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From: Meredith Brown <racer@lanl.gov>

Subject: Yellow Alert: Mechanical Jack Replaced with Stationary Tool

Title: Mechanical Jack Replaced with Stationary Tool

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LESSONS LEARNED: Jobs utilizing tools with moving parts that present safety hazards should be evaluated to determine if stationary tools can be substituted to minimize hazards without impairing workers ability to perform the job.

DISCUSSION: A subcontractor operating a Handyman bumper jack to lift the end of a water tank so water could be pumped out of the tank was struck on the chin by the jack handle when his right hand slipped as he pushed down on the handle. The subcontractor's chin was cut and he required 23 stitches to close the wound. The subcontractor was given first aid at the job site, and then he was transported to a local hospital for treatment. After treatment, he was released to return to work with heavy lifting restrictions for the remainder of the day.

The 10 x 4 x 2.5 foot tank is used to hold barrels of bore hole rock sediment cuttings from drilling operations. The 55-gallon barrels are set inside the tank, filled with drill cuttings, and then lifted with a boom truck and dumped in a cuttings collection area. Water and fine sediment from the barrels accumulates in the tank, which must be drained periodically. The tank, which weighs approximately 400 pounds empty, contained approximately three inches of water and five inches of sediment at the time of the accident. The Handyman bumper jack was rated at 7,000 pounds maximum capacity. Site personnel estimate that the tank and contents were well within the jack's rated capacity.

The Handyman bumper jack had been used for this type of work for years, and most of the subcontractor personnel at the site were aware of the dangers of positioning their body in the line of travel of the jack and handle. Bumper jack safety precautions were informally conveyed through on-the-job-mentoring. The jack was also labeled with operating instructions and precautions, including a warning to always keep a firm grip on the handle.

The subcontractor organization and Laboratory safety personnel subsequently evaluated the engineering controls and work practices associated with the tank pumping operation and determined that the jack could be eliminated if a metal wedge was shimmed under the tank. The metal wedge was inspected after installation to determine if any new safety precautions were necessary, and additional safety benefits were identified.

Before the wedge was installed, two workers were required to move the tank on a roller conveyor to switch between sample barrels. A second roller conveyor section was used to move the tank laterally. The second section presented a trip, slip, and fall hazard as employees moved on and around it. Because of the lower rolling resistance of the wedge rails, the tank was much easier to move and the movement can now be accomplished by a single worker using one roller conveyor section. This ergonomic improvement will help prevent strains as well as slips and falls.

Safety personnel subsequently inspected the entire site and evaluated other tasks that use the bumper jack to determine if additional controls were necessary or if alternative equipment could

be used. The Handyman bumper jacks were then taken out of service except for tasks the jack is specifically designed to perform such as jacking up vehicles, and then the bumper jacks will only be used when the supplied jack does not have enough lift to change a tire.

To ensure that all site personnel are aware of the potential hazards associated with operating the jacks, a knowledgeable employee presented a safety briefing on mechanical jack devices.

ORIGINATOR: Los Alamos National Laboratory

CONTACT: Robert Baran, Health and Safety Representative, 505-667-2943

AUTHORIZED DERIVATIVE CLASSIFIER: Meredith Brown, 505-667-0604

REVIEWING OFFICIAL: Meredith Brown, 505-667-0604

DOE FUNCTIONAL CATEGORY: Human Factors

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REFERENCES: N/A

FOLLOW-UP ACTIONS: Information in this report is accurate to the best of our knowledge. As a means of measuring the effectiveness of this report, please contact the originator of significant action(s) taken as a result of this report or of any technical inaccuracies you find. Your feedback is appreciated.