

TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Forklift operator is crushed by a roll of paper when it falls out of a railroad boxcar in California

SUMMARY
California FACE Report #97CA007

A 24-year old forklift operator (decedent) died when he was crushed by a 2,214 pound roll of paper that tumbled out of a boxcar door. The decedent had opened the boxcar door to access the load of rolls of paper for unloading. The bands that had held several rolls together pulled apart during shipping and the rolls had dislodged. When the decedent opened the door far enough, one roll fell on top of him. Neither the decedent nor his co-worker had training in unloading boxcars. The CA/FACE investigator that, in order to prevent future occurrences, employers should:

- use means of opening and closing railroad boxcar sliding doors that do not allow employees to stand in the door's opening.
- develop and implement a formal, written training program that addresses the hazards of the job.
- In addition, shippers should standardize methods of shipping to assure the integrity of the freight.

INTRODUCTION

On March 18, 1997, at 10:00 a.m., a 24-year old male forklift operator was fatally injured when he was crushed by a 2,214 pound roll of paper when it tumbled out of a railroad boxcar and struck him. The roll was part of a shipment of rolls of paper in the boxcar. Several rolls were dislodged when their metal banding straps pulled apart. When the decedent opened the boxcar door far enough, the roll of paper fell on him. The CA/FACE investigator learned of this incident from the coroner's report on March 27, 1997. The CA/FACE investigator, accompanied by the CA/FACE research scientist, traveled to the site of the incident on April 14, 1997. The manager of the facility was interviewed and the scene of the incident examined. A copy of the coroner's report and the police report were obtained by the CA/FACE investigator.

The company has been in business as a public warehouse since 1966. There are 1000 employees in the company, 20 of whom work at the site of the incident. Safety responsibilities were assigned to the company safety coordinator and in turn, assigned to the forklift operator in charge of the job. The company had a written Injury and Illness Prevention Program (IIPP). There was no written, formal training program for the safe unloading of boxcars. Neither the decedent nor his co-worker received training in unloading boxcars. Safety shoes and safety

glasses were required for the job, but it is unknown if the decedent was wearing them.

INVESTIGATION

The site of the incident is a 241,961 square-foot warehouse used for the receiving and distribution of paper in large rolls. The paper is generally received by railroad boxcar, stored in the warehouse, and distributed by truck to various clients. A number of large, bay doors in the rear of the warehouse (**Exhibit 1**) are used as access points to the adjacent railroad tracks. A dock plate is used to span the distance (**Exhibit 2**), approximately six feet, between the edge of the warehouse and the bed of the boxcar. Forklifts use the dock plate to access the boxcar for unloading the rolls of paper.

On the day of the incident, the decedent and a co-worker were assigned to unload a boxcar loaded with 64 rolls of paper. The rolls were stacked two levels high in the boxcar. The first level of rolls covered the entire floor of the boxcar. The second level had rolls placed at either end of the box car. These rolls are banded together with metal strapping to prevent them from dislodging during shipping. The decedent's co-worker warned the decedent to look out for rolls falling out of the boxcar door. He then broke the seal on the door. The two employees, in preparing for unloading, tried to open the sliding door of the boxcar involved in the incident. The door was stuck and it was decided to have the decedent push the door while the co-worker pulled from the other side. When the door was opened partially, the employees could only see the first level of rolls stacked on the floor.

When they opened the door far enough, a 2,214 pound roll of paper that had been dislodged from the second level during shipping rolled off the first level of the rolls of paper, a height of about 10 feet, and onto the decedent. The roll knocked him into the concrete wall of the loading dock, bounced back, and then again fell onto the decedent who had fallen onto the ground. The co-worker moved the roll off the decedent and ran to get help. A call was placed to 911 and the fire department and paramedics responded. They found the decedent lying on the ground with a broken neck and numerous other broken bones. It was determined that the subject was deceased and the paramedic pronounced death at 10:15 a.m.

Subsequent investigation revealed that the second level rolls of paper on the front end of the boxcar, nearest the sliding door had metal bands that had pulled apart during shipping. The roll involved in the incident had flipped onto its side (the rounded portion of the roll). The rolls were not cribbed or otherwise blocked from movement. The band which held together the rolls which dislodged during shipping was crimped in only two places. The other rolls had their bands crimped in at least four to five places, making it much more unlikely that the bands would come apart.

CAUSE OF DEATH

The death certificate indicated the cause of death to be multiple blunt force injuries.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Employers should use means of opening and closing railroad boxcar

sliding doors that do not allow employees to stand in the door's opening.

Discussion: The sliding door of the railroad boxcar involved in this incident was stuck due to the roll of paper leaning on it. One person can normally push this type of door open or closed. Normal means of opening and closing stuck boxcar doors is to use a crowbar to lever the door open or shut. In those situations where other methods fail to open or close the door, a come-a-long could be used to winch the door open or closed. Using these methods, employees are not normally required to stand in the door's opening. If employees had been trained in and used alternate methods of opening and closing railroad boxcar sliding doors, this fatality may not have happened.

Recommendation #2: Employers should develop and implement a formal, written training program that addresses the hazards of the job.

Discussion: In this incident, the decedent had not received any training in the hazards associated with unloading boxcars. The co-worker stated that he had not received any training from the employer. The co-worker did understand that there was a hazard of falling rolls of paper from boxcars because he stated that he warned the decedent to watch for it. It is not known whether this is because he was told by someone else or that he had observed rolls of paper fall out of boxcars prior to this incident. The employer in this incident needs to assess the hazards associated with the job, develop safety measures to address those hazards and prepare a formal, written training procedure. Employees could then be trained to recognize the hazards of the job and in accident prevention measures.

Recommendation #3: Shippers should standardize methods of shipping to assure the integrity of the freight.

Discussion: In this incident the manner in which the bands were crimped varied. Only two crimps were used to fasten the bands together on the rolls that dislodged during shipping. Those rolls which remained fastened together were crimped in four or five places. Shippers should determine the maximum possible forces which the bands would have to withstand during transport and establish the minimum number of crimps needed on each type of band to prevent the bands from pulling apart.

References:

Barclays Official California Code of Regulations, Vol. 9., Title 8, Industrial Relations. South San Francisco, CA, 1990.

National Health and Safety News, "Open the Door to Safety": Shipping and Receiving Materials Properly, September 1985

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the California Public Health Foundation, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on 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, Colorado, Georgia, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, Wisconsin, and Wyoming.

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

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