



ACCIDENT/INCIDENT ALERT

No.1, August 2005

Accident Involving a 3.5 kg CO₂ Extinguisher

What Happened

A young woman received fatal head injuries and another worker received a compound fracture after being struck by a 3.5 kg aluminium CO₂ extinguisher propelled by an uncontrolled discharge of gas.

Investigation

The investigation found that the cylinder was structurally sound and that the design and integrity of the extinguisher were not contributing factors to the accident.

The hand piece of the extinguisher from an LPG trailer was being replaced with a hand piece from a similar out-of-service CO₂ extinguisher. Handles on the full extinguishers on the trailers wear, break and fall off, often from vibration during road use, and require replacement.

The partly disassembled CO₂ extinguisher was left in an elevated position from which it fell, landing on the exposed valve spindle causing the extinguisher to vent.

The valve body was damaged in the fall preventing the valve from self-closing. This resulted in a full discharge of the CO₂ extinguisher which had not been emptied before the hand piece was removed. Because the extinguisher did not have a horn the gas discharge was not diffused.



3.5 kg CO₂ extinguisher.

Inset: Depressed spindle unable to return to its 'off' state because of damage to the valve.

The uncontrolled continuous discharge of gas caused the extinguisher to spin on the ground, striking a worker's boot and inflicting a small puncture wound and a compound fracture to his ankle. The extinguisher was deflected and propelled 4.27 metres in an upward spiral, across an 11.5-metre distance striking the young woman in the head, resulting in her death. The extinguisher continued on its trajectory, punching a hole in perspex panelling at the top of the wall, to land outside.

The CO₂ extinguisher was used as an 'engine snuffer' to stop the pump engine in the event of a gas leak. The pump was not cab-activated, and required the driver to stand by the pump during the operation and, if necessary, manually operate the extinguisher.

Recommendations

It is recommended that:

- The emptying, disposal and storage of out-of-service CO₂ extinguishers is carried out in consultation with the suppliers and service agents and specific procedures put in place to manage this hazard.
- Maintenance of CO₂ extinguishers is reviewed in consultation with the suppliers

and service agents and specific procedures put in place to manage this hazard.

- No employee maintains or carries out repairs to CO₂ extinguishers unless they are a:
 - Tradesman fitter with appropriate knowledge of the servicing of CO₂ extinguishers; or
 - Non-tradesman skilled person with the appropriate training in the skills and knowledge necessary for the servicing of CO₂ extinguishers.
- Out-of-service CO₂ extinguishers are discharged prior to being stored for parts.



Photo of the hole made by the extinguisher as it exited the building and the landing area to demonstrate the distance flown and force of the escaping gas.