

# HAZARD ALERT

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## HYDRAULIC FLUID ON EARTH MOVING EQUIPMENT

### SUMMARY OF INCIDENT

SafeWork SA is investigating a fatality at an open cut mine involving a large hydraulic excavator that was engulfed in fire while in operation.

The fire was fuelled by the sudden release of hydraulic fluid at high pressure. The hydraulic fluid is used to power the equipment.



*Hydraulic hose application*

### BACKGROUND

Earthmoving equipment such as excavators, back hoes and front-end loaders use hydraulic fluid to provide power transmission or motion, most often via hydraulic hoses. These hoses are subject to constant flexing, vibration and mechanical damage.

Many hydraulic fluids are combustible and are used under high pressure. Pressurised fluid in hydraulic systems presents a considerable fire hazard,

particularly where ignition sources are present. A release of hydraulic fluid under high pressure can create an atomised spray or mist that could be readily ignited by hot surfaces, flames or electrical arcs.

### PROBABLE CAUSES

- Continuous operation at pressures exceeding hose maximum rating.
- Hoses subjected to excessive pressure surges.
- Hoses aged beyond service life.
- High fluid operating temperatures.
- High ambient temperatures.
- Incorrectly routed or supported hoses.
- Poor quality crimping of hose connectors.
- Hose internal linings exposed to non-compatible chemicals.
- Twisted hoses from poor installation.
- Hose bend below recommended minimum radius.
- Corrosion attack of hose reinforcement.
- Mechanical damage from wear and tear.
- Hose exposure to high temperature surfaces.

### ACTION REQUIRED

- Ensure all hoses are rated above the maximum operating pressure.
- Ensure all hoses are installed as per manufacturer's instruction.
- Conduct regular inspection of all hydraulic components for signs of wear, damage, corrosion, abrasion, kinking and leakage and replace as necessary.
- Replace any hose that has exceeded service life (refer to hose manufacturer specifications).
- Ensure that any potential ignition source is suitably shielded from direct hydraulic fluid spray.
- Release any stored energy in the hydraulic system prior to performing inspection or maintenance work.
- Consider the flammability of hydraulic fluid used in plant (refer Safety Data Sheet).
- Conduct a hazard ID and risk assessment on plant, considering the type of work performed, environment and remoteness of work.

- For the event of a burst hydraulic hose, or where leakage is observed, consider the procedure of immediately shutting down the plant to avoid further release of fluid and seek inspection by a competent person.
- For the event of a fire or explosion, ensure that appropriate controls and an emergency evacuation procedure are in place for the safe evacuation of plant operator and passengers.
- Ensure that the plant is fitted with an appropriate fire suppression system which is routinely inspected & tested by a competent person.

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## CONTACT DETAILS

**SafeWork SA:** GPO Box 465, ADELAIDE SA 5001

**Country offices:** Berri, Mount Gambier, Port Lincoln, Port Pirie and Whyalla

**Help Centre:** Library and Bookshop - 100 Waymouth Street, Adelaide

**Telephone:** 1300 365 255

[www.safework.sa.gov.au](http://www.safework.sa.gov.au)

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