



FUELS INDUSTRY
Association of South Africa

Lessons Learnt:

Sulfuric acid leak in Pipe rack under
Culvert



INCIDENT DESCRIPTION

Emergency management responded to a reported product spill. Upon arrival, a large volume of an unidentified liquid product was observed spraying vertically at high pressure.

Mitigation efforts were immediately initiated, and it was determined that a sulfuric acid line had ruptured, along with a nearby steam line prior to arrival.

Continuous monitoring of the area was conducted, during which a high volume of personnel reported symptoms of gas inhalation and facial irritation. A total of 143 patients needed to be transported to the Medical Centre for evaluation and treatment.



INCIDENT ROOT CAUSE

- A gasket blowout on the Sulfuric acid line resulted from the following potential root causes:
- Inadequate Gasket Installation: There is no installation Quality Control Plan (QCP).
- Deviation from Design Requirements: A lack of records indicates that the required 12-month torque verification, may not have been performed.
- Potential Design Specification Gap: A unique flange configuration requiring a specific Torque specification.
- The validity of torque calculations done by the Engineering Contractor will be verified by testing of various flange configurations as well as the influence of pressure/temperature cycles on the prolonged tightness of the flange joint.



THE POSITIVE POINTS

- **The triage area was setup and well managed.**
- **Emergency Decontamination was established early.**
- **Appropriate PPE was available and used, SCBA's, Class B-splash suits for the Hot zone.**
- **Teamwork was great.**
- **Fire ground communication was effective.**
- **Refreshments were plentiful and on time.**
- **Manpower was available, with second turnout team established for any other emergency that may occur.**
- **Response time to the incident was under 4 minutes.**
- **EM was able to deal with the incident without Works emergency team resources.**



IMPROVEMENT POINTS

- **Plant evacuation and emergency assembly.**
- **Plant personnel ignored safety instructions from fire fighters and entered hot zone.**
- **Three vehicles passed through the vapor cloud due to the Site Wide Emergency Alarm not being activated.**
- **Southern and Western road was not isolated by Security**
- **Works Emergency team not activated for additional resource requirements.**



INCIDENT LEARNINGS

- Mass casualty preparedness – Busses activated to transport P3 patients.
- Triage system – Coordinated effort to identify the critical patients from the low-risk patients.
- Resource coordination – Ambulance crews and keeping track of patient status and movement.
- Define the Zones as soon as possible to prevent un-involved to enter the hot zone.
- When the procedure is followed to activate the Site Wide Emergency it should be followed and questions may be asked later.



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Thank You