



Health and Safety Bulletin No. 28

Catastrophic failure of tyre and wheel assembly during inflation

Date: 12 October 2026

Background

Catastrophic tyre and wheel assembly failures can occur across a range of industries, including mining, agriculture, road transport, construction and in mechanical workshops.

WorkSafe is aware of three recent incidents where tyre inflation activities using an air hose caused serious injuries to workers:

- A truck driver suffered serious injuries following catastrophic tyre failure while attempting to re-seat a flat tyre after inflating it following a visual inspection.
- A mechanical worker was seriously injured when a multi-piece assembly (also known as a split rim) and tyre components were ejected from a tyre hub during catastrophic tyre failure while inflating the tyre and placing it onto a grader during workshop maintenance activities.
- An agricultural worker sustained life-changing injuries when a split-rim wheel assembly exploded during a tyre change in a shed.

Summary of the hazard

Tyres and wheel assemblies contain significant stored energy. During inflation, maintenance, repair or assembly activities, a catastrophic failure of the tyre, wheel assembly, multi-piece split rim or associated components can cause the sudden and violent release of compressed air and projectiles. Workers positioned in the line of fire are at greatest risk of serious injury or death.

The uncontrolled release of stored energy can create blast effects and a percussive shock wave, causing hearing damage and ejecting debris or components with sufficient force to result in impact, crush or fatal projectile injuries.

This may be caused by:

- using damaged, worn or deteriorated tyres, including cuts, impact damage or exposed belt wires and cords
- damaged rims and wheel components
- over-inflating tyres beyond the manufacturer's specifications
- previous tyre repairs that have weakened the casing.

Tyre and wheel assemblies vary in design, construction and size depending upon the vehicle. For example, a multi-piece (split-rim) assembly, whereby the rim, barrel and face are bolted together, which may increase the risk of components separating during tyre inflation.

Contributory factors

- Failure to assess the risks associated with tyres bursting during inflation activities.
- Inadequate safe systems of work (deviation from established procedures, poor lighting or visibility during tyre inspection and inflation, especially outside of a workshop environment).
- Insufficient training provided regarding the inspection and inflation of wheel and tyre assemblies.
- Inflating tyres in field locations, paddocks, roadside environments or workshops without appropriate restraint systems.
- Failure to establish or maintain tyre inflation exclusion zones.
- Inflation of tyres without consideration of hose length, in-line pressure gauges or digital displays, and inflation control devices to remove workers from the line-of-fire.
- Failure to assess the additional risks associated with split-rim assemblies.
- Failure to use PPE during tyre inflation activities.
- Incorrect assembly of multi-piece wheel assemblies or split-rim components.

Actions required

PCBUs must take proactive measures to eliminate the risks associated with tyre inflation activities. If that is not reasonably practicable, PCBUs must minimise the risks.

- Complete a detailed risk assessment to identify hazards associated with tyre inflation activities. The PCBU should include control measures as part of the safety management system in place for tyre inflation activities.
- Implement a safe system of work to eliminate or minimise the risk associated with catastrophic tyre failure.
- Implement engineering controls, including:
 - tyre cages or restraint devices that provide a barrier against the uncontrolled release of air and debris from the tyre and wheel assembly
 - inline gauges, displays or inflation control devices to allow the continuous monitoring of air during inflation
 - longer hose lengths to isolate the hazard
 - dump valves to rapidly deflate tyres where necessary.
- Implement administrative controls, including:
 - ensuring manufacturer instructions are available and followed when assembling and inflating wheel assemblies
 - ensuring only competent persons undertaking tyre inflation and wheel assembly work
 - utilising qualified tyre service providers for high-risk tyre fitting activities, where reasonably practicable
 - identifying and establishing line-of-fire exclusion zones before commencing tyre inflation
 - assessing whether inflation activities should be undertaken in a dedicated workshop rather than roadside, paddock, or field locations
 - providing relevant information, instruction and training for maintaining the various wheel and tyre assemblies used on site, including inspection and assessment for signs of damage prior to inflation.
- Inflate tyres in a workshop to a lower pressure when other people are in proximity.
- Implement and adhere to PPE policy and procedures where workers are working in the vicinity of tyre inflation activities.

Further information

Mining and Petroleum Advisory Committee

Guideline

- [*Tyre safety for earth-moving machinery on Western Australian mining operations*](#)

Department of Local Government, Industry Regulation and Safety – WorkSafe

Mines Safety Bulletin No. 122

- [*Use of tyre inflation cages*](#)

Safety alert 06/2021

- [*Off-highway haul truck tyre blowout in workshop injures workers*](#)

Media release

- [*Mining contractor fined after worker seriously injured by exploding tyre*](#)

Safe Work Australia

Guide

- [*General guide for split rims*](#)

Information sheet

- [*Compressed air and air receiver*](#)

Standards Australia

- AS 4457.2:2024 *Earth-moving machinery – Off-the-road wheels, rims and tyres – Maintenance and repair, Part 2: Tyres*