

TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Truck Driver Dies when a Load of Lumber Falls Over and Crushes Him in California

SUMMARY

California FACE Report #95CA019

A 47-year-old male truck driver (the victim) died when a load of lumber he was delivering fell over and crushed him. The victim had delivered the lumber to a residential neighborhood where a large family home was being built. The contractor at the jobsite stated that the victim had rolled the lumber (plywood) off the back of the truck, and that the wood had landed vertically on the pavement. The load contained 174 sheets of plywood and weighed 10,022 pounds. The victim got out of the truck and spoke briefly with the contractor before returning to the area where the plywood was located. The contractor last saw the victim crouching beside the lumber which was leaning at approximately a 60 degree angle. He thought the victim may have been placing a couple of two-by-fours (stickers) under the stacks of plywood just before the stack of plywood fell on top of him. The contractor heard a loud crash and felt the vibration when the plywood hit the ground. He discovered the victim beneath the stack of plywood and called out for help from some of his workers. The workers came over to assist the victim using a car jack and two 4" by 8" inch pieces of lumber to lift the plywood from the victim. Paramedics were summoned to the scene and the victim was pronounced dead at the scene. The FACE investigator concluded that, in order to prevent similar future occurrences, employers should:

- consider equipping their trucks with forklifts or bed-mounted cranes so that heavy loads of lumber can be safely unloaded.
- provide formal safety training for truck drivers and educate them about the potential hazards of their jobs, in particular, those associated with unstable loads.
- consider purchasing trucks that allow a load of lumber to be unloaded at a delivery site in a controlled manner.

INTRODUCTION

On November 22, 1995, a 47-year-old male truck driver died after the load of plywood he was delivering fell over and crushed him. The CA/FACE investigator was informed of this incident by the California Division of Occupational Safety and Health (CAL/OSHA) Bureau of Investigations (BOI) office on December 5, 1995. A site investigation was conducted by the CA/FACE investigator on December 12, 1995. The contractor was interviewed and photographs of the incident site were taken. Two subsequent interviews were conducted on January 4th and

January 11th, 1996 with the victim's employer. During the latter of these two interviews the victim's employer and co-workers (truck drivers) gave a demonstration on how a lumber drop (rolling loads) was done. Photographs of this demonstration were taken by the CA/FACE investigator.

The employer in this incident was a lumber yard company. The company owned 14 retail lumber yards, four wholesale distribution centers and a custom mill facility. There were 36 employees who worked at the same lumber yard as the victim. The victim had worked for his employer for approximately six and a half years. There were three other truck drivers working for the company at the time of the incident. One of these drivers, however, only drove smaller trucks. A safety officer was on staff and he devoted approximately 50%-75% of his time to safety issues. Monthly safety meetings were conducted with the truck drivers and load builders. New drivers were required to drive with an experienced driver for two weeks prior to going out on their own. The truck drivers received much of their training on the job. Older more experienced drivers would instruct them on how to avoid hazards such as rebar and rocks and how to be generally aware of their surroundings. A yard superintendent went with the drivers approximately once a year and did an evaluation from a checklist detailing each driver's performance. Since this incident, documentation has been developed by the employer which describes how lumber is to be rolled off of a truck in a proper and safe manner.

INVESTIGATION

On the day of the incident, at approximately 2:15 p.m. the victim delivered a load of lumber to a residential construction site. The delivery was being made to a framing contractor who was constructing a single family home at this location. The contractor stated that the victim had delivered six or seven loads to this location during the time he had been working at the site. The truck the victim drove was described by his employer as a flatbed/rollerbed truck. The truck had 10 wheels and there were two rollers on the back of the flatbed. The load of lumber consisted of 174 sheets of 4' by 8' by 19/32" plywood. The two stacks (87 each) had combined dimensions of 8' by 8' by 53". The stacks of plywood sat side by side on the flatbed. The long sides of each stack were parallel to the sides of the truck (see Exhibit 1). The load weighed 10,022 pounds. The employer stated that the wholesaler had given the driver a split load of plywood rather than one stack. This was done as a safety precaution for the driver. The driver had used a chain to secure the load onto the back of the truck.

The procedure for unloading the lumber (rolling loads) at the site involved the truck driver getting out of the truck and laying out a couple of pieces of wood (stickers). He lays these stickers out at the approximate location (see Exhibit 2) where he plans to drop the load. The reason for placing the stickers under the lumber is to enable the driver to remove the chain used to hold the plywood together. Before dropping the lumber the driver must also remove the chain which secures the lumber to the truck. The driver then returns to the cab of the truck and attempts to drop the lumber off of the rollers and onto the stickers. This procedure involves backing the truck up and stepping on the brake, and it may take several attempts before the lumber falls to the ground. In most cases the lumber lands flat (horizontal) on the stickers.

The framing contractor stated that the lumber had fallen off of the truck and was standing vertically, or on end at approximately a 60 degree angle (Exhibit 3). The victim then got out of the truck and came over to speak with the contractor. They spoke briefly and the victim returned to the lumber. The contractor stated that when he last saw the victim, he was crouched down beside the lumber where he was probably putting stickers on the ground between the plywood

and the rear of the truck. The employer and other truck drivers stated that when the stack didn't fall flat on the stickers, the standard operating procedure (SOP) at this point was to attach another chain (Exhibit 4) to the plywood and to the back of the truck. The truck was also to be parked within a couple of feet of the lumber so that in the event the lumber fell over it would hit the back of the truck rather than falling to the ground. After having completed these tasks the driver would then return to the cab by walking around the outside of the plywood, avoiding walking between the stack and the truck. He would then pull the truck forward which in turn would pull the plywood onto the stickers in a horizontal position (Exhibit 5).

In this incident, the victim had apparently leaned under the load of plywood to place the stickers. He had not backed the truck up to within a couple of feet of the leaning plywood, which was the SOP, and consequently when the stack of plywood shifted it fell over on top of him. The contractor stated that he heard the lumber crash to the ground and felt the vibration when it hit. He then looked around and did not see the victim. He walked around the load and saw a portion of the victim protruding from under the plywood. He yelled to some of his workers to come over and help. Several workers came over to assist the contractor and used a car jack and two 4"x8" pieces of lumber to remove the victim from under the plywood. Emergency services were summoned and the victim was pronounced dead at 2:56 p.m. by city fire paramedics.

CAUSE OF DEATH

The Coroner's Autopsy Report stated the cause of death to be multiple traumatic injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should consider equipping their trucks with forklifts or bed-mounted cranes so that heavy loads of lumber can be safely unloaded.

Discussion: In this incident, the truck driver was not able to control the precise position his load landed when it rolled off the truck. This forced him to make later adjustments which ultimately led to his death. If he had a crane or forklift, he would have been able to unload the lumber with no further positioning.

Recommendation #2: Employers should provide formal safety training for truck drivers and educate them about the potential hazards of their jobs, in particular those associated with unstable loads.

Discussion: This incident may have been prevented if the employer had required that all truck drivers go through a formal safety training program. Since this incident, the employer has documented the procedures for safely rolling a load of lumber. This information should also be included in a safety training program. Truck drivers should be evaluated by their supervisors before being allowed to make a drop on their own. Title 8 of the California Code of Regulations (CCRs) section 3203(a)(7)(B), requires that employers provide employees with information and training on the procedures to prevent such employees from being injured during lumber roll-offs by loads which may fall over after landing in an unstable position (such as leaning on end). Possible procedures include positioning the rear of the delivery truck against upended loads in order to prevent the load from tipping over while the driver may be working in close proximity (such as when repositioning stickers under the load).

Recommendation #3: Employers should consider purchasing trucks that allow a load of lumber to be unloaded at a delivery site in a controlled manner.

Discussion: The type of truck used in this incident does not allow controlled movement of the load from the truck to the ground. Once the movement is initiated, the driver has no way of influencing the load's direction or speed. A successful drop, one in which the load lands in the correct position and orientation, requires skilled drivers and an optimal operating environment. In this incident, the driver was unable to control the drop, the load landed incorrectly, and he was killed during his work to correct the problem. Truck designs exist that would allow the driver to drop a load of lumber in the exact position desired with no further adjustment required. These designs, such as hydraulically operated tilt-bed trucks, would minimize the effect that drivers' skills and/or environmental factors have in ensuring a safe unloading.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the Public Health Institute and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations of work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact. NIOSH-funded, state-based FACE programs include: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin.

Additional information regarding the CA/FACE program is available from:

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