

## **Worker Dies From Multiple Injuries After Fall into Baling Machine**

---

### **SUMMARY**

On January 15, 1993, a 25 year-old male printing company worker was killed when he fell into the hopper of a paper and cardboard baling machine and the machine was reactivated. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- **Employers must assess each job for potential hazards and train employees in methods of dealing with them.**
- **Lockout/tagout procedures should be implemented for all employees who who operate or maintain any type of industrial machinery.**
- **To avoid the need to climb onto the equipment in the event of it jamming, a platform should be built next to the baler and conveyor belt.**
- **A written procedure should be established that clearly describes safe methods to clear jams in the baler.**
- **A systematic communication procedure by which employees are accounted for should be established.**

### **INTRODUCTION**

On January 19, 1993, NJDOH FACE personnel learned about this work-related fatality from a newspaper article. The FACE site visit was conducted on January 20, 1993 with the OSHA compliance officer, police detectives, and the company safety director. Information for this report was derived from the OSHA file, medical examiner's report, and discussions with employees and company representatives.

The victim's employer was a printing company that has been in business for 97 years. Certain operations were moved to this new building 1½ years before this incident. Approximately one thousand full and part time workers are employed by the company, 70 of whom are in the new building. The company employs a safety officer whose responsibilities include security and environmental concerns as well as safety. He is at this location approximately two to four days per month. There is a joint labor-management safety committee that meets once per month; it is comprised of one employee from each department for a total of twenty five employee representatives from the entire company.

There were no specific written company training or safety procedures for this particular job. There was a written company lockout/tagout policy but only maintenance mechanics were trained in lockout/tagout. No procedure existed for methods to use to clear jams in the baling machine. Workers usually clear jams by climbing up the stopped conveyor belt, holding on to the side conveyor walls to stabilize themselves, and using their foot to clear the jam in the charging chute.

The twenty five year-old male victim was employed by the company for less than five years, transferring to the new plant when it opened. His training was on-the-job.

## INVESTIGATION

The site of the fatality was a large mail room in the plant. There were several types of jobs being performed in the clean, well-kept room including feeding paper or cardboard scraps into the baling machine. The baler accepts paper or cardboard scraps fed to it on an inclined feed conveyor belt.

The conveyor belt is fed by a worker who loads loose pieces of paper or cardboard onto the bottom of the belt. The scraps travel up the conveyor belt at a pre-set speed and fall into the feed chute, or hopper. They first pass through hanging pieces of a leather/vinyl-type material (to prevent pieces of paper from flying out of the chute) and are collected and compacted in the bottom of the hopper. There is a window on the hopper through which workers can look into the machine to inspect its contents. In the automatic mode, the machine senses that the bale has been compressed into the correct pre-set dimensions (about 4 feet by 4 feet, or 1700 to 2000 pounds) and pointed steel "needles" pierce the bale and bind it with #10 gauge wire. The bale is then pushed out of the baling chamber by a hydraulic ram. As a new bale is formed and pushed from the baling chamber, it pushes the previously formed bale out to a cart that will be moved to a loading dock for collection by a recycling center. The machine tends to jam more easily when cardboard is processed, probably due to the size and heavier weight of the cardboard which is supposed to be cut or torn into small pieces before being loaded on the belt. The baler can tear pieces of newspaper into smaller sections if that part of the machine (the "fluffer") is activated. It is not used when cardboard is processed.

Controls to program the machine's functions are located on its front. The controls to turn the machine on or off are also located there. The equipment is activated or deactivated by turning a key to the on or off position. The key is always kept in the lock on the front of the baler and there is only one key for the machine. When the key is turned to the on position, the machine can be stopped or started by pushing the appropriate button. If the key is turned to the off position and removed from the machine, no part of the machine can be activated. To completely deenergize the baler the electrical disconnect must be used. This is done by the mechanics before they perform work on the machine.

The baler is noisy when in operation. It is difficult to hear a conversation when standing near the machine.

On top of the side walls of the conveyor are yellow emergency stop cables which, when pulled, turn off the belt and baler. The machine can be turned back on only by a worker manually pushing the start button on the front of the baling machine. It cannot be turned back on from any position on the belt.

On the night of the incident, the victim started work at 10:30 p.m. for his 10:30 p.m. to 5:45 a.m. shift. He and two other men worked on processing cardboard, an operation performed once a week. A supervisor was present but was not in the immediate area.

One co-worker was involved in moving compacted bales to trucks for recycling pick-up while the victim and another man worked at the baling machine. Before midnight, the charging chute of the machine jammed and the victim climbed up the conveyor to attempt to clear the obstruction. The belt was turned off. His co-worker left the area. When he returned he did not see the victim; the machine was still turned

off. The co-worker went to the other employee and asked if he had seen him. One of the workers looked in the access window of the hopper but did not see the victim. The key had not been removed from the lock. Unable to find the victim and assuming he had gone on a break, the worker reactivated the machine.

The victim had fallen from the top of the conveyor belt into the hopper, or chute, of the baler, a distance of 13 feet, 10 inches. His body was found around 12:30 a.m. Due to his obviously traumatic injuries, no attempt could be made to treat the victim and he was pronounced dead at the scene.

## **CAUSE OF DEATH**

The medical examiner determined that death was caused by multiple blunt force injuries. It cannot be determined if the victim died of injuries resulting from the fall or from injuries inflicted by the baling machine.

## **RECOMMENDATIONS/DISCUSSIONS**

**Recommendation #1: Employers must assess each job for potential hazards and train employees in methods of dealing with them.**

Discussion: A walk-through conducted by a safety professional knowledgeable about the company's processes, operations, and equipment should be conducted. Employees should participate in the evaluation. Employee participation would ensure that work habits are evaluated along with the work environment and could alert employers to unsafe procedures which are being used. Joint participation would also foster greater safety knowledge and awareness as well as demonstrating the employer's commitment to safety. Attached is Job Hazard Analysis, published by the U.S. Department of Labor, OSHA.

**Recommendation #2: Lockout/tagout procedures should be implemented for all employees who operate or maintain any type of industrial machinery.**

Discussion: Although this company had a written lockout/tagout procedure and training, it was implemented only for the mechanics who service the equipment. A lockout/tagout procedure should be devised for all workers who operate any type of industrial machinery, as required by 29 CFR 1910.147(c)(4)(i). They should also be trained in the use of these procedures, as required by 29 CFR 1910.(c)(7)(i). Workers should be made aware that before attempting to clear a jammed machine, it must be deactivated, locked out and tagged out so that no other person can reactivate it. On this particular machine, this includes turning the key to the off position, removing the key, and keeping it in a pocket or other secure location.

**Recommendation #3: To avoid the need to climb onto the equipment in event of it jamming, a platform should be built next to the baler and conveyor belt.**

Discussion: When the baler jams, workers have no other method of clearing the jam other than climbing up the conveyor belt. A platform, accessible by steps and protected by guard rails, would provide a safe alternative. Workers would be able to climb to the top of the platform and use a long pole or other device to clear the machine. This would prevent them from standing on any part of the baler or conveyor and alleviate the hazard of falling into or off of it.

**Recommendation #4: A procedure should be established that clearly describes the methods to clear jams in the baler.**

Discussion: No specific procedure for clearing jams in the equipment existed. The practice of climbing the conveyor belt and kicking the jam clear exposed workers to the danger of falls and the mechanical hazards of the baling machine. After conducting a hazard analysis, a written policy should be established and employees instructed in its use. The policy should include, but not be limited to, lockout/tagout procedures.

**Recommendation #5: A systematic communication procedure by which employees are accounted for should be established.**

Discussion: To ensure safety, it is important that the whereabouts of each worker be known. A systematic method to accomplish this should be established as part of company policy.

## **REFERENCES**

29 CFR 1910.147. Code of Federal Regulations. Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.

Job Hazard Analysis, U.S. Department of Labor, Occupational Safety and Health Administration, 1988.

To contact [New Jersey State FACE program personnel](#) regarding State-based FACE reports, please use information listed on the Contact Sheet on the NIOSH FACE web site. Please contact [In-house FACE program personnel](#) regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.