



FUELS INDUSTRY
Association of South Africa

LEARNING FROM IOGP PROCESS SAFETY EVENTS 2023

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MAIN FINDINGS

- All 27 incidents evaluated were categorized as TIER 1 Process Safety Events. The loss of containment incidents with uncontrolled product release above threshold quantity in any 1-hour period accounted for 63%, followed by injuries and/or fatality resulting in employees being days away from work (30%), explosion (4%) and evacuation (4%).
- The majority of substances released during loss of containment incidents were subject to the following categories: toxic substances and highly flammable liquids.

Substance Category	Number	Percentage
Highly flammable	15	94
Toxic Substance	2	6



MAIN FINDINGS

- All loss of containment incidents occurred during 6 operating modes: normal operations, routine maintenance, startup/reinstatement, other operations, temporary deviations or plant upsets.

Operating Modes	Number	Percentage
Normal operations	15	55
Routine maintenance	4	15
Startup/reinstatement	3	11
Other production operations	3	11
Temporary deviations	1	4
Plant upsets	1	4



MAIN FINDINGS

- Pipeline failures (including pipe flange and body punctures) were the majority of site releases (56%) which occurred either during normal operation (67%) or maintenance (33%).
- Breaking containment location accounted for 4% as a site of release occurred during routine maintenance resulting into two fatalities.
- Tank overflows (including pits and sumps) accounted for 11% as a site of release occurred during normal operations.
- Relief, Vent and Discharge Systems (including lifting of PSV and discharge into the drains) causing sudden loss of containment was the site of 22% release which occurred either during startup/reinstatement, temporary deviations or plant upsets.

	Number	Percentage
Startup/reinstatement	4	66
Temporary deviations	1	17
Plant upsets	1	17



MAIN FINDINGS

- Inadequate hazard identification or risk assessment was the cause of 20% of incidents, followed by the inadequate work standards/procedures, inadequate/defective protective barriers and inadequate maintenance/inspection all at 12% each. Unintentional deviations by individuals or groups were the cause of 10% of incidents.
- Analysis revealed that the majority of incidents were a result of the organization failing to enforce training and assessing competence, implement procedures for a variety of risk control systems including the management of change in relation to design/specifications; and a permit to work system in relation to isolation of equipment.
- The causes of these 27 incidents were traced back to a failure of effective communication (shift handovers, failure to report events) for 14 incidents and 6 incidents were due to lack of supervision which resulted in lack of judgement or improper decision making.



MAIN FINDINGS

- There were 17 incidents (63%) that involved the uncontrolled release highlighting the lack of applying the process safety fundamentals in the following operating modes to prevent LOPC.

Process Safety Fundamental	Operating Modes
We stay within operating limits.	Normal operations
We apply procedures	Startup/reinstatement
We respect hazards	Temporary deviations
We stop if the unexpected occurs	Normal operations
We maintain safe isolation	Routine maintenance
We sustain barriers.	Startup/reinstatement
We watch for weak signals.	Normal operations



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Thank You

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