

Case 202. 57-year-old machinist who worked for a paper mill equipment service contractor was killed when he was struck by a paper roller end cap propelled by compressed air.

A 57-year-old male machinist who worked for a paper mill equipment service contractor was killed when he was struck by a paper roller end cap propelled by compressed air. The decedent and two coworkers were attempting to remove an end cap from a paper mill press roll to determine why the steam condensate was not exiting the hollow roll while it was in use. The 118-inch long (without ends) by 24-inch diameter roll was supported by metal saw horses. The 23-inch diameter end cap, which weighed 300-500 pounds, was supported by a sling and a 10-ton overhead crane. The end cap had a center portion that was 19 inches wide by 4 inches thick that recessed into the roll and was 4-6 thousandths of an inch larger than the interior of the roll. A flange around the outside of the end cap was approximately 2 inches wide and 2 inches thick. The end cap flange was connected to the roll by 18 retaining bolts, 3 inches long and 3/4 inches in diameter. There were 6 additional threaded holes in the flange. Bolts, called pusher bolts, were threaded into these holes and when tightened, pushed against the roll (not into it) causing the end cap to be forced away from the roll. Two days prior to the incident, the 18 retaining bolts had been removed from the end cap and roll. Because of a coating on the roll, the work crew did not heat the roll to aid in disassembly. Several attempts to remove the end cap with the 6 pusher bolts had failed. To facilitate the end cap removal, the crew attached an air valve on the cap and a gate valve and pressure gauge and applied 50 psig to the inside of the roll to help push the end cap away from the roll. The crew also used penetrating oil on the outside and tapped on the cap to help move it the 4 inches necessary to remove it from the roll. The air pressure, penetrating oil and tapping on the cap moved the cap 1/2-3/4 inches of the necessary 4 inches. The crew left for the weekend and the roll remained under 50 psig for two days. Upon arriving on the incident day, the pusher bolts that had been left in the end cap had bent and mushroomed. One of the employees made new pusher bolts. As the crew began to tighten the pusher bolts against the roll, the end cap unexpectedly released and propelled out of the roll, causing it to swing on the sling and strike the decedent in the chest. His two coworkers were injured by shrapnel during the incident and were treated at the hospital and released. The decedent was declared dead at the scene.

At the conclusion of its investigation, MIOISHA General Industry Safety and Health Division issued the following Serious citation:

SERIOUS:

MICHIGAN OCCUPATIONAL SAFETY AND HEALTH ACT, ACT 154, P.A. 1974, AS AMENDED, SECTION 11(a).

The employer did not furnish to each employee, employment and a place of employment, which was free from recognized hazards that were causing or were likely to cause death or serious physical harm to the employee: "in that the employer did not develop and utilize procedures to restrain roll end caps during disassembly under pneumatic or other forms of pressure".

Among other methods, one feasible and acceptable abatement method to correct this hazard is to develop and implement procedures to restrain roll end caps during disassembly under pneumatic or other forms of pressure.