

Lightning strikes on rubber-tyred heavy vehicles

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Lightning strike incidents

During lightning storms, heavy, rubber-tyred vehicles should not be recommended as a place of safety.

A number of incidents have occurred on Australian minesites where lightning has struck rubber-tyred vehicles causing tyres to explode, demonstrating the enormous potential for significant harm when this occurs.

An incident at a Western Australian mine in January 2018, when an autonomous truck was struck by lightning and the position 2 (front right) tyre exploded, resulted in extensive damage to the upper structure of the truck, including the cab.

[Significant Incident Report No. 260](#), issued from the Western Australian Department of Mines, Industry Regulation and Safety, contains more information.

Another incident occurred at a mine in NSW in 2008 when a parked rear dump truck was struck by lightning. This resulted in two tyres exploding (position 1 and 3) on the driver's side of the truck, causing extensive damage to the truck and other equipment. Debris was thrown up to 275 m from the truck.

A [Safety Alert](#) issued by the NSW Mine Safety Operations Branch was issued regarding this incident.

Comments:

The two incidents above indicate the risks to operators in heavy, rubber-tyred vehicles from pyrolysis due to lightning strikes. Whenever excess heat is developed in or applied to a tyre, it can initiate pyrolysis, (the decomposition of a substance by heat), within the tyre. This can cause a build-up of flammable gases and pressure within the tyre, which may rupture or explode. Further information can be found in [Safety Bulletin 47 \(Tyre fires, pyrolysis and explosions\)](#) available on the DNRME website.

Recommendations:

With the storm season now on us in Queensland:

- Mines should review their severe weather or lightning TARPS to take into account the risk to coal mine workers operating heavy rubber tyred vehicles during lightning storms.
- Clearly, a heavy rubber tyred vehicle *cannot be* considered as a place of safety during a lightning storm, and care must be taken where these vehicles are parked during a lightning storm so as not to create a hazard for buildings or structures.

Mines Inspectors will be auditing mines' severe weather and lightning procedures and TARPS during routine inspections.

