

TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: Janitor Dies When He Falls into a Baling Machine that Bales Cardboard for Recycling

SUMMARY
California FACE Report #09CA009

A 64-year-old Hispanic janitor working in a manufacturing and distributing company died when he was crushed inside a machine that bales waste cardboard for recycling. The victim climbed inside the compacting chamber of the machine while the machine was running. The point of operation on the machine was not guarded to prevent the entry of any part of an employee's body. The company had a lockout/tagout program but it was not implemented. The machine did not have any safety or warning signs affixed to the exterior around the feed chute or compaction chamber. The CA/FACE investigator determined that in order to prevent future incidents, employers who use machines that recycle waste products should ensure that:

- The area around the machine's point of operation is guarded by barriers or interlocked safety gates.
- Lockout/tagout procedures are implemented and enforced if workers plan to access the point of machine operation.
- Safety and warning signs are affixed to the machine in the language of the user.

INTRODUCTION

On Friday, October 23, 2009, at approximately 3:30 p.m., a 64-year-old Hispanic janitor died when he was crushed in a machine that makes bales out of waste cardboard for recycling. The CA/FACE investigator received notification of this incident via electronic mail on October 26, 2009, from the NIOSH Surveillance and Field Investigations Branch, in Morgantown, West Virginia. On November 16, 2009, the CA/FACE investigator inspected the incident site and conducted interviews with two managers and two employees of the facility.

The victim was born in Guatemala and had lived in the Los Angeles area for 30 years. It is not known how long the victim had lived in the United States. The victim had a sixth grade education. According to co-workers, the victim was fluent in Spanish and spoke limited English. The victim's supervisor spoke Spanish to the victim on the job. He had

been employed with the company for six months as the second shift operator of the machine that baled waste cardboard for recycling.

The employer of the victim was a global manufacturer and distributor of ink toner cartridges, inkjets, and thermal transfer ribbons. The company had been in business for 15 years and had 723 employees. There were approximately 200 employees onsite at the time the injury occurred. The employer had a written Injury and Illness Prevention Program (IIPP) that addressed the operational and safety procedures for the baling machine including lockout/tagout and machine safety. The lockout/tagout program specified that the baling machine operator would alert the supervisor if he needed to access the point of machine operation. The supervisor would then implement the lockout/tagout procedure.

The company documentation showed that the victim received video training in April of 2009 on the operation of waste cardboard baler machines. This video did not address safety procedures specific to the machine in this incident, but did contain general safety precautions such as keeping a safe distance from the machine while compacting. According to the supervisor, at the time of hire, the victim was provided with written procedures in Spanish on the baler operation and safety, and received training in baler operation in Spanish.

INVESTIGATION

The machine involved in this incident did not have any identifying labels, placards, or stencils. The machine was purchased in 2005 from a recycling company as a "used horizontal baler" and had been painted over numerous times. The baler machine did not come with an operator, maintenance or repair manual. The machine took recycled cardboard and crushed it into bales for recycling. The cardboard was fed into the machine through a hopper on top of the machine. After the cardboard was compressed into a bale, it was tied with wire and removed from the machine. The machine had two modes of operation, which were "bale" and "eject." When the machine was set in the "bale" mode, a signal from an electronic sensor mounted on the side panel of the hopper would activate a hydraulic compressing ram in the baler portion of the machine whenever the stacked cardboard reached a specified level in the hopper. The "eject" mode was used by the machine operator to push the completed and tied bale out of the machine to make room for a new bale.

On the day of the incident, the victim was working alone operating the machine and feeding waste cardboard into the hopper. A co-worker, who had finished his work shift and was on his way to the parking lot, heard the victim cry for help. He ran to the victim's location and immediately shut the machine off and then tried to free the victim, who was standing in the compaction chamber of the machine pinned by the ram against the base of the feed chute. The co-worker called 911. Fire department personnel and paramedics removed the victim from the machine. He was pronounced dead at the scene.

CAUSE OF DEATH

The cause of death according to the death certificate was severe pelvic trauma.

RECOMMENDATIONS / DISCUSSION

Employers who use machines that recycle waste products should ensure that:

Recommendation #1: The area around the machine's point of operation is guarded by barriers or interlocked safety gates.

Discussion: In this incident, the victim was able to gain access to the point of operation of the machine through the opening on the open side of the hopper. It is not known exactly why the victim was standing in the compaction chamber. When he entered the compaction chamber, his body broke the sensor beam and activated the ram that crushed him. Guards around the machine's point of operation are necessary to prevent entry of hands, fingers, or any part of the body into the point of operation. Had this guard been in place, the victim would not have been able to climb into the machine and this incident might have been prevented.

Recommendation #2: Lockout/tagout procedures are implemented and enforced if workers plan to access the point of machine operation.

Discussion: The employer in this case had lockout/tagout procedures for the baling machine. These procedures required the machine operator to request the supervisor to implement lockout/tagout if the operator needed to access the point of machine operation. It is not known why the victim accessed the point of operation and why he did not request lockout/tagout from his supervisor.

The employer had shown the victim video training on the safe use of baling machines. However, this training did not cover when the employee should request lockout/tagout for the baler being used in this case. Likewise, there was no written documentation that the victim had received any other specific instruction or supervision on when to request lockout/tagout in the event he needed to access the point of machine operation. For the implementation and enforcement of lockout/tagout procedures, employers should have a formal testing program to assess worker skill and knowledge about safety policies and procedures. Supervisors should routinely audit employee work practices to ensure compliance with lockout/tagout when appropriate. Employers can enhance worker compliance with safe work practices through programs of task specific training, supervision, recognition and progressive disciplinary measures. If the employer had implemented and enforced their written lockout/tagout program, the victim would have known to request assistance from the supervisor if he needed to access the point of machine operation. The machine would have been de-energized and the victim would have been able to enter the hopper without activating the sensor, thereby preventing this incident.

Recommendation #3: Safety and warning signs are affixed to the machine in the language of the user.

Discussion: In this particular case, the machine involved in the incident had no warning signs. Signs or placards increase the likelihood that workers are alerted to possible danger. Posted warning signs in the primary language of the employees assist in alerting workers to exercise caution when working in the area of the identified hazards. Had the machine been affixed with safety and warning signs, these signs may have alerted the victim to the danger of entering an operating machine, and this incident might have been avoided.

References:

Division of Occupational Safety and Health - Title 8 regulations - Subchapter 7 - General Industry Safety Orders
Group 8. Points of Operation and Other Hazardous Parts of Machinery - Article 61. Compaction Equipment
§4350. Scope.
§4351. Definitions.
§4353. Stationary Compaction Equipment and Balers.
§4355. Operating Rules for Compaction Equipment.
Group 6. Power Transmission Equipment, Prime Movers, Machines and Machine Parts - Article 41. Prime Movers and Machinery
§4002. Moving Parts of Machinery or Equipment.
Group 2. Safe Practices and Personal Protection - Article 7. Miscellaneous Safe Practices
§3314. The Control of Hazardous Energy for the Cleaning, Repairing, Servicing, Setting-Up, and Adjusting Operations of Prime Movers, Machinery and Equipment, Including Lockout/Tagout.

California FACE Investigation Report #05CA003:

<http://www.cdph.ca.gov/programs/ohb-face/Documents/05CA003.pdf>

NIOSH Publication No. 2003-124: Preventing Deaths and Injuries While Compacting or Baling Refuse Material <http://www.cdc.gov/niosh/docs/2003-124/>

NIOSH Safety and Health Topic: Machine Safety

<http://www.cdc.gov/niosh/topics/machine/>

Texas FACE Investigation Report #98TX071:

<http://www.cdc.gov/niosh/face/stateface/tx/98tx071.html>

EXHIBITS:



Exhibit 1. The front view of the cardboard baling machine involved in the incident.



Exhibit 2. Side view of the cardboard baling machine.



Exhibit 3. Alternate side view showing the baling chamber.



Exhibit 4. The feed hopper and compaction chamber.



Exhibit 5. Closer view of the feed hopper.



Exhibit 6. Inside view of the compaction chamber.



Exhibit 7. The controls and electronic sensor.



Exhibit 8. Close-up of the controls.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Public Health, 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 the CA/FACE program is to prevent fatal work injuries. 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: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington.

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

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