TYREgate Information
Phone: +61 7 3346 4081
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EMESRT CATEGORY:

Risk of a tire operating condition becoming critical without the operator's knowledge

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TYREgate Reference:4

Continuous high speed and excessive payload - TKPH exceedance resulting in initial tyre fire then spreading to truck

Root & Contributing Causes:

- **TKPH & payload exceedance**
- **High Speed**

Preventative / Recommended / Accepted Steps of Risk Mitigation, Points of Interest:

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Site Answers & Comments:

TYREgate Reference:12

LTA pit floor maintenance

Root & Contributing Causes:

- **Tyre environment - severe conditions causing tyre failure**

Preventative / Recommended / Accepted Steps of Risk Mitigation, Points of Interest:

1. Sheeting of pit floors with suitable materials 2
2. Reinforce dangers to employees re compressed air (workshop, pneumatic tires)
3. Keep areas pedestrian free where rubber tired vehicles travel over sharp protruding rocks.

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TYREgate Reference:22

Tyre fatigue - small cuts and casing separations are thought to have been present - considered to have caused localized heating of the casing in operation, with elevated temperatures from this thought to have persisted after vehicle stopped causing the explosion

Root & Contributing Causes:

- **Elevated operating temperatures**
- **Tyre fatigue**

Preventative / Recommended / Accepted Steps of Risk Mitigation, Points of Interest:

1. Combustible materials: Mass of tyre lubricant required to cause an explosive mixture within the tyre was discounted as possible cause.
2. Incorrect lubricant - discounted. Accidental inflation with LPG - discounted.
3. Pyrolysis of liner evolving explosive gases. Tests on running tyres showed that some gas is produced but well short of required volume.
4. Tools/tramp materials left inside tyre - discounted.
5. Carbon Dust given off from Pyrolysis of tyre inner - auto ignition temperature 200ºC.
6. Ignition Sources: Truck reported to be consistently slow traveling uphill - but dragging brakes or collapsed bearings were discounted.
7. Sabotage - discounted.
8. High voltage contact (powerline/electrical storm) - discounted as no evidence was found.
9. Tyre fatigue - small cuts and casing separations are thought to have been present - considered to have caused localized heating of the casing in operation, with elevated temperatures from this thought to have persisted after vehicle stopped causing the explosion.

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Site Answers & Comments:

TYREgate Reference:38

The tyre ruptured was excessively worn and was due to be changed the next shift

Root & Contributing Causes:

- **Tyre environment - severe conditions causing tyre failure**

Preventative / Recommended / Accepted Steps of Risk Mitigation, Points of Interest:

Discard criteria should be developed for dump truck tyres in accordance with manufacturers recommendations. Tyre inspections should be carried out by a competent person at least daily to identify defects and monitor wear. Prestart checks systems should require operators to check tyres for new damage and remove any rocks from treads. Any trucks should be stood down if new tyre damage warrants this. So far as is practicable, the pit floor, haul roads and dump areas should be maintained clear of rock spillage and operators should be given instruction in the procedures for dealing with such spillage.

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TYREgate Reference:40

The tyre was weakened by a previous rock cut

Root & Contributing Causes:

- **Tyre environment - severe conditions causing tyre failure**
- **LTA operational prestart inspection - tyre & rims.**

Preventative / Recommended / Accepted Steps of Risk Mitigation, Points of Interest:

Tyre inspections should be carried out on a daily basis by competent personnel to identify and monitor defects and wear. Good loading/trucking practices and haul road design and maintenance practice should be implemented to ensure the load is evenly distributed and spillage is minimized. Equipment capable of removing spillage from pit floors, ramps, haul roads, ROM pads and dumps should be available. Procedures should be developed that effectively deal with spillage. Tyre rotations and discard criteria should be developed in accordance with manufacturer`s recommendations. Purpose designed loaded truck park up areas should be available and specific procedures for pedestrian traffic adjacent to loaded trucks should be developed. Employee awareness of the potential for rupture due to wear, spillage, overheating and poor operating techniques should be addressed in operator training. Employees need to wear appropriate PPE at all times, especially at the end of shift when the equipment is operational in their vicinity.

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