

SAFETY ALERT

Potential danger with PETN based perimeter explosives

INCIDENT

A loader operator was hit in the head and cut by a fragment of rock that was projected through the front window of his cab whilst bogging out a recently blasted development heading (tunnel).

CIRCUMSTANCES

A worker inspecting the development heading after a recent firing found a length of 'unfired' perimeter explosive in a drill hole. The 'unfired' explosive was washed from the drill hole but not removed from the muckpile. It remained in the muckpile when bogging operations commenced.

INVESTIGATION

An investigation of the incident suggests that the length of unfired explosive was picked up in the loader bucket and brought into contact with the side wall or face of the development heading. The impact caused the explosive to detonate and project a rock fragment through the cab window.

The investigation also revealed that there have been similar occurrences at other mine sites.

The supplier of this type of perimeter explosive has ceased to manufacture it; however, the remaining stock continues to be sold to a limited group of users across Australia.

Contributing factors:

- Continuous lengths of perimeter explosive (compared to pumped products) increases the probability of unfired explosive being left hanging from the face or ejected into the muck-pile.
- Explosives containing PETN are more sensitive to detonation from impact, friction or heat than other types of explosives.
- The development heading in question had some jointing evident down both side walls. Geological structures such as sheared or jointed ground can contribute to 'cut-offs' or shearing of the explosive charge in adjoining blastholes, prior to a hole firing, thus leaving unfired explosive.

RECOMMENDATIONS

- 1) Mine operators should ensure that persons using explosives understand the relative sensitivity of different explosive products and the associated hazards if ejected into the muck-pile or transported from the mine and into the waste/ore processing system.
- 2) Explosive product, particularly PETN based product, sighted in the face or the muck-pile following a blast is a serious hazard and must be removed in a safe manner prior to bogging.
- 3) Mine operators should conduct a risk assessment on the use of perimeter explosives that may present an unacceptable hazard if present in the muckpile.
- 4) Mine operators using explosive products must ensure that persons handling explosives are competent in their use and adhere to the manufacturer's guidelines for safe use.
- 5) Manufacturers should consider making perimeter explosive in a form that reduces the potential for lengths of unfired explosive being left in the face or in a muckpile.
- 6) Manufacturers of particularly sensitive explosives must ensure, as far as reasonably practicable, that all users of the product are notified of:
 - the hazards and controls associated with using the product
 - any dangerous incidents involving the product.

Refer to *Work Health and Safety Act 2011*, Section 23.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed



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NSW TRADE & INVESTMENT

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