

SAFETY BULLETIN

DATE: NOVEMBER 2019

Spontaneous combustion of rubber fines

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

Issue

The NSW Resources Regulator has been made aware of an incident at an interstate underground mine where an independent investigation verified that a spontaneous combustion of FRAS conveyor rubber could be replicated in a laboratory.

The Health and Safety Executive, a United Kingdom government agency responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare and for research into occupational risks in the UK, has also issued a safety alert following several incidents at tyre recycling facilities. It was identified that several occurrences of spontaneous combustion were identified in large stockpiles of shredded rubber.

Circumstances

In the UK, the incidents of spontaneous combustion of tyre rubber occurred at tyre recycling facilities, in piles over three metres deep. The material consisted of tyre shred and crumble, ground or chopped tyres that are typically coarse (less than 1% sub 5 millimetre). Under controlled conditions a one metre pile was able to spontaneously combust. In most cases, initiation times took several weeks.

The local tests were conducted with FRAS rubber and rubber mixed with coal fines. The testing determined thermal runaway could occur with FRAS rubber fines, once a temperature of approximately 80°C was reached within the pile. Although it was not tested, it was estimated that a 100-millimetre thickness rubber pile could achieve spontaneous combustion because of the fine particle size of belt shavings. A mix of coal fines and belt shavings can also alter the spontaneous combustion properties.

It is recognised that the likelihood of achieving the ideal conditions for this to occur is low, however it is a known risk and must be managed.

Recommendations

The following recommendations should be considered:

- Review the risk assessment for fires associated with conveyor systems.
- Update the conveyor management plan to include the risk of spontaneous combustion of rubber fines.
- Update belt inspection training material and procedures to make workers aware of the risk of rubber fines spontaneously combusting.

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 common area, such as your notice board where appropriate.

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