TO: Director, National Institute for Occupational Safety and Health

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

SUBJECT: A machine operator's helper died when caught in a slitting machine.

SUMMARY
California FACE Report #06CA002

An 18-year-old Hispanic laborer, working as a machine operator's helper, died when he got caught between a steel sheet and a rewind cylinder on a machine called a "slitter." The victim turned 18 years old two weeks before the incident occurred but had been working at his position for approximately six months. He was a temporary employee hired from an employment agency whose documents showed he was 22 years old. The victim prepared the sheet steel to be wound on the cylinder and then gave the machine operator the signal to start the machine. The victim was clear of the machine at that time. The machine jammed, and when the operator went to find the cause, he found the victim caught in between the rolled steel sheet on the rewind cylinder. No one witnessed the actual incident. The CA/FACE investigator determined that, in order to prevent future occurrences, employers, as part of their Injury and Illness Prevention Program (IIPP), should:

- Ensure employee safety by installing guards around the moving parts and pinch points of machinery to protect employees from accidental contact.
- Ensure employees do not operate machinery without proper guarding.
- Ensure employees are properly trained on machine operation and safety, and their achievement of skills is verified through a testing program.
- Periodically reassess job assignment hazards.
- Establish work policies that comply with employment standards for youth less than 18 years of age in nonagricultural employment.

INTRODUCTION

On March 16, 2006, at approximately 12:45 p.m., an 18-year-old Hispanic laborer, working as a machine operator's helper, died when he got caught in between the rewind cylinder and the steel sheet on a machine called a slitter. The CA/FACE investigator learned of this incident on March 29, 2006, through the Division of Occupational Safety and Health (Cal/OSHA). Contact with the victim's employer was made on

March 30, 2006. On April 26, 2006, the CA/FACE investigator traveled to the facility where the incident occurred and interviewed company managers, supervisors, and co-workers of the victim. The machine involved in the incident was photographed and the area where the incident took place was examined. On May 3, 2006, the safety supervisor of the temporary employment agency that employed the victim was interviewed. Copies of reports from other investigating authorities were obtained and reviewed. On May 17, 2006, a second visit took place at the scene of the incident to review and clarify information previously collected.

The employer of the victim was a temporary employment agency (agency A) that supplied unskilled bilingual workers to businesses and industry throughout the Los Angeles area. The victim had been placed at the client company where the incident occurred by another temporary employment agency (agency B) in August 2005. In February 2006, agency A took over the account from agency B at the client company. Documents that agency A received from agency B at that time showed the victim to be 22 years old. The safety supervisor for agency A stated that the agency does not provide specific training to their employees. The agency would give their employees a general safety orientation and then the agency's safety supervisor would conduct a safety walk-through of their client's business to ensure the work environment was safe and that there was no danger to their employees. The agency relied on their clients to give specific safety training to their employees when they reported to the client company's facilities.

The client company was a manufacturer of carbon steel tubing. The company had been in business for 35 years. The facility where the incident took place had 90 permanent employees and 35 temporary employees. The victim had been working at this company for approximately seven months and turned 18 years old two weeks before the incident occurred.

The victim was born in Mexico and had been in the United States for seven years. He had an eleventh grade education and spoke both English and Spanish. The client company had a written IIPP. The program had procedures for employees to follow that were not task-specific. The program also had hazard assessment checklists for a variety of working conditions. Safety meetings were held monthly and were documented. The client company had a training program that provided training to both temporary and new employees, for employees given new job assignments, and for employees operating machines. Training was also provided to all employees with respect to hazards specific to each employee's job assignment. The training program was primarily on-the-job training. Training was measured by supervisor's observation of job performance.

INVESTIGATION

The site of the incident was a factory that manufactured carbon steel tubing. The machine involved in the incident was called a slitter. The machine was used to cut sheets of different gauges of steel into different widths depending on the customer's order. On the day of the incident the victim and another temporary employee were

working with a slitter machine operator performing their prescribed duties, which included the set up of the sheet steel in the machine and the removal and banding of the finished product.

At approximately 12:30 p.m., the victim and the other temporary employee were assisting the machine operator guide a new sheet of carbon steel into the slitting machine. After the slitting machine cut the steel sheet into strips, the victim guided the finished product onto the machine's rewind cylinder. The victim placed the cut steel strips in the groove in the rewind cylinder and then jogged the cylinder forward just enough to complete a full wrap around the cylinder. The victim then checked the alignment of each strip and used a steel bar to tap misaligned strips into place. The operator stated that after the victim connected the cut steel to the rewind cylinder and aligned all the strips, he was clear of the machine and he gave him the signal to go ahead and start the machine. The operator turned his attention away from where the victim was standing and started the machine. The operator stated that suddenly the machine shook and then jammed. He said he immediately pressed the emergency stop button and went to investigate the problem. He found the victim caught between the cut steel and the rewind cylinder. He immediately called for help.

The paramedics arrived and found the victim approximately three feet off the floor entangled between the cut #16-gauge steel sheets wrapped around the rewind cylinder of the slitting machine. The paramedics found no pulse and pronounced the victim dead.

CAUSE OF DEATH

The cause of death, according to the death certificate, was a crush injury of the upper torso.

RECOMMENDATIONS / DISCUSSION

Recommendation #1: Ensure employee safety by installing guards around the moving parts and pinch points of machinery to protect employees from accidental contact.

Discussion: In this particular case, the victim was performing a task described as one of his normal duties. Heavy machinery with rapidly moving parts can present serious risks of worker entanglement. The risk associated with operating such machinery is mitigated by physical guarding, safety interlocks and sensors, and/or the use of specially adapted long-handled tools. Manufacturers of heavy machinery can ensure newly made equipment has adequate guarding, and employers should consider retrofitting older equipment.

Recommendation #2: Ensure employees do not operate machinery without proper guarding or equivalent safety protection.

Discussion: The slitter is a swift moving machine that takes different gauges of steel stock and cuts them into varying sizes of strips. These types of machines should be

equipped with some type of barrier or safety system to prevent worker entanglement. Occasionally, a breakdown in these safety systems can occur or the systems are bypassed, and the machine is able to run without the safeguards. Employers should have programs that ensure that employees do not operate such machinery if those safety measures are not present. Employers can enhance worker compliance with safe work practices through programs of task specific training, supervision, recognition, and progressive disciplinary measures.

Recommendation #3: **Ensure employees are properly trained on machine operation and safety, and their achievement of skills is verified through a testing program.**

Discussion: Employees who work with and around machines need to be trained on the specific safety standards associated with the machine. They need to be made aware of all the possible hazards associated with such a machine. This information can be provided through a formalized training program that tests the employee's achievement of skills and knowledge of the subject. The testing methods can vary from written, oral, or demonstration formats, providing they accurately measure the employee's ability to understand matter being presented.

Recommendation #4: Periodically reassess job assignment hazards.

Discussion: The client company in this incident had performed job-specific hazard assessments sometime in the past and had identified the open rewind cylinder as a potential entanglement risk. Their IIPP had written work practices to help avoid entanglement; however, no guarding or safety interlock system had been built for the rewind cylinder. Although the machine in this incident was constructed at a time when guarding was not required, current regulations and state-of-the-art machinery designs require guarding or safety interlocks. By periodically re-performing job hazard assessments, both the acceptability of risks from certain hazards and any new solutions to hazard abatement can be reviewed.

Recommendation #5: **Establish work policies that comply with employment standards for youth less than 18 years of age in nonagricultural employment.**

Discussion: In this case, the temp agency was placing employees in hazardous work conditions that had restrictions for those less than 18 years of age. When the victim was hired by the agency, he presented authentic-appearing social security and alien residence cards, both of which were forged. For this reason, it may have been difficult for the employer to ascertain the victim's correct age. However, employers should make every reasonable effort to ensure they are aware of a worker's correct age and that workers under 18 years of age are not assigned to perform prohibited work. Employers who have a multilingual/multicultural work force should use interpreters when necessary to inform all employees about age-appropriate work assignments. If employers do not fully understand the types of work prohibited for young workers, they should contact the U.S. Department of Labor (DOL), Employment Standards Administration (ESA), Wage and Hour Division. This Division enforces child labor laws

under the Fair Labor Standards Act (FLSA). Employers should communicate these work policies to all employees.

References:

California Code of Regulations, Vol. 9, Title 8, Sections 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. (a) Application., (f) Repetitive Process Machines., Section 39999. Converyors (b), Section 4002. Moving Parts of Machinery or Equipment

http://www.cdc.gov/niosh/childlab.html
http://www.cdc.gov/niosh/face/In-house/full9502.html

EXHIBITS:

Exhibit 1. A picture of the slitting machine involved in the incident.

Exhibit 2. A picture of the rewind cylinder with the cut steel being wound onto the cylinder.


Exhibit 3. A picture of the rewind cylinder from the side showing where the victim was standing (white arrow) prior to getting entangled in the steel.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, 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 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: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington.

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

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