

Safety In Mines Research Advisory Committee Project Summary :

Project Title:	Investigation into causes of accidents on scraper systems in the Gold and Platinum mining sectors	
Author(s):	R. Moseme, S.M. Rupprecht, P.J. Foster and R.L. Demana	To complement the SAMRASS database investigation, the research team also conducted underground visits and interviews with mine personnel associated with the management and operations of scraper winch systems to identify projects and causes of accidents from this perspective. The main finding of the underground observations was that 'rigging', 'signaling devices' and 'winches being started without warning' were identified as the main/significant hazards.
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Category:	GAP	Applied Research

Summary

This research report identifies the risk and hazards associated with scraper winch systems that may lead to potential accidents in the gold and platinum sector. The research also suggests whether scraper winch systems are a major safety risk, and if the associated risk is a managerial and an operational issue, or whether further research is required to provide potential solutions to the identified risk.

The initial stage of the research concentrated on an analysis of the SAMRASS database. The analysis indicated that accidents associated with scraper winch systems in the gold sector accounted for 5%, and in the platinum sector for 9%, of all underground mine related accidents. The analysis also indicated an increase in the fatality rates for the platinum sector with a decrease in injury rate for both gold and platinum sector between the periods of 1988 to 2002. The indications therefore were that scraper winch systems do indeed constitute a safety risk in the gold and platinum mining industry.

A risk profile study was conducted to assess the nature and extend of the identified accidents associated with scraper winch systems. The results of the risk profile shows that significant hazards in the gold sector are due to the scraper/scoop (33%), whilst scraper winch rope accidents are significant for both the platinum (31%) and the gold (30%) sector.

An analysis of the activities of workers of the scraper winch accident profile was also investigated. The investigation revealed that winch operators, stope workers, general miners, shift bosses and drillers are prone to scraper winch accidents, in that order. In addition, most injuries occurred at the beginning of the morning shift when most workers are in groups of occupation and fatal accidents occurred mostly during night shifts when there was likely to have been absence of supervision, loss of concentration and awareness amongst workers.

Principal causes of the scraper winch accidents in relation to the workers were due to 'poor adherence to standards and procedures', 'lack of training and its practical application to the actual working environment', 'poor hazard identification skills and perception of risks', and 'management and supervision of safe working practices and procedures'.

The research was conducted by the research team at the Camborne School of Mines. The investigation also identified projects and causes of accidents from this perspective. The main finding of the underground observations was that 'rigging', 'signaling devices' and 'winches being started without warning' were identified as the main/significant hazards.

In parallel with the practical investigations, a health and safety risk assessment analysis with respect to the design, installation and operation of scraper winch systems was conducted. The risk assessment confirmed hazards similar to the SAMRASS and underground investigations i.e. being struck by winch (during transportation, installation, operation or removal), ropes, scoops, snatchblock; punctured by rope strands; and entanglements. Importantly, the risk assessment identified significant shortcomings in scraper winch control measures, limitations in rules and standard procedures, lack of training, lack of routine inspections, and inadequate communication systems. The investigation also highlighted that Regulations on scraper winch systems need to be revised, a process that is already underway, and improved controls put in place. A document to give guidance on adequate controls and applications of best practice is also needed.

Overall, the research work indicates that scraper winch accidents are primarily a managerial and operational issue. A great deal of further effort is directed at changing peoples attitudes towards risk identification and hazard recognition, appropriate training, adherence to mine standards, as well as the management and supervision of scraper winch systems is required. Mining houses must continue to be diligent to ensure that standards are implemented and enforced. Furthermore, risk assessments need to be integrated with the mine standards.