

Fatality Investigation Report

OR 2005-43-1

Mill worker killed by flying chunk of wood from chipper

SUMMARY

On December 16, 2005, a 52-year-old mill worker at a wood-processing mill was killed when he was struck in the head by a flying chunk of wood ejected from a wood chipper. The mill worker was working to unplug a jam in a wood chipper while the machine was still running. An electrical switch installed on the chipper bypassed the manufacturer's safety interlock mechanism, and allowed the



An electric switch was installed on the wood chipper in this incident to allow the hood to open without shutting down the machine, bypassing the manufacturer's safety shutdown mechanism.

machine to continue operating when the hood was open. The mill worker stood on a catwalk next to the feed chute with the hood open, trying to clear the jam with a stick, which was ground up without effect. He then threw in a large chunk of wood. A coworker joined him on the catwalk and handed him a picaroon (a metal pike with a hook) to maneuver the chunk of wood inside the chute. Once they heard the wood start to grind, they ran and ducked. This was their routine procedure when clearing a jam. The mill worker was struck on the back of the head, apparently by the chunk of wood he had thrown into the chute, and was killed instantly.

CAUSE OF DEATH: Blunt Head Trauma

RECOMMENDATIONS

- **Never attempt to remove jammed material from a wood chipper while machinery is in operation. Shut down, isolate, and block all forms of hazardous energy before performing any machine maintenance.**
- **Never disable the manufacturer's safety interlocks or other safety features on a machine.**
- **Employers must train all workers assigned to operate or maintain machinery on appropriate energy-control procedures for that specific piece of equipment.**

INTRODUCTION

On December 16, 2005, a 52 year-old mill worker at a wood-processing mill was killed when he was struck in the head by a flying piece of wood while clearing a jam in a wood chipper. OR-FACE was notified of the incident the same day. Interviews and an onsite visit by an OR-FACE investigator were declined by the employer. This report is based on information from Oregon OSHA, Medical Examiner, and news reports.

The employer operated plywood and lumber mills, wood-products and paper manufacturing plants, and building-material distribution centers in the United States and other countries. The employer had 22 facilities worldwide, with approximately 10,000 workers. Eleven facilities were operated in Oregon, with 2,500 workers.

The small wood-processing mill employed 12-15 workers, chipping whole logs and wood debris into fuel for boilers at one of the company's paper mills. Two chipping machines were used: a whole-log chipper, and a portable Falcon chipper for grinding smaller pieces of wood and debris. The Falcon chipper, commonly called a "hog" in reference to the type of hammers in the chipper mechanism, was the machine involved in this incident.

According to the Oregon OSHA report, the safety program at the site included requirements for personal protective equipment, job safety analyses, and lockout/tagout procedures for all machinery. The mill had a generic lockout/tagout guide for the Falcon chipper, located in a binder at the machine, but the guide was incomplete and not followed. The manufacturer's safety interlock for the protective hood over the hog had been bypassed with an electric switch to allow the hood to be raised to clear jams while the chipper was still running. Clearing jams with the chipper running saved time and was routine. Mill workers were reportedly trained and instructed to use the bypass button and not shut down the chipper while clearing wood jams. Oregon OSHA reported that managers and supervisors "had assisted workers attempting to unplug the hog infeed without the protective hood in place while the hog was running."

The mill worker was experienced, but his specific work history is unknown. Twelve workers were onsite at the time of the incident. A coworker was a direct participant in the incident.

INVESTIGATION

On the day of the incident, the mill worker was assigned to operate a loader that fed material onto a conveyor for the chipper. No one worker was assigned to the hog and any worker might intervene to unplug a jam. About 12:50 p.m., the mill worker noticed the hog intake was backed up, indicating a jam. He went to the chipper, engaged the electrical bypass button to raise the



Looking down the throat of the hog inside the infeed chute of the wood chipper shows the hammers that pulverize wood into boiler fuel.

hood without shutting down the machine, and climbed up to the catwalk alongside the infeed chute. He then raised the hood to access the hog, and began poking with a stick to try to loosen the jammed wood. The stick got ground up, but did not loosen the jam.

A coworker witnessed the mill worker's lack of success with the stick, and climbed to the catwalk alongside to hand him a picaroon (a metal pike with a hook), so he could maneuver a large chunk of wood he had thrown into the chute to help break the jam. When they heard the wood start to grind, they quickly moved 6-7 feet down the catwalk and ducked as usual. The coworker heard a thud and felt the mill worker brush past him. The victim was hit in the back of the head, apparently by the 12½-pound chunk of wood, about 18 inches long and 7 inches in diameter, which he had thrown into the hog.



The 18-inch chunk of wood that struck the victim was only slightly shaved by the hog before it was forcefully ejected beyond the open hood of the bin.

Emergency responders found the victim dead at the scene. The medical examiner reported that the victim had a blood alcohol content of .06, a level that could have contributed to impaired judgment or coordination. The primary hazard in this incident, however, involved a routine practice to unjam the wood chipper while it was running, putting all workers at risk.

RECOMMENDATIONS/DISCUSSION

Recommendation #1. Never attempt to remove jammed material from a wood chipper while machinery is in operation. Shut down, isolate, and block all forms of hazardous energy before performing any machine maintenance.

This incident emphasizes the danger of attempting to clear a jam in a wood chipper without first shutting down the machine. All maintenance related to the point of operation of a machine, including clearing jammed material, should be performed only after shutting down the machine completely and blocking all forms of hazardous energy.

Recommendation #2. Never disable the manufacturer's safety interlocks or other safety features on a machine.

This incident emphasizes the danger of disabling a manufacturer's safety features on a machine. Clearing a jam on a wood chipper with the machine running may save time, but employers must not compromise worker safety by installing bypass switches, or training or allowing workers to violate safe operating procedures. In this case, the manufacturer's safety interlock mechanism on the hood of the wood chipper followed legal requirements to protect workers from flying objects. A wood chipper and similar grinding machines must be shut down completely before opening the hood to the infeed chute.

Recommendation #3. Employers must train all workers assigned to operate or maintain machinery on appropriate energy-control procedures for that specific piece of equipment.

Employers must understand applicable regulations related to worker safety and train workers to follow safe operating procedures specific to each piece of machinery or equipment, including hazardous-energy training, lockout/tagout procedures, and the manufacturer operating instructions. Employers should ensure that workers operate machinery according to the manufacturer's operating instructions.

An employer should maintain written records related to hazardous-energy program training to assure adequate and accurate training over time. A written record is useful for tracking compliance by both supervisors and workers. Employee retraining should be conducted whenever there is reason to believe an employee has inadequate knowledge or deviates from the use of safe work procedures.

REFERENCES

Center for Research on Occupational and Environmental Toxicology. CROETweb.

Lockout/Tagout: www.croetweb.com/links.cfm?subtopicID=250

Machine guarding: www.croetweb.com/links.cfm?subtopicID=251

National Institute for Occupational Safety and Health. (1999). *Preventing worker deaths from uncontrolled release of electrical, mechanical, and other types of hazardous energy*. Available online: www.cdc.gov/niosh/99-110.html

Occupational Safety and Health Administration. (2005). *Control of hazardous energy (lockout/tagout)*. Online resource: www.osha.gov/SLTC/controlhazardousenergy/index.html

Oregon OSHA. *Machine safeguarding at the point of operation* (2006). [Pub 440-2980]. Available online: www.cbs.state.or.us/external/osha/pdf/pubs/2980.pdf

Oregon OSHA. (2005). *Hazardous energy: OR-OSHA's guide to controlling hazardous energy*. Available online: www.orosha.org/pdf/pubs/3326.pdf

Oregon OSHA. (2005). *Safety committees for the real world*. Available online: www.cbs.state.or.us/external/osha/pdf/pubs/2341.pdf

FOR MORE INFORMATION

OR-FACE/CROET L606
Oregon Health & Science University
3181 SW Sam Jackson Park Rd
Portland OR 97239-3098

Phone 503-494-2281
Email: orface@ohsu.edu
Website: www.ohsu.edu/croet/face/

Oregon Fatality Assessment and Control Evaluation (OR-FACE) is administered at the Center for Research on Occupational and Environmental Toxicology (CROET) at Oregon Health & Science University (OHSU). OR-FACE is supported by a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (U60/OH008472), through the Oregon Worker Illness and Injury Prevention Program (OWIIPP), Oregon Public Health Division.

OR-FACE reports are for information, research, or occupational injury control only. Safety and health practices may have changed since the investigation was conducted and the report was completed. Persons needing regulatory compliance information should consult the appropriate regulatory agency.