



Trucks tipping over the edge

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Mine Type

All mine types

Incident

There have been a large number of serious incidents lately involving haul trucks passing through berms when tipping over the edge. In one week recently three events were reported on three consecutive days. Further investigations have also uncovered some mines at which trucks have damaged berms, but the incidents have not been notified to an inspector.

Site senior executives are advised that the Chief Inspector of Coal Mines regards any incident of a truck damaging a safety berm as an unplanned movement that endangers the safety or health of a person. Berms - Section 139 of the Coal Mining Safety and Health Regulation 2001 states: 'If rear dump trucks are required to dump up to, or over, an edge at a surface mine, the mine's safety and health management system must provide for constructing and maintaining a safety berm to reduce the risk from the trucks toppling over the edge.' Berms must be seen as a safety extra, and should not be used as a brake or even an indicator that the edge has been reached. They need to be designed to suit the nature of the material and the size of the machinery. While traditional rules of thumb such as half the height of the wheel may be useful, they need to be supported by geotechnical calculations.

Equipment

Haul trucks.

Hazard

Berms

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Cause

Angle of approach

In many of the incidents, the truck has not approached square to the berm, but at an angle of 20° or more. This greatly increases the force exerted on the berm if contact is made.

Strength of material

In another incident, the material was a sandy topsoil, which would run through your fingers. A berm made of this material provides no resistance.

Any risk assessment of the effectiveness of berms or the height of dumps would need to consider the nature of the material, among many other things.

Lighting

Most of the incidents have occurred at night. This raises issues about location of lighting plants, the effect of shadows and possibly fatigue.

Proximity detection

These incidents suggest investigating available engineering solutions, to warn that the truck has reached the berm or to guide the truck into a position square to the berm.

Comments

Rescue

Any risk assessment should also consider the recovery of the driver if the control measures fail and the truck falls over the edge. In one incident a fire broke out outside the driver's cabin on an overturned truck. Fortunately, emergency response teams were at the site within minutes.

Recommendations

The number of incidents occurring at different mines in a short period of time show that the hazard exists. Assessment and management of the risk will require attention to many factors, including:

- berm design
- direction of travel
- reversing speed
- night time visibility and fatigue problems
- dump material.



While rules of thumb may provide guidance, technical expertise is also necessary to develop a suitable plan. OCEs, supervisors and operators need workable guidelines to decide when it is not appropriate to tip over the edge and other methods such as paddock dumping or short tipping must be adopted.





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