# Failure to isolate results in electrical burns

## WHAT HAPPENED

A contractor was called to a site after a fault was reported with a hired generator. Whilst tightening the bolts on the lift pump using a socket wrench the contractors' ring came into contact with the exposed positive terminal of the starter motor. Despite wearing latex gloves, the ring became instantly heated causing the contractor to sustain a burn to the finger.

On examination it was found that a number of terminals of the starter motor were exposed due to poorly fitting rubber insulating covers. The contractor had commenced work on the generator without isolating or disconnecting the battery. This was not in accordance with the contractors risk assessment and method statements, or the guidance provided on the door of the container housing the generator. In a statement given by the contractor, he stated that he "...didn't feel that there would be any danger from a 12 Volt battery".

The calculation below shows the current would have been circa 120 amps even though it was only using a 12 volt battery. If contact had been maintained for 1 to 2 seconds, a gold ring would

have heated to temperatures of around 700°C

This calculation is based on the likely resistance of the whole electric circuit being around 0.1 ohm (the sum of the very low resistance of the ring, and the internal resistance of the battery, plus the resistance of the contact points).

Using Ohm's Law ;

I = V/R = 12 volts/0. 1 ohm = 120 amps





## LEARNING POINTS / ACTIONS TAKEN

• Are Contractors registered on the MPA National Contractor Database?
• Have they completed the industry Contractor Safety Passport?
• Ensure Contractors coming onto your site are competent to do the work they have been employed to do;
• Contractors must receive a site induction;
• Risk assessment and Method statements should be reviewed with contractors prior to commencing work;

work;
• Risk assessments and Method statements should be fit for purpose, specific to the work planned and understood by those undertaking the task;
• Contractors should not be left to their own devices once on site. Regular supervision visits are required to ensure they are following their own safe systems of work and site rules.
• Once work is completed ensure any plant is handed back in a safe condition and obtain feedback along with discussion on any improvements to Health and Safety, required for future work.
• When carrying out any electrical work isolate and test before you touch!
• Remove; metal bracelets, watches and rings and wear appropriate hand protection when handling batteries.



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| **LOCATION:** | **COMPANY-WIDE** | **ALERT STATUS:** | **Normal** |
| **ACTIVITY:** | **MAINTENANCE & HOUSEKEEPING** | **DATE ISSUED:** | **01/10/2015 21:30:38** |
| **SUB ACTIVITY:** | **N/A** | **INCIDENT No:** | **01419** |