

# Risks of High Pressure



# What is it? and how can it occur?

- ▶ High pressure systems – open and closed systems
- ▶ Common injuries
- ▶ Fluid injection can penetrate into the skin at pressures as low as 100psi





# Hydraulic Ram

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## What happened?

- ▶ Ram ruptured and high-pressure hydraulic fluid erupted.
- ▶ Hitting the worker and causing fatal injuries.

## How did it happen?

- ▶ The hydraulic ram and power pack was built by the victim's employer using a ram sourced from an excavator.
- ▶ The pressure relief mechanism on the power pack was not compatible with the ram's safe operating pressure







# Hydraulic Torque Wrench

## Why did it happen?

- ▶ The swivel manifold post screws were not adequately secured. This allowed for the sealing mechanism to fail.
- ▶ The risk of high pressure fluid injection had not been identified. There is a focus on safely using these tools, however this has been on pinch points



Figure 1: Seal which leaked



Figure 2: Torque wrench and finger that was injected

# Hydraulic Torque Wrench



## What happened?

- ▶ Seal between the swivel manifold post and the cassette failed.
- ▶ High pressure hydraulic fluid ejected and penetrating through their glove and into finger.

Example of pressure  
injection injury and  
surgery required



# What we learnt?

Minimum site requirements for the use of these tools which stipulates the following controls:

- ▶ Protective sleeve over fittings
- ▶ Hydraulic Fluid Protection Gloves - <https://www.youtube.com/watch?v=XgjzCNkVnlw>
- ▶ Double eye protection
- ▶ Kevlar apron (job specific)
- ▶ Workers to hold a card for medical personnel to be aware of the risk of hydraulic fluid injection
- ▶ Appropriate hand positioning





# High Powered water blasting OHSA example

## What happened?

- ▶ What happened?
- ▶ Operating high-powered water blasting control gun, with an approximate 9,500 p.s.i. to clean the interior of a tank.
- ▶ Accidentally sprayed his thigh
- ▶ This resulted in a severe laceration to his thigh
- ▶ Crawled from the tank, but later died from his injuries due to a massive loss of blood



## Why did it happen?

- ▶ Front barrel of the water blasting control gun, was modified from the originally manufactured length of 48 inches to a length of 28.13 inches

Thank You!

Q&A

