Safety alert

Mines Inspectorate
www.dme.qld.gov.au

Safety alert 196
Published 22 May 2008

Mine Worker Suffers Chemical Burns to Eyes due to High Pressure Fluid Release

Mine Type: All underground mines

Incident: A coal mine worker received facial injuries and chemical burns to his eyes as a result of the uncontrolled release of diluted foam catalyst (sulphuric acid, phenol, and phenolsulphonic acid) from a pressurised line.

The direct cause was the disconnection of a pressurised fluid-filled line. The pressure in the line had not been reduced before disconnection commenced.

The worker was not wearing safety goggles.

The injury occurred at the end of a 12 hour shift after injecting foam into a cavity in the roof of a long-wall face. The worker was in the process of packing up and storing the gear ready for the next night shift.

Initial first-aid treatment was carried out by flushing the injured worker's eyes with water.

He was subsequently treated by paramedics. Fortunately he didn't lose his eyesight.

This emphasizes the importance of controlling the release of hazardous energy, wearing correct personal protective equipment (safety goggles / face shield) and immediate first-aid treatment where eyes come into contact with hazardous chemicals.

Equipment: Chemical pump and high pressure fluid lines.

Hazard: Corrosive chemical fluid under pressure

Cause:

- Worker removing the staple while the hose was still under pressure.
- Worker failing to fully dissipate the pressure.

Comments:

Contributing factors also included:

- The procedure for the chemical application process requires more specific instructions on relieving pressure prior to isolating and removing pressure lines.
- Ineffective verbal communication
- The injured worker proceeded to crack the lines at the pump thinking that the pump operator had already released the pressure
- The injured worker was not wearing the required PPE as required by the Material Safety Data Sheet (MSDS)
- The crew was at the end of a twelve hour shift
- An LHD was in the area, creating a noisy environment, which hindered communication.

Recommendations:

- Installation of 3-way valves for isolation and de-pressurisation of fluid lines
- Design equipment with the facility to permit locks to be used for isolation
- In addition to colour coding, ensure valves and gauges are labelled with text
- Conduct a review of risk assessments that have analysed 'using liquid chemicals under pressure'
- Review procedures in relation to de-energising and isolation
- Reinforce the requirement for, and re-emphasise the importance of positive and effective communication
- Refresher training for all workers specifically for isolation and de-pressurisation
- Reinforce the requirement for, and re-emphasise the importance of wearing appropriate PPE suitable for the task
- Retrain workers and supervisors to ensure specific requirements of Mines SOP for Personal Protective Equipment, Isolation and Tagging, and MSDS for use of the chemical.

Note – When implementing the recommendations from this safety alert, the hierarchy of control approach should be followed.

It is essential that tasks which involve the use of hazardous chemicals have appropriate emergency response equipment nearby (viz; eyewash stations / first-aid aid kits with emergency eye-treatment kits).

If risk based work practices were carried out, then the hazard would have been identified and appropriate controls would have been in place, as required by the MSDS. Chemical management should ensure that there is appropriate supervision. Risk management shall ensure that risk assessments are carried out for hazardous substances. To reduce the risk of injury or illness from hazardous substances, the MSDS must be read, understood and safety precautions followed, prior to working with any hazardous substance.

MSDS shall be readily accessible, a copy of which shall be used in emergency response, including first aid and also provided to the doctor where follow-up treatment is necessary.

Gavin Taylor
Chief Inspector of Coal Mines

Contact: Tim Watson, Inspector of Mines, +61 7 4967 0868

Please ensure all relevant people in your organisation receive a copy of this safety alert. Any such advice supplied to site should reach those who require it, and it should also be placed on the mine notice boards.

See more Safety Alerts and Safety Bulletins at
www.dme.qld.gov.au/mines/safety_information___bulletins.cfm