

Severe Finger Laceration during Machine Shop Operations

Lesson ID: 2015-ANL-026

Originator: Argonne National Laboratory

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Statement: Serious injury can occur to experienced, skilled employees. The lack of recognition of sufficient guarding either through incomplete review and analysis of all operating configurations of a machine and an acceptance of unguarded hazards because of high skill levels, past practices, perceived time pressures, cumbersome incomplete guards, all combining to create a complacency with regards to complete guarding may result in a serious incident. Complete guarding is necessary to protect all employees against any moment of distraction.

Discussion: On August 13, 2015, a 911 call was initiated by a Facilities Management and Services (FMS) Central Shops (CS) employee to report an injured co-worker with a cut hand. Upon initial treatment, the first responders reported that a senior repair machinist had sustained a near amputation of the left index finger. The employee was transported to a nearby hospital emergency room for further evaluation and treatment. The injury resulted in a bone fracture and digit nerve damage requiring surgical repair.

On August 19, the injured employee described the incident as follows: A broken scale bracket/limit switch on a mill located in the Building 401 Central Shops satellite shop needed to be repaired. Upon returning to the Central Shop at Building 363B, just prior to midday on the day of the incident, the repair machinist obtained a piece of three-inch heavy-walled steel pipe to cut the needed repair piece. The pipe was placed on the material table, which extended forward from the cutting area on the saw. The saw, a horizontal metal-cutting band saw, was started by the repair machinist as it was thought not to have run in several days. The repair machinist visually noted the blade was 'jumpy' and heard an unusual sound from the chip auger to the right of the table and point of cutting operation. As the repair machinist leaned over the table to the right, the left hand slipped forward into the blade. The top of the left index finger between the hand and the knuckle at the middle of the finger contacted the moving blade.

Analysis: Causal analysis identified the following factors:

- 1) Inadequate guarding condition was not previously identified- An inspection conducted in 2013 noted guarding deficiencies on Saw 2 but recommendations only addressed the deficiency on the right side of the cutting point of operation.

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The Central Shops Safety Inspection Tours conducted each month completed an inspection of the 363B area the morning of the incident but did not note any guarding deficiencies on the Saw 2. Focused guarding inspections, including all configurations of machine operation, were not completed on an annual basis.

2) Corrective action for previously identified problem or event was not adequate to prevent recurrence- A handwritten note on a small piece of paper that identified hydraulic and chip brush issues with the saw was provided to the foreman for repair by the normal operator prior to leaving for vacation but it did not identify any guarding deficiencies. Previous inspections conducted by non-Central Shops personnel noted guarding deficiencies with the saw, but even if corrected at some point in the past, were not in place when the incident occurred.

3) The saw was operating with the blade rotating while the senior repair machinist leaned to check an unusual sound- When a sound was heard across the table and to the right of the cutting point of operation, the repair machinist leaned over to the right and the left hand moved forward and under the moving saw blade to the left of the guide arm, beyond the short length guard attached to the guide arm. The left index finger contacted the unguarded blade.

Recommended Actions: The following actions were identified:

1) Conduct a material saw guarding evaluation of all saws within Central Shops before returning any saw to service following the stand down. Utilize machine guarding SMEs to conduct the evaluation.

2) Create a visual record of each Central Shops saw that documents the correct and complete installation of all required guards.

3) Provide written analysis of each operators qualifications as specified in PROC-78, Machine Guarding and Operation, to assure consistency and compliance with PROC-9, Central Shops Work Planning and Control.

References: SC--ASO-ANLE-ANLEFMS-2015-0008, NTS--ASO-ANLE-ANLEFMS-2015-0003, ITS-57532

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