

Safety bulletin

MINES

Mines Inspectorate

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Diesel Engine - Turbocharger Fires

Mine Type: All Mines

Incident: Fires with the engine turbocharger as the source of ignition.

Equipment: Any turbocharged diesel engine.

Hazard: Potential personal injury, fire.

Cause: Diesel engine turbochargers are increasingly acting as ignition sources for fires at surface coal mines.

The Mines Inspectorate has noticed an increase in the occurrence of these fires and has analysed the last 18 months' incident data supplied by the coal industry. The analysis shows excavators recorded 30% of all turbocharger fires, followed by track dozers (15%) and rear dump trucks (12.5%).

Sixty per cent of the fires resulted from hydraulic or engine oil spraying on the turbocharger. Eleven per cent of the fires were caused by engine fuel contacting the turbocharger and 13% from turbocharger failure.

Comments: The surface temperature of turbochargers can exceed 500 degrees Celsius during the normal operating cycle, and this temperature can rise to beyond 600-700 degrees following engine shutdown. Irrespective of whether the turbochargers are heat shielded, the turbocharger's surface temperature is hot enough to ignite fuel or oil when it comes into contact with it.

When did your operation last conduct a mock emergency with an engine bay fire as the scenario?

Recommendations: All mines are advised to review the occurrence of this type of incident at their mine site. Review your prevention, monitoring and contingency controls to ensure the risk from turbocharger fires is adequately controlled.

Consider:

- Heat shielding turbochargers
- Deflection barriers separating the oil hoses and fuel lines from an engine's turbocharger
- Contain fuel lines and hydraulic hoses to prevent spray onto hot surfaces.

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