

## **Workplace Fatality Summary Report:**

### **Worker Fatally Injured by Falling Truck Box**

## The Contents of this Report

This report summarizes the Ministry of Labour Relations and Workplace Safety's Occupational Health and Safety Division investigation of a fatal incident. The information contained is intended for educational purposes only.

## Incident Summary

The incident occurred when a worker was repairing a gravel truck. The truck's operator had identified an issue with raising and lowering the truck's gravel box. The worker performed the repairs, fabricated a steel band and attached it horizontally across the hydraulic cylinder. When the worker attempted to lower the box, it jammed. The steel band had caused an obstruction. The worker and another employee tried to force the box down with a metal chain, but this method did not work. The next day the worker began cutting the steel band off with a torch. One quarter of the way through, the steel band broke, the hydraulic cylinder gave way and the box dropped. The gravel box's metal apron fatally injured the worker when it landed on the truck's cab.

## Background Information

### Worker 1:

The worker had a significant amount of on the job experience with repairing transport trucks, but did not possess a journeyman certificate.

## Equipment and Materials

### Gravel Box, Apron and Ladder:

The type of gravel truck the worker was servicing had a metal apron on its box. The apron prevented gravel from pouring onto the truck's cab. During transport, the apron rested on the cab's roof. The worker used a ladder to access and repair the hydraulic cylinder (Figure 1).



Figure 1

**Blocking:**

Blocking was used to prevent an incident while the truck was under repair. The wooden 2x4 and 4x4 inch blocks meant to secure the gravel box in a raised position were approximately 24 inches in length. Combined, the pieces were not strong enough to effectively support the weight of the gravel box from one side of the truck's frame to the other (Figure 2).

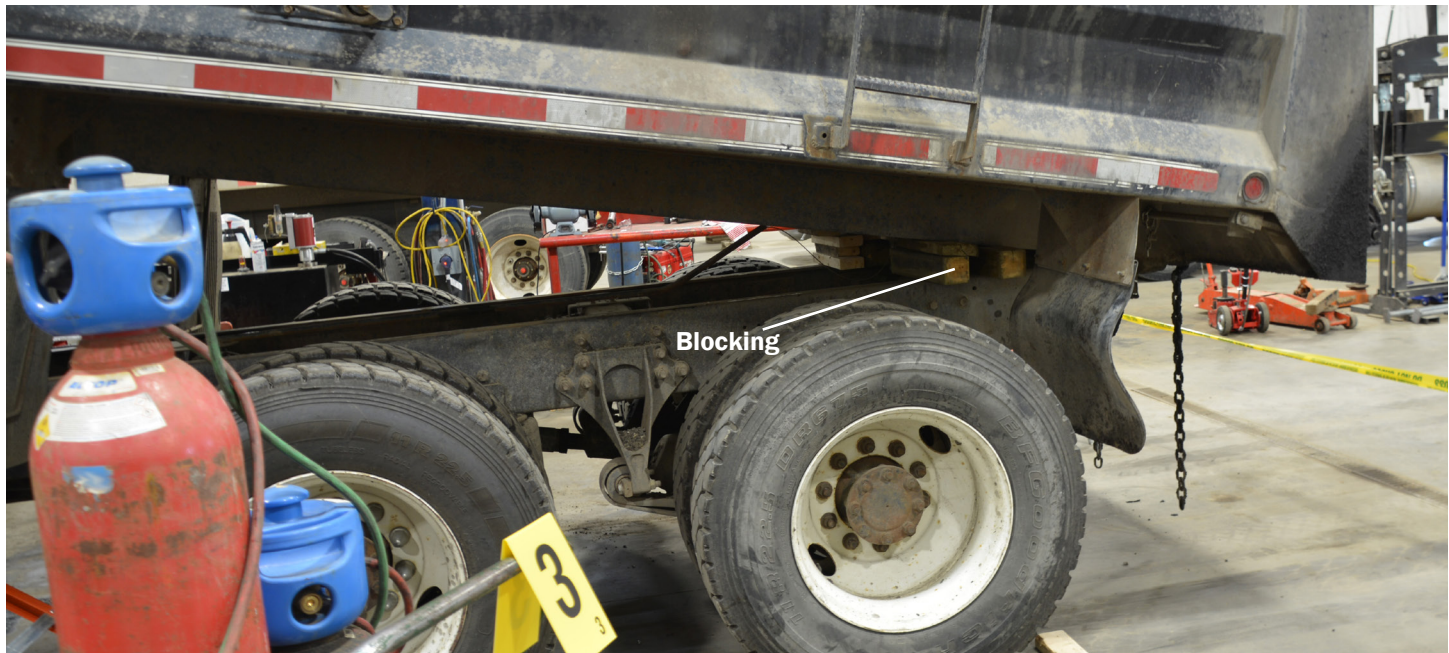


Figure 2

**Come-along Hoist:**

This portable metal chain was attached to the gravel box's upper frame in an attempt to force it downwards when it jammed and could not be lowered (Figure 3).



Figure 3

### Hydraulic Cylinder, Hydraulic Fluid Holding Tank and Gear Shift:

The gravel box was controlled through hydraulics. Oil filled the hydraulic cylinder to raise the gravel box and then drained back into the hydraulic fluid holding tank when it was lowered. The day before the incident, the worker placed the gear shift for the hydraulic cylinder in the downward position to lower the box. The oil drained out of the cylinder and back into the hydraulic fluid holding tank overnight. With no oil in the cylinder, the shop-fabricated steel band was the only thing supporting the cylinder and gravel box's weight (Figure 4).



Figure 4

### Oxy-fueled Torch:

A canister of oxy-acetylene gas fueled the torch the worker was using to remove the steel band. Oxy-fuel torches are commonly used in the automotive industry for iron and steel welding, rust and scale removal, loosening and removing corroded bolts, and cutting ferrous metals (Figure 5).



Figure 5

### Shop-fabricated Steel Band:

The 4x12 inch shop-fabricated steel band was installed to prevent the hydraulic cylinder from banging during transport. The gravel box could not be lowered because the band was holding the hydraulic cylinder on the wrong angle – it had to be removed. As the worker cut through the steel band with the torch, the weight of the cylinder and the gravel box leaning against the band made it break (Figure 6).

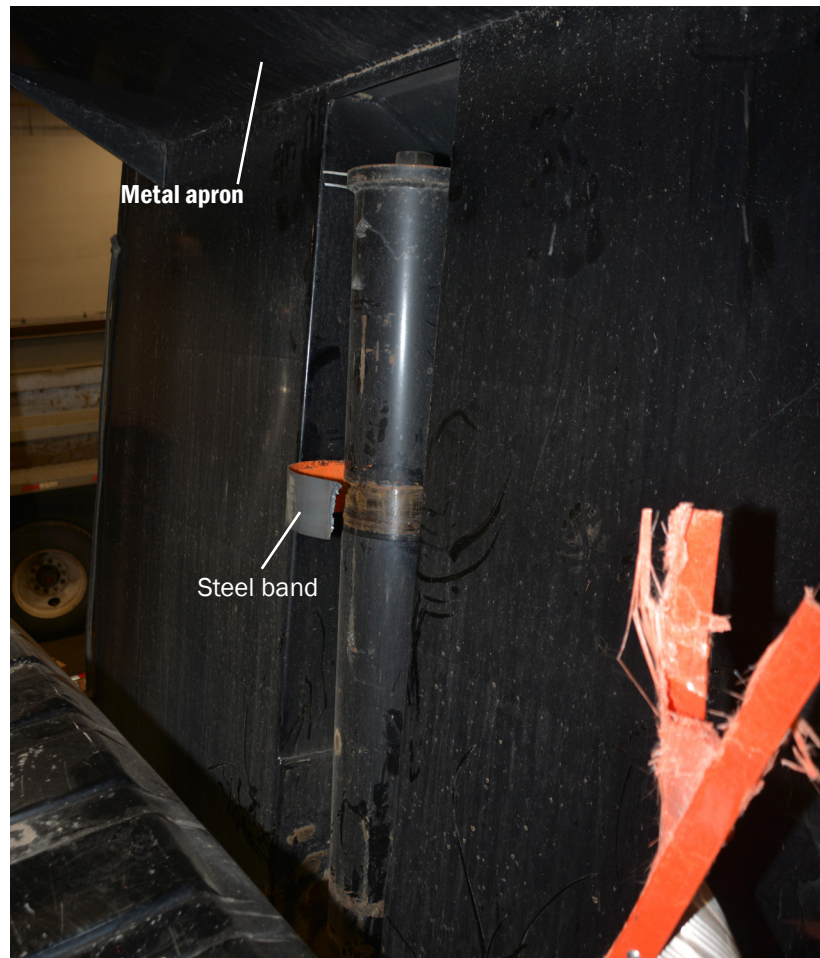


Figure 6

### Sequence of Events

A gravel truck operator brought the vehicle to the automotive repair business after hitting a garage door's frame with its gravel box partially raised. The hydraulic cylinder that controlled the lifting and lowering of the box was damaged from the collision and needed repair.

The worker used wooden blocks to secure the box in the raised position and repaired the damage. Then the worker fabricated a steel band and attached it horizontally across the front of the hydraulic cylinder to prevent it from banging during transport.

When the worker entered the cab and placed the gear shift in the downward position to lower the gravel box, the box jammed. The steel band was holding the cylinder on the wrong angle and had caused an obstruction.

The worker and another employee attached a portable metal chain to the gravel box's upper frame to force it downwards, but this method was ineffective. The steel band had to be removed. At 4:30 p.m. they re-applied the blocking and planned to resume working on it again the following day.

At approximately 8:00 a.m. the next morning, the worker used an oxy-fuel torch to continue repairs on the hydraulic cylinder located behind the truck's cab. As the worker was gradually cutting through the steel band, it broke. At that moment the cylinder straightened and the gravel box dropped in a rapid motion. The worker was fatally injured when the box's apron landed on the truck's cab.

A close examination of the events leading to the incident revealed that the steel band did not need to be installed – the truck was manufactured with a bracket and four bolts for adjusting the cylinder. The gear shift for lowering the gravel box was left in the downward position when the workers went home the previous evening. The hydraulic oil drained back into the hydraulic fluid holding tank overnight. With no oil in the hydraulic cylinder, the steel band was the only mechanism supporting the weight of the cylinder and the gravel box while in the raised position. When the steel band broke, the cylinder – that the band was holding – straightened and then fell. The wooden blocking was not strong enough to withstand the weight of the gravel box when it crashed onto its cradle.

## **Completion**

The employer pleaded guilty to subsection 164(1) of *The Occupational Health and Safety Regulations, 1996* (being an employer failed to ensure that where a worker may be required or permitted to perform maintenance, repairs or other work on or under an elevated part of a unit of powered mobile equipment, the elevated part is securely blocked to prevent accidental movement, resulting in the death of a worker). The employer was fined \$65,000 plus a victim surcharge of \$26,000.