

Safety Alert

Mines Inspectorate—All surface mines

Safety Alert No. 276 | 6 December 2011

Articulated dump truck rollover

What happened?

Six incidents reported in the last half year have all involved **six-wheel articulated dump trucks** becoming unstable and tipping onto their sides. Four of the six were configured as **water carts**. These all-terrain dump trucks nominally have less than 40 tonne payload.

Truck roll-overs are dangerous, but fortunately in these incidents all operators escaped unharmed.

Why did it happen?

Factors in an articulated truck rollover can include:

- **Uneven ground conditions:** Although the vehicle is designed for rough terrain, as ground conditions worsen speed can cause instability.
- **Unstable loads:** Many such trucks are fitted with a water cart body in place of the dump tray. Unstable loads cause vehicle instability and water is a most unstable load. The tank must contain baffles to reduce the effect of the water 'sloshing'.
- **Fully articulated vehicle:** The articulated connection lacks the front to rear axle rigidity of a single chassis. A rigid chassis absorbs the 'slosh' of the water in a tank, reducing the potential to roll. (See also 'cross-slope travel' below.)
- **Cross-slope travel:** In these situations, the centre of gravity can move outside the body line of articulated trucks, which then become unstable on cornering.
- **Untrained or inattentive driver**
- **Excessive speed:** as ground conditions worsen, speed should be reduced.
- **Uneven ground conditions**
- **Overloading**

Combining any of these factors increases the possibility of overturning. (One mine operator has deemed these vehicles unsuitable for use as water carts, which travel at speed along haul roads). Both the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999* require the risks to be assessed and kept to within acceptable limits.

Recommendations

Before using this type of vehicle, evaluate its suitability for the site and for the configuration planned.

- Operators should be trained and competent to operate the equipment.
- Particular care must be taken when operating fully articulated vehicles on cross slopes.
- Speed must be reduced to match the conditions.
- Take particular care when operating the vehicle as a water cart. Check the tank has baffles.
- Vehicles should not be overloaded.

Determining suitability for the task is of prime importance as the above are administrative controls only. Using the vehicles as water carts may present too great a risk.

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