MICHIGAN

MICHIGAN STATE UNIVERSITY: Prevention of work-related injuries & illnesses through research & investigation

WORK-RELATED AMPUTATIONS AND DEATHS DUE TO POWER PRESSES IN MICHIGAN

Mechanical, hydraulic and other types of presses are a leading cause of work-related amputations in Michigan. On the average, each year, 52 Michigan workers have part of their hand amputated while using some type of press. They also have caused two deaths. Workers are about twice as likely to sustain losses to multiple fingers when injured by a press as compared to all other mechanisms. In 20% of the incidents, workers lose more than the distal phalanx. Males sustain more than four times as many amputations as females. For both sexes, amputation rates are highest among workers in their 20's. Most (82%) amputations occur within the manufacturing industry; one quarter of manufacturing incidents occur within Fabricated Metal Product Manufacturing

EXAMPLES OF MICHIGAN WORK-RELATED AMPUTATIONS AND DEATHS CAUSED BY POWER PRESSES:

- A mechanical press engaged while a 19-year-old male was using both hands to unjam the machine. He sustained amputations of index, middle, ring, and little fingers at the proximal phalanges of the right hand and crush injuries to the same fingers on the left hand.
- A 21-year-old female had her left hand crushed in a press. Her index, middle, and ring fingers were unsalvageable and each finger was surgically amputated at the proximal interphalangeal joint.
- A co-worker of a 27-year-old male activated a mechanical press while the latter was removing scrap from the machine. He sustained a complete amputation through the middle phalanx of the ring and middle fingers.
- A 46-year-old female was working with a hydraulic press when it possibly malfunctioned and her right hand was caught. She sustained amputations through the middle phalanx of the index, middle, ring, and little fingers. She was initially unable to remove her hand, but eventually was able to "after the fingers broke off."
- A 30-year-old male was injured by a press that delivered 1.9 tons onto his left hand. There were crushing injuries to the entire length of his index, middle, and ring fingers, which were surgically amputated.
- A 44-year-old male machine operator was killed when his head was crushed in a cycling press. The victim was setting up for the next job run. The machine had been locked out for job setup, and then unlocked in preparation to running the job. The press had light curtains and sensor touch to keep hands out of the machine, but the safety devices were not activated.
- A 26-year-old male machine operator was crushed and killed in a bench draw machine. The decedent, who had been operating the bench draw machine for approximately three weeks, did not lock out the control panel. The buttons on the control panel were not labeled. The wrong button on the control panel was pressed and the carriage returned to the rest position at full speed crushing the decedent's head.

PREVENTING AMPUTATIONS DUE TO POWER PRESSES IN THE WORKPLACE:

- Establish a press maintenance and inspection program to ensure that, among other things, the clutch and brake mechanism, mechanical linkages and air counterbalances are operating and used properly, that the machine is operating at its proper speed (RPM or SPM), and point of operation safety devices (e.g. barrier guards or gates, presence-sensing devices, and pullout and restraint devices) are adjusted properly and are operational.
- Develop, implement and train workers in power press controls, safety guards and devices and safe work practices.
- Never operate a press not equipped with adequate, point-of-operation safety guards or safety devices. Do Not bypass guards and other safety devices.
- Always disable and isolate energy sources and implement lockout procedures before service, maintenance and repair. Don't attempt to adjust or repair a press without permission of your supervisor.
- When using hand tools, ensure hands are kept away from the point of operation. REMEMBER: Hand tools must be used with other guards and safeguarding devices.

DID YOU KNOW?

- Power presses are generally defined in "size" by the force that they can generate – from under 5 to over a 300 ton capacity.
- Power presses are inherently noisy - noise levels can be as high as 95~115dB(A). Machines with worn out parts also contribute to the high noise level - and can cause hearing loss. Wear hearing protection when using a power press.
- Injury statistics compiled by OSHA indicated that 49% of the injuries from mechanical power presses resulted in an amputation.

RESOURCES

MIOSHA General Industry Safety Standards [Hydraulic (Part 23) and Mechanical (Part 24)] Power Presses:
http://www.michigan.gov/lara/0,4601,7-154-11407_15368-39941--,00.html

MIOSHA General Industry Machine Guarding Publications:
http://www.michigan.gov/lara/0,4601,7-154-11407_30453-93831--,00.html#machgd

OSHA: Machine Guarding e-tool – Presses
https://www.osha.gov/SLTC/etools/machineguarding/presses.html

Technical Advisory: Safe Use of Power Presses and Press Brakes:
https://www.wshc.sg/files/wshc/upload/cms/file/TA_for_Safe_Use_of_Power_Presses_and_Press_Brakes.pdf