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## Overwatering of roads leads to vehicle incidents

This safety bulletin provides safety advice for the NSW mining industry.

### Significant safety issue

Overwatering of mine roadways decreases tyre traction (skid resistance) and therefore increases braking time. It may also contribute to destabilisation of fill slopes and erosion.

It is well understood that haul trucks and other vehicles cannot stop quickly on wet roads. Hard braking on a wet road can easily result in a vehicle losing control and colliding with safety berms, other vehicles or infrastructure. Additionally, standing water can soften road bases, potentially leading to road failures and collapsing fill sections and slopes.

Poorly designed and maintained roads also leads to increased operational costs in road maintenance, fuel, loss of production and tyres.

### Background

For the period January 2017 to February 2018, there have been 20 incidents reported to the Resources Regulator where it has been identified that overwatering or water on roads has led to the loss of control of a vehicle. This represents almost one-third of the total number of loss-of-control incidents reported during this period.

Mine roads are generally watered to suppress dust. This is done through checkerboard or spot intermittent pattern on slopes to reduce the risk of slipping during braking. This process attempts to leave intermittent dry and wet lines for vehicles to use, minimising slippery conditions. Spot watering works well for areas with limited water supplies.

There are chemical-type dust suppressions available, but these are not regularly used in the mining industry, usually due to the cost.

### Investigation

In reviewing the reported circumstances of these events, generally mine operators have not identified whether there were contributing factors, other than a wet road surface.

It is noteworthy that the following issues were not identified as contributing factors in these incidents:

- **Road construction or materials used in the road construction:** A clay surface can lose up to 50% of its coefficient of friction through the application of water (Refer to Mines safety bulletin No. 94 [Excessive watering of haul roads](#) –January 2010 – Qld Department of Natural Resources and Mines)
- **Road slope/grade:** Mines tend to not report incidents if the road was not designed to suit the equipment used on it.

- Camber or cross grade of the road.
- Tyre condition.
- Drainage.
- When the road was last maintained.
- If water operations coincided with a rain event.

In almost all of the incidents reviewed, mine operators attributed the cause of the incident to the behaviour of the operator, and the reported corrective actions focussed on changing the behaviour of the operator by counselling, reassessing skills, retraining and procedures. Other organisational and environmental factors were apparently either not considered, or this was not reported in the notification to the regulator.

## Recommendations

The following recommendations are made:

1. Incident investigations undertaken by mine operators should consider all factors that contribute to incidents as part of their review of control measures, not just focussing on the actions of individual operators.
2. Mine operators should review the suitability of the material used on roads in relation to their properties when wet.
3. Regarding the design and construction of roads and ramps, risk assessments should consider that steep grades of ramps to in-pit dumps, particularly in switchback mining methods, increases potential uncontrolled movement of vehicles down the ramp when they are wet.
4. Operator training should highlight actions in response to a loss of control, and that wet-surfaces on roads may not be identified in dark conditions.
5. Training of water cart operators should consider the fact that over watering is often identified only after a skidding or sliding incident has occurred. Training for water cart operators should include a rigorous assessment of competence for undertaking road-watering in compliance with site requirements to ensure the likelihood of over-watering is reduced.

**NOTE:** Please ensure all relevant people in your organisation receive a copy of this safety bulletin, and are informed of its content and recommendations. This safety bulletin 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.

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