



CASE STUDY

OISD/CS/2025-26/MOLPG/22

Date: 18.03.2026

INTRODUCTION

Title: Major accident while operating service water valve for topping up of soap solution tray used for lubricating conveyor chain.

Location: LPG Bottling Plant

Result/ outcome: Amputation of contract worker's right hand below elbow.

BRIEF OF INCIDENT

For the chain conveyor, the plant has dedicated service water line fitted with a isolation valve at the soap tray end of each drive unit. Soap is manually poured into the tray using a bucket arrangement, after which water is added by opening the valve of the service water line to obtain a soap mixture.

A contract workman was assigned the task of pouring soap solution and topping up of soap solution tray by opening the valve of service water line for chain lubrication. Instead of going to the other side of the chain conveyor where the valve of service water line was located, workman attempted to operate the valve from beneath the conveyor from the other side, without stopping the chain conveyor. This action caused his coverall sleeves to come into contact with the sprocket and further his hand near elbow also got trapped in the sprocket resulting in the amputation of his right hand.

OBSERVATIONS/ SHORTCOMINGS

The observations are as follows: -

1. The IP (Injured person) operated the valve of service water line from beneath the conveyor on the other side of valve, without stopping the chain conveyor. This indicates an unsafe act and deviation from Standard Operating Procedure (SOP).
2. The isolation valve of service water line near the soap trays is positioned too close to the running sprockets
3. Approach towards the valve of service water line of soap tray of Drive Unit is very difficult due to the narrow clearance between the two conveyors, resulting in constrained and unsafe access to the valve.
4. The following unsafe act were observed from the CCTV footage:
 - a) IP was wearing a two-piece coverall with sleeves folded at both arms, resulting in loose end.
 - b) Many workers were seen using mufflers with loose ends.

Provided for information purpose only. This information should be evaluated to determine if it is applicable in your operations, to avoid recurrence of such incidents.

- c) Maintenance activities were being carried out in the hot air sealing machine, with personnel placing their hands beneath the conveyor without implementation of Lockout–Tagout (LOTO).
 - d) The emergency shutdown system was not activated immediately after incident, as the conveyor chains were observed to be running and workers were seen running towards the incident site.
5. Non-adherence to approved SOP for soap pouring activity.
 6. The location-based SOP has not been revised in line with Head Office SOP.
 7. The last training on soap solution topping-up of the tray was conducted three years back. However, the practices followed at the location do not align with the training content, indicating a lack of linkage between the training imparted and the actual procedures being followed at site.
 8. The location safety committee does not have representation from all plant functions. Although equal management and non-management representation concept is followed, critical functions such as electrical, fire-fighting team, administration and floor officers are not represented in safety committee.
 9. Recommendations shared by OISD, based on similar incident were not implemented at the location. The location was unaware of these recommendations.

PROBABLE REASON OF FAILURE/ROOT CAUSE:

1. Negligent act by the Injured Person.
2. Non-adherence to approved SOP for soap solution and failure of SOP governance
3. Non-dissemination and non-implementation of shared learning's across the plant.

RECOMMENDATIONS:

The recommendations are as follows: -

- 1 **Hazard Identification and Risk Assessment (HIRA):** - The location shall carry out Hazard Identification and Risk Assessment (HIRA) for each activity undertaken at the plant and implement appropriate corrective actions to mitigate the identified risks to the ALARP (As Low As Reasonably Practicable) level.
- 2 **Relocation of isolation valve of service water line:** - Possibilities may be explored to position the valve at a convenient location away from the soap tray. Additionally, valve may be installed on both sides of the soap tray for easier access and safer operation.
- 3 **Sprocket Guard Installation:** - To install suitable safety guards on both sides of the sprockets to prevent accidental contact and ensure additional safety.
- 4 **Improvement of Access Path:** - Ensure that the access path is always kept unobstructed.
- 5 **Revision and alignment of SOP:** - The location-specific SOP for soap solution pouring shall be revisited in line with actual ground practices and Head Office SOP and implementation to be ensured.
- 6 **Reporting of unsafe act and unsafe condition:** -
 - a) Normalization of deviation if any to be noticed and reported as unsafe act and unsafe condition.
 - b) Periodic review of CCTV footage shall be carried out to identify unsafe acts and conditions and timely corrective actions

Provided for information purpose only. This information should be evaluated to determine if it is applicable in your operations, to avoid recurrence of such incidents.

- 7 **Training:** Conduct refresher training including (on-site) demonstration for all operators, supervisors, and contract workers on soap solution preparation and topping-up, emphasizing hazards of entanglement and consequences of deviations.
- 8 **Usage of PPEs:** Prohibit use of loose clothing's, folding of sleeves and ensure use of PPEs as per corporation policy.
- 9 **Mandatory Dissemination of Learnings:** A centralized system shall be developed to track implementation status of OISD recommendations of incidents. Closure of recommendations shall be verified through periodic audits
- 10 **The location safety committee:** The Location Safety Committee should have representation from all plant functions, including shed, Electrical, Firefighting, and Mechanical teams etc.



Isolation valve position



Demonstration of act
