

Investigation Report

Worker Fatally Injured While Welding a Tire Rim

April 25, 2016

Final Report

The contents of this report

This document reports Occupational Health and Safety's (OHS) investigation of a fatal incident in April 2016. It begins with a short summary of what happened. The rest of the report covers this same information in greater detail.

Incident summary

A farm hand was standing on the back of a flat deck pickup truck, welding on a rim/tire assembly from a Henke feed/mixer wagon. The farm hand was attempting to repair a crack on the rim when the tire separated from the rim striking the farm hand with enough force to cause fatal injuries.

Background information

Heidecker Farm

The Heidecker Farm is a multigenerational family run business west of Coronation, Alberta (AB). The farm covers 37 quarters (2395.7 hectares) and operates as a feed lot, cow/calf operation, and grain producer. The Heidecker Farm employed two workers at the time of the incident.

The owner owns 10 quarters (647.5 hectares) of the land and has been farming most of his life. The owner works on the farm and does whatever is needed to keep the farm going.

The wife is the spouse of the owner and has been farming most of her life. The wife works on the farm and does whatever is needed to keep the farm going.

The farmer owns 27 quarters (1748.2 hectares) of the land and has been farming most of his life. The farmer works on the Heidecker farm and mostly operates equipment.

The farm hand had been working for the Heidecker Farm for 3 years and was described as a "jack of all trades". The farm hand's job was to complete any necessary tasks that were required on the farm (i.e. calving, feeding, operating equipment, etc.). At the time of the incident, the farm hand was welding on a rim/tire assembly to fix an air leak.

OK Tire

OK Tire is one of the largest independent tire retailers in Canada with over 300 locations throughout 10 provinces with each OK Tire store independently owned and operated (OK Tire website).

Equipment and materials

Bridgestone M844 tire

The tire involved in the incident was an M844. It was a commercial tire, manufactured by Bridgestone, and was classified as a “Truck Bus Radial.” The specifications of the tire were 425/65R22.5 rated with a maximum inflation pressure of 827 kilopascals (kPa) (120 pounds per square inch (p.s.i.)) and a maximum load of 5600 kilograms (kg) (12 345 pounds) (Figure 1).



Figure 1 – Tire from the incident

A – Yellow Residue Tire Sealant

Tire Sealant

The tire sealant used in this incident was a product called “air-care sealant” made by the Seal-Corp company in Lethbridge, AB (Figure 2). The sealant was a non-flammable, environmentally safe product, used to seal leaks up to 6 millimetres (mm) in diameter. The tire sealant was purchased from OK Tire in Coronation, AB.

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Figure 2 – Tire sealant use in the incident

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Tire Rim

The rim was made from steel and measured 58.42 centimetres (cm) (23 inches) wide and 38.1 cm (15 inches) deep (Figure 3). The rim from the incident had a crack in it that caused the tire to deflate. The rim/tire assembly was removed from a Henke 515 feed/mixer wagon the day before the incident. The rim had been previously welded on by the farm hand. OK Tire refused to work on the rim/tire assembly because of the condition of the rim.



*Figure 3 – Rim from the incident
A – Damage caused by the incident
B – The weld*

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Henke 515 feed/mixer wagon

The feed/mixer wagon (wagon) was used to haul and spread silage (fermented vegetation with high moisture content) to feed the cattle in the field. The wagon (Figure 4) was pulled by tractor between the silage pile and the cattle in the field.



Figure 4 – Henke wagon with the tire assembly removed

A – Hub for wheel assembly

Sequence of events

On Sunday April 24, 2016, the farmer discovered that the feed wagon had a flat tire on the left side. The wheel assembly (rim and tire) was removed by the farmer and taken back to the shop for repair. At the shop, the farm hand attempted to reinflate the tire. The tire would not hold air.

On Monday April 25, 2016, the farm hand started the day at approximately 7:00 a.m. As it was calving season, the farm hand started the day by checking on the cows in the field.

The farmer took the separated tire and rim, to OK Tire in Coronation at 8:00 a.m. to get it repaired.

As part of the repair process, a tire technician (tech) at OK Tire added a tire sealant to the tire. The tire was put on the rim and the bead was seated. The tech would not put more than 10 p.s.i. in the tire as the rim had been welded on previously. The tire was sprayed down with a

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leak finder to find out where the air was leaking from and, if found, marked with chalk. It was discovered that the leak was on the rim and not the tire. At this point the tech would not work on the wheel assembly. The farmer took the wheel assembly back to the farm.

The farm hand setup to repair the rim which was positioned on the back of a flat deck pickup truck parked in the shop. The farm hand had experience with this task as the farm hand had previously repaired/welded this particular rim.

Using a grinder that had a buffing wheel attached, the farm hand cleaned the area on the rim that needed repairing. After cleaning the rim, the farm hand lifted up the right side of the tire and propped it up with a piece of wood 61 cm (48 inches) long.

While standing on the deck of the truck, leaning over the propped up side of the tire, the farm hand began to weld on the rim. At approximately 9:30 a.m., after performing approximately 6.3 cm (2.5 inches) of welding there was a sudden release of energy as the tire and rim violently separated. The rim and the piece of wood went flying to the right (north) causing a dent in the steel rim flange, and the tire went to the left (south). The tire sealant sprayed to the left (south) and up onto the ceiling. The farm hand was impacted by the tire shattering the farm hand's welding mask and causing fatal injuries.

The farmer was the first person on scene followed by the owner and his wife. The farm hand was found lying on the back of the flat deck of the pickup. The tire was found on the ground next to the truck on the driver's side, and the rim was found on the passenger's side of the truck. The wife called 911 and both the owner and the wife performed cardiopulmonary respiration (CPR) on the farm hand until the ambulance arrived.

The farm hand was pronounced deceased upon arrival at the Coronation Hospital.

OHS arrived at the site on the morning of April 25, 2016, and began to conduct an investigation into the incident.

A review for enforcement action was completed on December 14, 2017, and it was determined that prosecution or an administrative penalty were not appropriate based on the circumstances surrounding this incident.

This file was closed on January 23, 2018.

Signatures

ORIGINAL REPORT SIGNED

May 10, 2018

Lead Investigator

Date

ORIGINAL REPORT SIGNED

May 10, 2018

Manager

Date