

## Battery explosion – worker injured

This Alert warns anyone jumpstarting plant batteries for plant such as excavators, tractors and trucks.

June 2009

### Summary

This Alert highlights the hazards and risks associated with jumpstarting batteries. This follows a recent incident in which an employee was injured when a battery exploded while jumpstarting a battery system on an excavator.

The employee sustained serious injuries to the head, neck and eyes due to acid from the battery and a piece from the battery casing penetrating his eye.

### Background

An employee was using leads to connect one 24-volt battery system (consisting of two 12-volt batteries connected in series) to another 24-volt battery system.

He was attempting to jumpstart one excavator from another that was running at the time.

It appears that the leads to the excavator that needed to be jumpstarted were connected across only one 12-volt battery.

### Recommendations

The hazards and risks associated with jumpstarting and charging batteries should be identified.

Controls (a safe work method system, SWMS) should be developed to deal with the identified hazards and risks.

Risk control procedures should be established and followed when dealing with jumpstarting batteries. This should include:

- avoid jumpstarting or boosting batteries
- where possible remove the battery and charge it with a battery charger, or replace it with a healthy battery of the same size.

Batteries can generate and release hydrogen gas which is flammable. Therefore you should:

- ensure there are no naked flames or any materials that may create electrical sparks near the battery
- prohibit smoking
- ensure employees wear protective face and eye protection
- ensure risk control and safety procedures are followed.

If there is no alternative to jumpstarting, take the following precautions:

- read the manufacturer's recommendations and follow all safety procedures
- wear a face shield

- ensure the plant where the battery is located is out of gear, the park break is on, and always attempt to start from the operator seat
  - always use the same voltage booster battery
  - be extremely careful of series connected systems –
    - 2 x 6 volt batteries connected in series = 12 volts
    - 2 x 12 volt batteries connected in series = 24 volts
  - ensure leads have adequate current-carrying capacity (the bigger the battery, the heavier the jumper leads)
  - double-check the polarity connection, always:
    - positive (+) (**red**) to positive
    - negative (-) (**black**) to negative
  - ensure a firm and clean connection to all terminals
  - on a negative earth system, always connect the negative (-) (**black**) connection first
  - always connect the jumper leads to the dead battery first.
- There should be a SWMS; and employees should be trained in the safe operation, maintenance and charging of mobile plant, and in the correct procedures for jumpstarting batteries.



### Contact details

Call us on: 1800 136 089

Email us at: [info@worksafe.vic.gov.au](mailto:info@worksafe.vic.gov.au)

For more information on occupational health and safety, go to WorkSafe's website: [worksafe.vic.gov.au](http://worksafe.vic.gov.au)

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