance Classification

The released Alcohol slops (mixture of industrial Alcohols) was identified in terms of its hazard as a flammable liquid whose vapours can form ignitable and explosive mixtures with air at normal room temperatures.

A calculated volume of 32m³ hazardous substance was released uncontrolled, this incident was regarded as a Tier 1 PSE for exceeding the threshold quantity and discharge into the undesired location. However, the quantity released remained within the site premises and was recycled back to the effluent treatment plant; and the loss of containment was regarded as non-reportable environmental incident under NEMA Section 30.



BARRIER FAILURES

Barrier Failure: Communication Gap

- Implementation of change: Poorly conducted MOC missing the critical part of secondary containment in safety review
- Procedure violations: Field Operators failure to execute the isolating procedure as required after tanker loading activity was a secondary contributor to the incident
- Supervision: Failure to carry out safety reviews/checklist of activities was viewed as an underlying contribution in a failure to manage hazards brought by the change operation



INCIDENT LEARNINGS

- **Altering Plant Design:** MoC safety critical review failed to identify and manage the risks associated with product spillage resulting in the absence of secondary containment structure to mitigate environmental incident.
- **Continuous assessment of plant changes:** Lack of supervision / communication gap gave rise to non- conformance to working instructions or procedures for managing change in the plant safely.



FUELS INDUSTRY
Association of South Africa

Thank You

2024