

Fatality Assessment and Control Evaluation Project

Public Health

KY FACE #98KY044

December 4, 1998

TO: Michael Auslander, DVM, MSPH, Kentucky Department for Public Health, Division of Epidemiology, Surveillance and Investigations Branch

FROM: Ellyn Moon, MA, KY FACE Project Investigator

SUBJECT: Factory Worker Entangled in Conveyor Belt Rollers

SUMMARY

An 18-year-old male chop saw operator (the victim) died when his right arm became caught in the roller mechanism underneath a conveyor belt. He was pulled into the roller mechanism and suffered compressional asphyxia and blunt force injuries. The victim had left his usual work station for a break. When he did not return on time, his supervisor began to search for him. He saw the victim's legs hanging from the conveyor belt and immediately ran to him and shut off the power to the conveyor belt, radioing a guard to call for emergency medical services (EMS). He and another worker then checked the victim for a pulse, but found none. EMS received the call at 12:02 a.m. and reached the scene at 12:10, but could detect no vital signs. EMS workers called the coroner and extricated the victim from the machine. The coroner pronounced the victim dead at the scene. In order to prevent similar incidents, the KY FACE investigator recommends that:

- *guarding should be placed around ingoing nip points created where conveyor belts run between rollers;*
- *workers should be trained to recognize and avoid hazards in the workplace; and,*
- *employers should develop, implement and enforce comprehensive written safety programs.*

INTRODUCTION

KY FACE was notified by a coroner of the death of an 18-year-old male just after midnight on July 9, 1998. An investigation was initiated after contacting the deputy sheriff handling the case.

The KY FACE investigator travelled to the scene on the afternoon of July 9, accompanied by the deputy sheriff. He was interviewed, and his documents and drawings of the scene were reviewed. (The deputy, an emergency medical technician (EMT) who had been on duty with the rescue squad the previous evening, had responded to the 911 call.) Photographs of the scene were taken, the employer's Assistant Safety Director was interviewed, and a copy of the Employee Handbook was reviewed. Later, official reports were obtained from the sheriff's department, the coroner's office, and the Kentucky Labor Cabinet's Occupational Safety and Health (OSH) Program.

The employer was a corporation that manufactured hardwood trim, stairways, doors, mantels and moldings. It began operations in 1983, with three employees, and at the time of the incident employed 565 persons and ran two shifts full-time. Safety was part of the orientation program for all new employees. The company had a full-time Safety Director, an Assistant Safety Director, and a written safety program. This was the company's first fatality. There had been no prior injuries involving the conveyor belt.

The victim began working for the employer upon graduation from high school, a little over two months prior to the incident. He was employed in the cutting room as a chop saw operator. His job was to chop out knots and other imperfections, to cut rough lumber to the desired lengths, and to clean up scrap wood by loading it onto the flat portion of the conveyor, which ran the length of the building.

INVESTIGATION

On the day of the incident, the victim began his 10-hour shift at 4:30 p.m. He had been working approximately seven and a half hours when the incident occurred. The building in which he worked was a 120,000 square foot metal building with a concrete floor. His work station was approximately 150 feet away from the portion of the conveyor involved in the incident, but he had left his work station because he was caught up. Several employees were absent that night, and the pace was slower than usual. The victim left his work station without telling his coworkers where he was going. After 5-10 minutes had elapsed, his supervisor began to look for him. The supervisor radioed the guard gate to inquire if the victim had been seen outside, but he had not, and the guard reported that his truck was still in the parking lot. Later, several employees reported having seen him cleaning up scrap wood along the flat portion of the conveyor, hopping on and off to pick up the wood; this was not part of his job, and he had not been requested to do it.

Searching inside the plant, the supervisor finally located the victim, entangled in the inclined portion of the conveyor belt. The victim's right arm, up to the shoulder, had been pulled into the roller mechanism underneath the belt at a point where the bottom of the roller was almost six feet

above the floor. The ingoing nip point was created where the 24-inch-wide conveyor belt rolled over a smaller tension roller, which was four inches in diameter and 26 inches in length. A larger, powered roller had an 18-inch diameter and was also 26 inches long. The conveyor was powered by a three-horsepower motor that operated at 1725 RPMs (approximately 80 feet per minute). The inclined portion of the conveyor belt was 33 feet long, nine feet, eight inches from the floor at the highest point, and twelve inches from the floor at the lowest point. The point at which the victim was entangled was in the middle of the 33-foot inclined portion; the ingoing nip point was 68 inches above the concrete floor. (See Figure 1.) The supervisor, upon seeing the victim, immediately shut off power to the belt at a wall panel four feet beyond where the victim was entangled.

Since there were no eyewitnesses to this incident (no work stations were within 100 feet of the inclined portion of the conveyor belt), it is not certain how the victim became caught. The roller mechanisms were too high to have caught him or his clothing (sleeveless shirt, jeans) as he walked by unless he jumped up or reached up. The victim was not wearing any gloves or other personal protective equipment (PPE). The conveyor belt was in constant operation when the plant was running so workers throughout the plant could place scraps on it at any time. It is possible that the victim might have been climbing up the conveyor belt and may have caught his hand in the roller from above. Coworkers reported having seen the victim riding the raised portion of the belt on previous occasions, and he had received written reprimands for this. It is also possible that he reached up as he was walking under the belt, catching his hand between the rollers.

After first shutting off the power and then radioing the guard to call for EMS, the supervisor and another worker checked for a pulse, but could find none. EMS received the call at 12:02 a.m. and personnel reached the scene at 12:10, but could detect no vital signs. They called the coroner and then extricated the body of the victim. The coroner pronounced the victim dead at the scene.

CAUSE OF DEATH

The cause of death as stated on the death certificate was “compressional asphyxia and blunt force injuries sustained from entanglement in conveyor belt.”

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Guarding should be placed around ingoing nip points created where conveyor belts run between rollers.

Discussion: A metal guard placed over the rollers would prevent workers from being caught in the ingoing nip points. Guards are required on such rollers when they are less than seven feet above the floor [29 CFR 1910.219(e)(2)], as this one was. Within a week of this incident the company had installed a box-type fixed guard over the roller mechanisms on this conveyor belt.

Recommendation #2: *Workers should be trained to recognize and avoid hazards in the workplace.*

Discussion: *Coworkers reported having seen this worker riding on the conveyor belt on the evening of the incident as well as on prior occasions. He had received written reprimands for this behavior. Employers must train their workers in hazard recognition and avoidance, and when workers are seen performing acts that are hazardous, retraining or effective disciplinary measures must be taken. Progressively severe forms of repercussions should be designed for violations of safety procedures.*

Recommendation #3: *Employers should develop, implement and enforce comprehensive written safety programs.*

Discussion: *In this case, the employer had an employee handbook containing general safety information. However, a comprehensive written safety program should contain information specific to particular jobs (e.g., what PPE is required, what safety procedures must be followed). Enforcement of such a safety program should reduce or eliminate worker exposure to hazardous situations.*

REFERENCES

29 CFR 1910.219(e)(2). *Occupational Safety and Health Standards for General Industry.*

Kentucky Labor Cabinet, Occupational Safety and Health Program, Citation and Notification of Penalty.

A Basic Guide to Machine Safeguarding. 1991. Office of Training and Education, Occupational Safety and Health Administration.

Victims right arm was pulled, up to the shoulder, between these two rollers.

Small roller
(4" diameter)

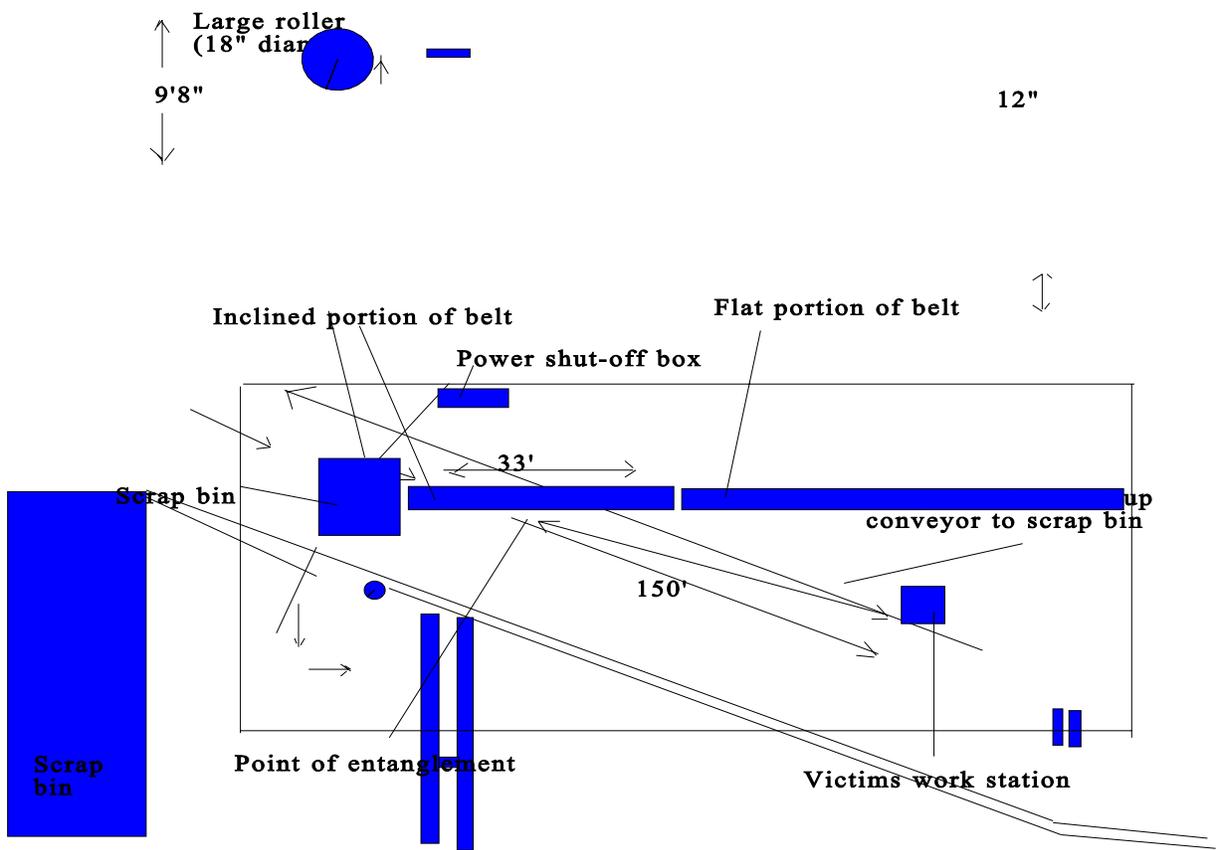


Figure 1.
(Not to Scale)