Dangerous Goods Safety Bulletin No. 0118 and Mines Safety Bulletin No. 148

Stench gas activation stations for underground mining operations

Background

Underground mining operations are required to have an alarm system to warn personnel working underground when an emergency is declared. Normally this requirement is fulfilled by the use of stench gas, which contains mercaptans that act as an odourant. The stench gas is introduced into the underground workings from activation stations installed on the surface near mine openings (e.g. portals, shafts, rises).

During recent inspections and audits, the Department of Mines, Industry Regulation and Safety noted a significant number of activation stations located within 50 metres of mine openings that contained stench gas bottles classified as a flammable gas (Division 2.1). This contravenes regulation 4.37 of the Mines Safety Inspection Regulations 1995, which requires the manager of an underground mine to ensure that flammable liquids, flammable materials or explosives are not stored within 50 metres of any entrance to the mine.

In some instances, there was also combustible material in the area as well as potential ignition sources. Furthermore, all stench gas bottles contain compressed gas, but many did not have impact protection.

Left. Stench gas activation station (yellow circle) located within 50 metres of a portal, mounted on combustible material and adjacent to a potential ignition source. Right. Stench gas bottles installed to manufacturer's specifications with activation instructions provided.

Summary of hazard

- If a fire starts around a mine opening, it could endanger underground workers by polluting fresh air intakes or interfering with an escape way.

Contributory factors

- There is an inadequate understanding of the regulation regarding the storage of flammable material within 50 metres of a mine opening.

Actions required

The following actions are recommended to managers of underground mining operations to reduce the potential for a serious incident at mine openings.

Stench gas activation stations

- Review all stench gas activation stations located at the surface and ensure they comply with regulation 4.37, Mines Safety and Inspection Regulations 1995.
- Confirm appropriate impact protection measures are in place for all stench gas bottles, whether underground or on the surface (see Section 4, AS 4332 *The storage and handling of gases in cylinders*).
- Confirm that the requirements of the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (DGSH) and the approved code of practice AS 4332, have been met, including:
  - flammable and combustible materials are separated by not less than 3 m [Section 2.5, AS 4332; r. 67 DGSH]
  - elimination of ignition source, or if this is not reasonably practicable, control of the risk arising from the ignition source [rr. 56,126, DGSH]

Installation

- Verify that stench gas bottles are installed to the manufacturer's instructions so the stench gas will fully disperse when activated.
- Confirm that stench gas bottles are within date and are marked as advised by the manufacturer.

Instruction and information

- Provide adequate instructions at the activation station so, if an emergency is declared, the stench gas can be properly activated when needed.
- Check that the safety data sheet (SDS) is available and current.

Further information

- Standards Australia, www.standards.org.au

  AS 4332 *The storage and handling of gases in cylinders*

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