For example, improper manifold hoses and hose connections, whether on VLCC’s or small river barges have big potential for causing significant operational oil spills. A prerequisite to carrying out any cargo operation should be physical cross-checking of line settings by at least two members of the ship’s crew before, during and after cargo operations.

Below are some root causes identified which resulted in spills at the manifold:

1. Use of camlock couplings instead of flanged couplings
2. Improper line up at manifold prior commencement of lines stripping or line blowing operation
3. Inadequate check of newly installed valves at manifold post vessel undergoing major repair period
4. Sequence of valve operation not properly done when changing tanks for loading
5. Manifold pressure gauges not monitored when increasing discharge rates

Statistics indicate operational spills continue to dominate incidents across the marine industry. The majority of these spills can be attributed to Poor Operational Discipline, Inadequate Maintenance and Human Error.

Flawless process safety and environmental performance can only be achieved by a fully focused crew, assisted by shore support staff with all parties committed to rigorously and diligently following procedures and industry best practices. Failure to address minor losses of containment can lead to a culture of acceptance onboard. A culture of acceptance and a lack of identification of spill hazards can ultimately lead to adverse environmental impacts.

Are you missing early warning signs?
In order to prevent operational spills, it is imperative that vessel operators are aware of the industry best practices and incorporate them into operating systems. These may include:

- Identify spill hazards associated with all operational activities, include these hazards with company procedures, risk assessments, job safety analysis and tool box talks.

- Identify high-potential “loss of containment” near misses. Robust follow-up of lessons learnt and ensure sustained compliance through regular verification.

- Implement safety campaigns to improve “loss of containment” and Spill Hazard Identification performance within the fleet.

- Provide robust SMS procedures for non-routine transfers, cargo and ballast operations.

- Conduct meaningful operational audits in real-time. Create culture of compliance, intervention and professionalism. Audits should identify corrective actions are assigned, verified, and closed out in a specified time period.

- Prepare detailed cargo, bunker, decanting and pressure testing plans to ensure all hazards are identified and the vessel is prepared for emerging emergencies. All necessary tools should be made available to the crews by shore management to achieve this objective.

- Ensure training incorporates awareness on the causes of operational spills, including human behaviors and signs of complacency.

- Leverage shore based simulators to provide refresher training in routine and emergency cargo operations. Critique simulation trainings at senior management levels within the organization.

- Conduct thorough and specific risk assessments for simultaneous operations which include resource and fatigue management.

**Leadership drives culture, culture drives behavior**

**Influence**

Influence your team to focus on process safety all day, every day.

**Inspire**

Inspire your team to collaborate effectively to manage process safety.

**Challenge**

Challenge your team to test the health of critical safeguards every day.

**Engage**

Engage your team through regular process safety drills and learning from results.

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