



Source: WorkSafe Vic

Worker suffers serious crush injuries in concrete pump hopper

A concrete pump operator has sustained serious injuries when his arm was caught in moving parts within the receiving hopper of a concrete pump. Early investigations indicate the worker was in the process of cleaning inside the concrete pump hopper when a moving component activated and seriously injured his arm.

Preventing a similar incident:

Cleaning out concrete pumping equipment including the hopper can be a highly hazardous operation. Entanglement, crushing and amputation hazards exist in a concrete hopper and pumping device of the concrete pump. Workers who stand in or place parts of their body in hoppers are at risk of serious injury and should avoid placing any part of their body within the hopper.

A risk assessment should be performed and documented so that adequate controls are implemented to control the risks associated with cleaning the hopper. This should be discussed by both the PCBU and the concrete pump operator. Safe work procedures and control measures are to be communicated to the workers involved before the commencement of work.

The PCBU (Person Controlling a Business or Undertaking), including the concrete pump manufacturer, should also apply adequate engineering controls to minimise risk. This includes a grate on the hopper to prevent a person from making contact with agitator mechanisms, valve gears ("S - tube" or "rock valve") and other dangerous moving parts inside the hopper.

Hopper grate design:

- Hopper grates designed for opening are to be fitted with an interlock system that de-activates both the paddles and the valve gear. This system is to ensure that there is no energy in the system that can cause movement of the agitator mechanism or valve gear after the interlock switch is activated (i.e. any remaining pressure in the accumulator is dumped when the grate is opened).
- The grate should be constructed of parallel bars which are spaced so that it is not possible for a person's hand to become trapped (this spacing should not exceed 75mm).
- The distance from the top of the grate to any moving parts should be at least 100mm.

Considerations to minimise risk when cleaning concrete pumping equipment include:

- Immobilising the equipment and exhausting any residual hydraulic or air pressure when cleaning or dislodging materials in the hopper. This is to prevent the hopper elements from moving or rotating even after the engine had been stopped.
- An emergency stop button should be accessible by the concrete pump operator and the concrete delivery truck driver.
- Workers should receive adequate instruction, training and where required supervision in cleaning concrete hoppers.
- Cleaning when there is another person in the immediate vicinity to provide assistance if required

Prosecutions and compliance

In 2015, a company was fined \$2000 after a worker received a severe laceration and muscle damage while using a pebblecrete pump in the construction of a swimming pool. Two workers were cleaning inside the hopper with the metal grate that covered the hopper raised. During the cleaning process one worker stepped away while the other continued cleaning. During the cleaning process this worker has reactivated the agitator in the hopper, but had not realised that the other who had stepped away had returned and was cleaning inside the hopper at the time. There was no appropriate guarding to the area of the plant where access was necessary during cleaning.

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