Safety Alert 15
Broken Arm while using Drill Press

What happened?

An offshore employee was using a drill press to drill holes into steel plate and was in the process of changing out a drill bit. While the operator was loosening the chuck with a chuck key, his foot inadvertently made contact with the foot operated pedal which started the machine. The chuck key caught the operator's glove as it rotated and pulled the operator's wrist and forearm around the chuck spindle. A co-worker in the workshop stopped the machine by depressing the drill's emergency stop button. The operator sustained an open fracture forearm injury.

What went wrong:

The drill press was configured with a mushroom type emergency stop, as well as a foot operated switch which was configured to act as a stop/start switch (press pedal to start and release pedal to stop).

- While the operator was using the chuck key to loosen the drill bit, his foot made momentary contact with the foot switch and the machine started.
- As the operators arm was pulled into the machine, the operator was unable to react in time to activate the mushroom type emergency stop button.
- The replacement drill bit was being changed, without effectively electrically isolating the drill press.
- The drill press was not fitted with any electrical interlocking system, to prevent single point inadvertent operation.
- The drill press did not have any directions for operation or warning signs posted to it.

Key lessons:

- An effective means to electrically isolate the drill press should be implemented before making any maintenance or routine adjustments (such as drill bit changes, securing work, or changing pulleys for drill speed adjustments).
- Inadvertent starting of the machine should be designed out of the system (in this case by configuring the foot switch as a 'dead-man switch', interlocked with a start push button).
- The machine should be fitted with an effective clearly marked emergency stop system.
- Operating instructions and warning signs should be posted on the machine.

Recommendations:

The following recommendations are applicable to all workshop electrical machines.

- The machines operation and emergency stopping should be reviewed to ensure safe operation in both routine and emergency conditions.
- The review should consider any workshop situations where an operator can be working alone, verifying the effectiveness of the emergency stop arrangement.

References:

- AS 60204.1 – 2005 (incorporating Amendment No. 1)
  Safety of machinery – Electrical equipment machines

- AS/NZS 3947:2000
  Low-voltage switchgear and controlgear

- ISO 13850:2006
  Safety of machinery – Emergency stop – Principles of design

Contact for further information:

For further information email alerts@nopsa.gov.au and quote Alert 15.