

# SAFETY BULLETIN

DATE: JUNE 2022

## Mobile plant and vehicle fires associated with diesel exhaust treatment

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

### Issue

There has been a rise in the number of incidents involving fires that have originated from diesel exhaust treatment systems on mobile plant including heavy and light vehicles in the NSW mining industry.

Over the past 6 months there were 6 fires where the heat source was either the diesel particulate filter (DPF) or catalytic converter.

### Application

This safety bulletin applies to plant that is not registered as fire protected to AS 3584.1, or explosion protected to MDG43, AS 3584.2

### Comments

Diesel exhaust stack gas temperature is typically measured between 300°C to 400°C. Where the exhaust contains a catalytic converter and DPF, the exhaust gas may be as hot as 600°C during a regeneration event. An exhaust system is a hot surface ignition area for any fluid that may escape during operation.

The minimum surface ignition temperature of any escaped fluid spray will vary depending on the type of fluid and the atomisation at escape. Surface temperatures that are 60°C or more above the fluid auto-ignition temperature (AIT) are likely to catch fire if a fluid escapes.

The surface temperature of a catalytic converter or a DPF component during a regeneration event may be the hottest part of the exhaust system and a likely hot surface ignition point for any escaped fluids.

## Recommendations

Mine operators and equipment owners should:

- carry out a review and, if necessary, an update of their risk assessment(s) in relation to fires on light vehicles, heavy vehicles, and mobile plant to ensure:
  - DPF and catalytic converters hot surface temperatures have been identified as a risk
  - an assessment of the fire risks associated with DPF and catalytic converters and the fluids used on the vehicle has been conducted
- confirm controls identified in their risk assessment(s) have been implemented
- have a system in place to ensure that controls identified in the risk assessment above are maintained so they remain effective
- have a system in place to ensure changes to plant go through a robust process to identify any risks the change may have on the vehicle or plant.

In addition, for people with management or control of specialised explosives MMU plant:

- review the shielding of engine exhaust systems, including catalytic converters or DPF systems for shielding from product delivery hose reels and hoses
- review product delivery hose spillage areas where accumulation can occur on trucks including absorbent materials such as exhaust blanket cladding.

Equipment designers, manufacturers and suppliers should:

- carry out a review of their controls in relation to the hazards associated with DPF and catalytic converters. The review should:
  - consider previous incidents associated with vehicle and mobile plant fires
  - identify all potential fuel sources including refuelling activities
  - include reasonably foreseeable hazards taking into consideration human factors.
- install effective shielding between pipes/hoses and any adjacent components that have an operating surface temperature higher than the auto-ignition temperature of the fluids that may spray onto the hot surface
- ensure when implementing remediation design post incidents that the solutions are assessed before implementing them
- provide end users with the necessary information to maintain plant in a safe state. This should include inspection, testing, maintenance and replacement frequencies or criteria of components.

In addition, for designers, manufactures, imports, or suppliers of specialised explosives MMU plant:

- ensure that any part of the diesel engine or exhaust system that may be exposed to product spillage must be shielded (ref. AS 2187.2, AS 2809.2)
- review shielding of engine exhaust systems, including catalytic converters or PDF systems for shielding from product delivery hose reels and hoses.

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## Other relevant resources

- [SB21-11 Fires occur after servicing mobile plant](#)
- [Fires on mobile plant quarterly reports](#)
- [SB21-01 Fires occur while refuelling plant](#)
- [AEISG Code of Practice – Mobile processing units](#)

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