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PUBLIC HEALTH SERVICE/CDC/NIOSH/DSR
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TO: **Director, National Institute for Occupational Safety and Health**

FROM: **Division of Safety Research, NIOSH**

SUBJECT: **Laborer Dies After Falling Into Baler at Paper Products Plant — South Carolina**

SUMMARY

On May 9, 1997, a 34-year-old laborer (the victim) died after falling into an operating paper baler at a paper products plant. The victim and a co-worker were loading scrap paper into an automatically operated paper baler via a belt conveyor. The victim ascended to a platform located between the conveyor discharge and the feed chute of the paper baler to clear jammed material. Before ascending, the victim had asked the co-worker to shut down the conveyor so that he could clear the jam. After shutting down the conveyor, the co-worker turned away to get more paper. The victim fell into the baling chamber and the baler ram automatically activated. The co-worker heard the victim scream, saw him inside the baler, and immediately turned the baler to manual operation and reversed the ram. Getting no answer after calling the victim's name, the co-worker notified his immediate supervisor. Co-workers recovered the victim and administered first aid until the EMS arrived approximately 10 minutes after notification. The victim was transported to a local hospital where he was pronounced dead.

NIOSH investigators concluded that to prevent similar incidents, employers should:

- *ensure that procedures for adequate control of hazardous energy(lockout/tagout) are implemented by workers when it is necessary to perform maintenance, including clearing jammed material from process machinery*

- *ensure that process machines such as paper balers which are prone to jamming are configured to include means of access to protect workers from injury while clearing material jams.*

INTRODUCTION

On May 9, 1997, a 34-year-old laborer (the victim) at a paper products plant suffered fatal amputation after being caught inside an operating paper baler. On May 12, 1997, representatives of the South Carolina Occupational Safety and Health

Administration (SCOSHA) notified the Division of Safety Research (DSR) and requested technical assistance. On July 9, 1997, a DSR safety engineer reviewed the SCOSHA investigative file and examined a videotape of the incident site.

The employer in this incident received unfinished paper stock and processed it into laminated sheets, row headers for paper mills, slip sheets for pallets, and paper dividers for packaging. The plant employed 80 workers; 25, including the victim, worked the second shift. The employer had implemented a general safety policy. As part of this policy, only supervisors and maintenance personel received training in lockout/tagout procedures.

INVESTIGATION

On the day of the incident, the victim and a co-worker began the afternoon shift at 3:30 p.m. They cut corrugated sheets of paper until about 5:30 p.m., when they went to the paper baler to begin baling scrap paper. Scrap was loaded onto an inclined belt conveyor which discharged into the open feed chute of the baler. Access to the conveyor discharge and feed chute was provided by a staircase and elevated platform, 8 ½ feet above floor level. It was common practice for workers to use this platform while clearing jams which often occurred between the conveyor discharge and open feed chute. The platform was guarded on three sides by a standard railing. No railing was provided along the side adjacent to the feed chute; however, a positioning system comprised of a rope tether and a body builder's belt, was secured to the opposite rail for use while clearing jams. Jams were cleared with wooden prods. The baler could be operated manually or automatically. When operated automatically, the ram was activated by an electronic sensor located in the feed chute.

At about 6 p.m., as the victim and co-worker were loading scrap onto the conveyor, the victim noticed that the scrap was not going down the chute. He asked the co-worker to shut down the conveyor and went up on the platform to clear the jam. The baler remained in automatic mode at this time. The co-worker shut down the conveyor and turned away to get more scrap. As he did so, he heard the victim scream. He turned around, saw that the victim was inside the baler, and immediately went to the baler's control panel. The ram was advancing into the baling chamber so the co-worker switched to manual operating mode and reversed the ram. He called the victim's name, but got no answer. He then went to the front of the plant to get the production supervisor. The supervisor went to the machine, opened the access door on the side of the feed chute, and began pulling paper out. He yelled to the co-worker to call 911 and to summon the maintenance supervisor. As he continued to pull

paper from the machine, he yelled the victim's name. The victim raised his head and the supervisor checked his neck for a pulse. The supervisor checked the machine's control panel to ensure that the ram had been fully retracted and then opened the front door of the baler. With the help of other workers who had gathered at the site, the supervisor removed the victim. The EMS arrived about 10 minutes after notification and transported the victim to a local hospital where he was pronounced dead.

CAUSE OF DEATH

The coroner established the cause of death as exsanguination due to traumatic amputation of both legs.

RECOMMENDATIONS/DISCUSSIONS

Recommendation #1: Employers should ensure that adequate procedures for control of hazardous energy (lockout/tagout) are implemented by workers when it is necessary to perform maintenance, including clearing jammed material from process machinery.

Discussion: The machine in this incident was capable of being controlled either manually or automatically. Manual operation required that an operator initiate machine movement by activating the controls at the machine's control panel. When controls were set in automatic mode, movement of the baling ram was initiated when the electronic sensor located on the side of the feed hopper detected material in the hopper. When the victim fell through the hopper, the sensor detected material and automatically initiated ram movement, resulting in amputation of the victim's legs. Proper procedures for control of hazardous energy require that power to the baler's hydraulic pump motor be de-energized during maintenance activities such as clearing jams. De-energizing the power would protect against inadvertent activation of the baler's ram.

Recommendation #2: Employers should ensure that process machines such as paper balers, which are prone to jamming, are configured to include means of access that protect workers from injury while clearing material jams.

Discussion: Access to the area between the conveyor discharge and the feed chute was provided by an elevated platform protected on three edges by a standard railing. On the edge adjacent to the baler and conveyor, no railing was provided. Instead, a positioning device consisting of a body builder's belt tethered to the standard railing by a rope was provided. This device was not used at the time of the incident. The top edge of the feed chute was just below waist height. It is conceivable that the victim may have been bent over pushing

against the jam with the wooden stick, and when the jammed paper released, he may have fallen into the chute. Where access to process machinery is necessary, employers should consider installing standard railings using gates interlocked with the machine's control system. When the gates are opened, the machine will shut down.

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Fatality Assessment and Control Evaluation (FACE) Project

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatality Assessment and Control Evaluation (FACE) investigations when a participating State reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying the working 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.

States participating in this study: North Carolina, Pennsylvania, South Carolina, Tennessee, and Virginia.

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